

**Environmental Assessment
Reconstruction of the Culebra Cargo Ferry Terminal
Culebra, Puerto Rico**

FEMA-4017-HMGP-PR-0030, Culebra

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List of Acronyms and Abbreviations

ATON	Aids to navigation
BFE	Base Flood Elevation
CCDA	Culebra Conservation and Development Authority
CIPR	Cultural Institute of Puerto Rico
CNWR	Culebra National Wildlife Refuge
CZMP	Coastal Zone Management Program
DHS	Department of Homeland Security
DNER	Department of Natural and Environmental Resources
EA	Environmental Assessment
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
GAR	Governor's Authorized Representative
HMGP	Hazard Mitigation Grant Program
LOA	Length Overall
MSL	Mean Sea Level
PRHTA	Puerto Rico Highway and Transportation Authority
PRMTA	Puerto Rico Maritime Transport Authority of Puerto Rico
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmosphere Administration
PRASA	Puerto Rico Aqueduct and Sewer Authority
PRPB	Puerto Rico Planning Board
PREMA	Puerto Rico Emergency Management Agency
PRNG	Puerto Rico National Guard
PRPA	Puerto Rico Ports Authority
SHPO	State Historic Preservation Office
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Services

1.0 Project Authority

Hurricane Irene made landfall on August 22, 2011 near the Municipality of Humacao with sustained winds of more than 70 mph. President Barak Obama declared a major disaster for the Commonwealth of Puerto Rico (FEMA-4017-DR-PR) on August 27, 2011, authorizing the Department of Homeland Security's Federal Emergency Management Agency (FEMA) to provide Federal assistance in designated areas of Aguas Buenas, Carolina, Cayey, Ceiba, Comerío, Juncos, Las Marías, Luquillo, Morovis, Naguabo, Orocovis, Utuado, Vega Baja, and Villalba Municipalities. This is pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), PL 93-288, as amended.

Section 404 of the Stafford Act authorizes FEMA's Hazard Mitigation Program (HMGP) to implement long-term hazard mitigation measures after a major disaster declaration. The HMGP aims to reduce the loss of life and property due to natural disasters and enable mitigation measures to be implemented during the immediate recovery from a disaster. The program is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

This Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act of 1969 (NEPA), the President's Council on Environmental Quality (CEQ) regulations implementing NEPA (Title 40 of the CFR, Parts 1500 to 1508), and FEMA's regulations implementing NEPA (44 CFR Parts 9 and 10).

The purpose of this EA is to analyze potential environmental impacts of the Proposed Action. FEMA will use the findings in this EA to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

2.0 Introduction

Pursuant to the damages experienced at the Culebra Passenger Ferry Terminal Ramp in Sardinias Bay after Hurricane Irene on 2010, the Puerto Rico Ports Authority (PRPA) evaluated the structural condition of the cargo platform and ramp. A report, dated September 2010 was submitted to the Maritime Transport Authority (PRMTA), which found advanced deterioration in the deck slab and concrete beams, which has probably spread to the entire concrete surface, apparently as a result of previous storm events, hurricanes and wave action. While it may be possible to patch and repair the deteriorated structure, any repairs attempted for this facility would be of short-term duration. Furthermore, the repair and reconstruction of the cargo terminal is not conducted promptly, structural failure may occur (see Appendix G).

An evaluation of potential temporary cargo operations determined that the area limitations of the existing facility makes it impossible to reconstruct the cargo area and continue to provide passenger and cargo service. As the only heavy commercial cargo transportation port in Culebra, the cargo ferry provides an essential service to the island-municipality residents. An alternatives analysis resulted in the proposed construction of an Auxiliary Cargo (see Appendices B and H) at San Ildefonso in Ensenada Honda Bay to provide cargo service during construction. Given the sizeable investment required for the proposed San Ildefonso terminal, and the usage limitations of the existing Ferry Terminal (see Appendix A, U.S. Coast Guard letter of October 27, 2014), this terminal is proposed to remain as a stand-by facility for future use.

The proposed Auxiliary Cargo Ferry Terminal is located in the Flamingo Ward, on a peninsula in the northern shoreline of Ensenada Honda Bay. It is bordered to the north by Road 250, to the east by Caño Quebrado, on the west by Ensenada del Cementerio, and on the south by Ensenada Honda. This area is the location of the first settlement in the island, named San Ildefonso de la Culebra, a site modified by the by the US Navy to establish the Culebra Naval Reservation from 1903 until their departure in 1975. Presently the site is used for passive recreation and includes two boat ramps, a pier on pilings with a maximum depth of approximately 13 feet, a seawall approximately 140 feet in length, three heavy duty bollards, an intake structure for a desalination plant (not in use for approximately 10 years), concrete park benches and roofed areas. Its maritime access is through Ensenada Honda Bay, one of the safest harbors in the region which encompasses approximately 700 acres, with a marked navigation channel and proper aids (outer and inner range channel markers and ten navigation buoys). Its coordinates

are Latitude 18°18'22.63"N and Longitude 65°17'00.44"W (see Appendix A: Figure 1: Location Map). The highest point within this area is located on the "Y" intersection, at approximately 28 feet above mean sea level (MSL).

The Proposed Action will be executed in phases. Construction of the Auxiliary Cargo Ferry Terminal at San Ildefonso would be the first phase with concurrent construction of a mooring dolphin in Sardinias Bay that will add resilience to the passenger dock. This phase is expected to last approximately 6 months. Once construction of the Auxiliary Terminal is complete, the second phase will be the reconstruction of the Cargo Ferry Terminal at Sardinias Bay, with a construction period of an additional 6 months. During this period, cargo operation will be relocated to the Auxiliary Terminal in San Ildefonso. Once the reconstruction of the Sardinias Bay Terminal is completed, the cargo operation will be relocated back to Sardinias Bay, and the Auxiliary Terminal will remain as a back-up terminal.

The Authorized Representative of the Governor, on behalf of the PRPA, has proposed this project to provide a safe and efficient cargo and passenger transportation that is in compliance with state and federal authorities, and meets the needs of the population of Culebra.

3.0 Purpose and Need

The purpose of the proposed project is to ensure the integrity and continuity of a safe maritime transportation system. The purpose also includes resiliency and effective recovery after a disruptive event, such as a natural disaster. The Culebra Cargo Ramp is the only heavy cargo transportation port serving the Island Municipality of Culebra, which has deteriorated beyond repair, and structural failure is presently imminent. This poses a threat to the safety of passengers and staff, to the equipment and vehicles that use the facility, and to the continued well-being of the resident and transient population that depend upon these supplies for a living.

The Island Municipality of Culebra has a population of approximately 2,000 residents, with approximately 10,000 visitors annually (Estudios Técnicos, 2011). To serve this population, the Culebra Ferry Terminal in Sardinias Bay provides transport to approximately 1,100 passengers per day in an average of three trips for the passenger ferries and two cargo ferries. The cargo ferries transport approximately 24 vehicles per trip or four 52-foot trailers in combination with twelve vehicles. Cargo transport through this terminal includes all the fuel, groceries, and construction materials that supply this important tourist destination (ENDI, 2010).

The PRPA, owner of the facility, has conducted an evaluation of alternatives for the continued cargo and passenger service to Culebra while the reconstruction activities take place. In summary, existing facilities have real constraints that severely limit alternative operations within the Ferry Terminal. The only area within the Ferry Terminal that is designed for cargo operations is the Cargo Ramp, which is approximately 48 feet wide. The remainder of 166 foot water front of the Ferry Terminal is only designed for pedestrian traffic; therefore, an alternative facility would have to be secured during reconstruction works, unless the Cargo Ramp could be reconstructed in sections.

As described in more detail below under the Alternatives, this proved impossible because of the length of the passenger ferry and the lateral position of its access doors. After careful consideration, a “temporary” facility was proposed (see Appendices B and H). However, due to the size of the investment for the “temporary” terminal (approximately \$2.6 million), and the serious shortcomings of the existing Ferry Terminal, stakeholders including the Culebra Major, the PRMTA and the US Coast Guard (USCG) have voiced their opinion that the Auxiliary Cargo Ferry Terminal should not be temporary, but remain in service beyond the reconstruction of the Cargo Ramp. Some of the reasons are:

- The physical limitations of the Culebra Airport are such that the supply chain to provide services to the island must heavily rely on uninterrupted maritime transportation. Also, cost of air transportation for supplies and fuel is cost-prohibitive.
- The existing port is located in Sardinias Bay, an open harbor that receives heavy winds and waves due to the prevailing weather patterns in the area.
- In the past, hurricanes have extensively damaged the Sardinias Bay facility for weeks at a time, disrupting commerce, commuters and tourism (the main source of income for the island of Culebra).
- The absence of a suitable alternate cargo vessel dock to receive basic habitation services for this island is both a safety and security concern.
- Ensenada Honda Bay, the site of the proposed Auxiliary Cargo Terminal, is a very well protected harbor which assists in minimizing heavy weather impact on pier structures, and will remain available for port operations under most conditions.
- The USCG has seen fit to maintain the federal navigation aids in this area beyond its employ by the Navy, including ten navigation buoys, an outer range channel marker and an inner range channel marker, for continued commercial activities.

Therefore, with the Proposed Action, PRPA will continue to provide safe and secure maritime facilities, will ensure the integrity and continuity of the maritime transportation system, including the recovery after a disruptive event such as a natural disaster. In keeping with those responsibilities, the PRPA proposes to improve and maintain an Auxiliary Cargo Ferry Terminal at San Ildefonso, since it will not only be an asset to the life and economy of Culebra, but also a critical component to ensuring that there is an alternate means for vessels to deliver fuel, food, goods and passengers to the island.

4.0 Alternatives

The NEPA process consists of an evaluation of the environmental effects of a federal action, including its alternatives. An Alternative Analysis was conducted to evaluate the options available for minimizing impacts associated with the reconstruction of the existing Cargo Ramp in Sardinias Bay and for an alternate cargo terminal to be used during its reconstruction, in order to maintain the existing schedule of passenger and cargo operation. Three alternatives have been proposed and reviewed for this project. They include:

- 1) No Action Alternative
- 2) The Proposed Action; and
- 3) Alternatives Considered and Dismissed.

4.1 No Action Alternative

The No Action Alternative would not change the existing cargo ramp conditions. This alternative would neither produce environmental impacts, nor would it meet the safety needs required for the existing Culebra Ferry Terminal Facilities. Due to its structural deficiencies, the partial or complete collapse of the deck or its sections is imminent in the near future if repairs are not conducted in a timely manner (see Appendix A, Figure 2: Pier Underside, Existing Conditions, Sardinias Bay).

The scenario for a collapse would likely occur while a heavy vehicle is loading or unloading, such as a fuel tanker truck or an asphalt truck, which would result in damage to property, bodily harm, likely to life, and the spilling of fuels and other engine fluids, resulting in widespread marine contamination. Following such an incident, an ensuing salvage, cleanup and reconstruction operation would ensue, with its own environmental impacts. This alternative would limit the maritime cargo transportation access to the island of Culebra for at least six months, and thus impose severe economic impacts to the PRPA, the people of Culebra and the Commonwealth as a whole. This alternative does not meet the purpose and need, but will continue to be evaluated throughout this EA and serve as a baseline comparison of impacts from other alternatives.

4.2 Alternative 1 (Proposed Action) Reconstruction of Existing Pier at Sardinias Bay Plus Auxiliary Cargo Terminal in San Ildefonso

The Proposed Action includes the reconstruction of the damaged Culebra Cargo Ramp, which consists of:

- The removal of approximately 27 existing 15 by 15 inch H-piles at the mud line. This operation would require each piling to be pulled from above by a crane while being cut at the mud line with the appropriate equipment, unless otherwise directed by the final Coral Transplant Plan coordinated with NMFS. The H-piles would be then lifted and transported to a predetermined location for disposal.
- Demolish the existing concrete platform, which measures approximately 4,907 square feet. The demolished, uncontaminated material, estimated at 204 cubic yards, will be disposed of at the Culebra Landfill or at an alternate, previously approved location, where it could be used as bank-stabilizing rip rap.
- Driving approximately 25 replacement 20 inch diameter piles over the existing Cargo Ramp footprint.
- Build the replacement Cargo Ramp of approximately 5,501 square feet.
- Build a raised bridge or walkway for safe passenger transit on and off the ferry, measuring approximately 10 feet wide by 100 feet long. This new feature is proposed in order to upgrade to current safety codes and standards, so that passengers that arrive in the cargo ferry do not board and disembark using the same areas as those for loading and unloading vehicles. For this upgrade, approximately 3 pilings 20 inches in diameter will be added (one every 25 feet) under passenger boarding ramp, and 5 pilings 20 inches in diameter will support the mooring dolphin.
- Install a catwalk and a mooring dolphin on the passenger ferry dock, which will serve for improved docking safety and add usability of the passenger dock facilities. This catwalk will measure approximately 4 feet in width and 25 feet in length. It will be used to provide access to the mooring dolphin for the PRPA/ATM employees in charge of assisting with the docking of the ferry. The mooring dolphin will measure approximately 10 feet by 10 feet and be supported by 4 pilings 20 inches in diameter.

Total construction time is estimated to take 6 months. During this time, one barge will use retrievable spuds to secure itself in position, temporarily impacting the unconsolidated substrate. In the meantime, the cargo ferry traffic will be taken elsewhere (see below), therefore reducing the ferry traffic in Sardinias Bay.

There are no permanent actions that are interrelated or interdependent with the reconstruction of the Culebra Cargo Ramp. After the construction period is over, the cargo ferry traffic will be restored to Sardinas Bay, where it is anticipated that the existing scheduled ferry service will remain unchanged.

Construction of an Auxiliary Cargo Ferry Terminal in San Ildefonso.

The Proposed Action includes the construction of an Auxiliary Cargo Ferry Terminal at San Ildefonso, which consists of:

- The installation of a pre-fabricated floating aluminum pontoon platform that will match freeboard ferryboat heights and ease loading and unloading activities. This floating pontoon platform will have an approximate length of 40 feet and a width of 56 feet, with a total of approximately 2,240 square feet (208 square meters).
- The floating pontoon platform will be anchored to the seafloor using 6 round concrete piles 30 inches in diameter, drilled into the bottom approximately 35 feet below MSL. These concrete piles will hold the floating platform in place.
- Installation of a pre-fabricated aluminum vehicular bridge, measuring approximately 35 feet long by 22 feet wide with a total area of 770 square feet (72 square meter) to connect the floating pontoon platform to land.
- Due to its unsafe structural conditions, the existing recreational dock will be demolished and replaced with a new prefabricated aluminum platform supported by eight 18 inch diameter steel encased concrete piles. The area occupied by this new dock will be the same as the existing one. The existing 14 inch diameter concrete piles will be removed at the mud line, lifted and transported to a predetermined location for disposal, unless dictated by the final coral transplant plan.
- Install an aluminum passenger boarding ramp to connect the replacement pier and the floating platform, measuring 20 feet in length by 4 feet in width (80 square feet). The boarding ramp will allow passengers to board and disembark the cargo ferry without using the vehicular loading and unloading area.
- A pile cap and fender measuring approximately 56 feet in length by 6 feet in width (336 square feet) will be supported by approximately eleven round 30

inch diameter concrete piles. The pile cap beam will be located on the seaward side of the pontoon platform at an approximate distance of 64 feet from the existing seawall, at an approximate depth of 17 feet, and will protect the floating pontoon platform from impacts by the cargo ferry during docking maneuvers. The stern of the cargo ferry will be tied to steel bollards on the pile cap.

- To protect the existing historical seawall, a pile cap beam measuring approximately 29 feet long by 3 feet wide and supported by six 18 inch diameter concrete piles will be constructed at a distance of approximately 5 feet from the existing seawall.
- No dredging works will be necessary to meet the required operational depth for the cargo ferry.
- Landside improvements related to the development of this facility will include two new cast steel bollards at its ends, construction of ticket booths, upgrading the parking area, and road improvements. These upgrades will not impact any wetland areas or existing drainages.

In addition to the aforementioned construction, the existing upland areas near the Auxiliary Cargo Ferry Terminal will require various modifications, including the widening of the existing access road to the required width with a loop lane that will allow an uninterrupted flow of traffic, the creation of approximately 30 parking spaces, and the relocation of two electrical poles. See Appendix A, Figure 5: Conceptual Parking Layout-San Ildefonso, Figure 6: Proposed Layout plan for the Auxiliary Cargo Ferry Terminal in San Ildefonso, Figure 7: Proposed Section Plan for the Auxiliary Cargo Ferry Terminal in San Ildefonso, and Figure 8: Proposed Plan for the Auxiliary Cargo Ferry Terminal in San Ildefonso.

The construction at San Ildefonso is estimated to take 7 months. During this period, one construction barge will use retrievable spuds to secure itself in position, temporarily impacting the sand/mud bottom. Once this auxiliary platform is completed, the scheduled cargo ferry service from Fajardo to Culebra will use the Auxiliary Terminal at San Ildefonso while the existing cargo platform in Sardinias Bay is demolished and rebuilt.

To reach the proposed Auxiliary Cargo Ferry Terminal in San Ildefonso by sea, the cargo ferry would travel south around Punta del Soldado and turn 40° NE in the “Canal del Oeste” between the lighted buoy (R “2”, FI R 4s in the Nautical Chart) that marks “Bajo

Amarillo”, keeping this heading for approximately 1 nautical mile, where the “Canal del Este” is located. Once reaching Canal del Este, the cargo ferry must turn 325° NW to the entrance of Ensenada Honda, clearly marked by two buoys (G “9”, FI G 4s and RN “10”). Once inside Ensenada Honda, the cargo ferry must travel an additional nautical mile before arriving at San Ildefonso on the eastern shoreline.

4.3 Alternatives Considered and Dismissed

The following alternatives are not assessed in the rest of the document, as they were evaluated and determined to be impractical.

4.3.1 Alternative #2: Reconstruction of Existing Pier in Sardinias Bay Plus Auxiliary Cargo Terminal in Fulladosa

Alternative 2 proposes the same configuration of Alternative 1, with the new Auxiliary Cargo Terminal using the Fulladosa Dock instead of San Ildefonso.

The existing Fulladosa Dock (Latitude 18°18'3.79" N and Longitude 65°17'27.78" W) is located within Ensenada Honda Bay in Culebra (see Appendix A: Figure 9: Location of Actual, Alternative and Proposed but Dismissed Cargo Ferry Terminal), was considered as a site for the Alternative Auxiliary Cargo Terminal. To reach the Fulladosa Dock by sea, the cargo ferry would follow the same route as that to reach San Ildefonso, except that Fulladosa is located on the western shoreline of Ensenada Honda, rather than its eastern one.

In the past, the Fulladosa Dock has been used by the PRMTA for its cargo ferries, which were then much smaller than the current fleet. The newer cargo ferries require at least 40 feet width for a safe docking and operation of the cargo door/ramp. With the actual width of the Fulladosa dock platform being 10.2 feet within concrete curbs, the existing facilities would require extensive structural modifications.

Located at the edge of a narrow (approximately 5 meters wide) two-way road with no shoulders or median, the space availability is the starkest limitation of the Fulladosa Dock. Required cargo terminal facilities include a passenger terminal waiting area, ticket booth, parking to serve the 24 vehicles uploading to the ferry, plus passenger drop-off and collection. In addition the site lacks potable water and electrical infrastructure. During its use, traffic in the area would be severely disturbed, as the road lacks the adequate width for the proper traffic flow.

In order to improve existing upland facilities to comply with the aforementioned area requirements, either the steep (30+ degree slope) hill on the opposite side of the road must be cut; alternatively, the shoreline could be filled or the required facilities constructed over pilings within the open waters of Ensenada Honda. However, from an environmental perspective, it is the least acceptable option. The filling of open waters or the construction of pilings is much more expensive, as is the cost associated to the cutting and impacting of uplands in Culebra. See Appendix H for the report for the evaluation of Fulladosa as the site for the Auxiliary Terminal.

4.3.2 Alternative #3: Phased Reconstruction

A Phased Reconstruction at Sardinias Bay would consist of demolishing half of the Cargo Ramp platform, removing the pilings that supported it, replacing those pilings, and rebuilding the platform, while using the other half for continued cargo operations. Once the first half of the Cargo Ramp was completed, the procedure would be repeated for the second half of the Cargo Ramp.

A detailed analysis concluded that the alternative of a phased reconstruction at the Culebra Ferry Terminal in Sardinias Bay is not a practical option, mostly due to logistics and operational concerns. See Appendix B for a report on this analysis. Some of the drawbacks:

- The Ferry Terminal does not have the adequate dimensions to allow the passenger ferry to dock while the demolition barge and turbidity barrier are set in place.
- The larger passenger ferries with an overall length (LOA) of over 150 feet on the PRMTA fleet that make the scheduled trip from Fajardo to Culebra would not be able to dock if the demolition/construction barge is in place.
- The Culebra Ferry Terminal is only approximately 166 feet long; due to this constraint, the cargo and passenger ferries cannot presently be docked simultaneously. To allow for such operation, the demolition barge and the turbidity barrier would have to be removed from the area before the ferries are scheduled to arrive, and reattached once they leave the terminal, which happens several times per day. The impact upon seafloor would be from the retractable spuds that would impact larger areas of the seafloor.

- The associated time delays would add significantly to the budget and the associated disruption in the scheduled ferry services, and the time required would impact the construction duration excessively.
- The weak structural condition of the existing facilities could be worsened by cutting half of the Cargo Ramp, adding risk factors.

The Phased Reconstruction was therefore considered an impractical alternative for the reconstruction of the Cargo Ramp.

4.3.3 Alternative #4: Restoration of Existing Pilings

In order to minimize impacts of the Proposed Action, several options were considered prior to concluding that a complete replacement is the most viable option with minimal impact. One of the options considered was to restore the existing Cargo Ramp pilings only. By restoring the damaged portion of the H-pilings existing coral colony and other encrusting organisms would not be disturbed. This option consisted of cutting the damaged portion of the H-pilings and restoring it with a new H-piling section using a load-bearing repair. Optional to this methodology was to add structural capacity by slipping a cylindrical mold over the H-piling and filling it with concrete.

The option of restoring the pilings was considered but dismissed mainly due to safety concerns, as the existing pilings are in an advanced state of corrosion. If the pilings were to be restored, they would eventually need replacement due to their shortened useful lifespan. Adding the concrete encasing could mitigate these concerns, but would still destroy encrusting organisms. Questions would remain about the structural integrity of the existing pilings below the mud line even after concrete encasing. Another concern with this option was the significant increase in construction time and associated increase in construction costs. Repairing the pilings would increase the construction time by approximately three months, since the repairs would be customized to the condition of each piling. Three months of additional construction time would add significantly to the budget and the associated disruption in the scheduled ferry services. Further, the coral survey conducted at the site concluded that listed endangered coral species are present in the pilings, adding the extra cost and effort would not be justified.

4.3.4 Alternative #5: Replace Pilings Leaving Existing Pilings in Place

In order to protect existing encrusting organisms presently attached to the pilings, this option considered cutting off the pilings at the water surface and driving the replacement pilings next to the existing ones.

This option was considered not feasible due to the limited space that would be available between the existing pilings and those proposed to be installed. There is also a high probability of damaging the encrusting marine organisms during the installation of the new pilings due to the limited space for construction. Additionally, the structural design would place some replacement pilings right against existing pilings, making for very difficult constructability. This option was dismissed since the coral survey conducted at the site concluded listed endangered coral species are present in the pilings.

5.0 Affected Environment and Potential Impacts

The following sections describe the environmental impacts and environmental consequences of the Proposed Action on physical, biological, recreational, visual, and cultural resources in the project area. When possible quantitative information is provided to establish potential impacts and the potential impacts are evaluated based on the criteria listed in Table 1.

Table 1: Impact Significance and Context Evaluation Criteria for Potential Impacts

Impact Scale	Criteria
No Effect	The resource area would not be affected and there would be no impact.
Negligible	Changes would either be non-detectable or, if detected, would have effects that would be slight and local. Impacts would be well below regulatory standards, as applicable.
Minor	Changes to the resource would be measurable, but the changes would be small and localized. Impacts would be within or below regulatory standards, as applicable. Mitigation measures would reduce any potential adverse effects.
Moderate	Changes to the resource would be measurable and have either localized or regional scale impacts. Impacts would be within or below regulatory standards, but historical conditions would be altered on a short-term basis. Mitigation measures would be necessary, and the measures would reduce any potential adverse effects.
Major	Changes to the resource would be readily measurable and would have substantial consequences on regional levels. Impacts would exceed regulatory standards. Mitigation measures to offset the adverse effects would be required to reduce impacts, though long-term changes to the resource would be expected.

5.1 Geology, Soils and Seismicity

Culebra and its adjacent keys are underlain by volcanic and intrusive rocks of probable Upper Cretaceous age. Andesite lava and Andesite tuff are clearly dominant. Toward the

north-central part of Culebra and on the east side of Cayo Luis Peña, the tuff and lava contain diorite porphyry inclusions. These volcanic rocks no longer exhibit porosity due to compaction and the filling of pores with quartz and calcite. The island of Culebra has a limited variety of soil types, due to its volcanic origin, small size, rugged terrain, and moderately uniform climate (Bachhuber, Hangesh & Sundermann, 2008, Jansma & Mattioli, 2003).

The soil associations for the entire island of Culebra are the Descalabrado-Guayama association, which are described as shallow, well drained, strongly sloping to very steep soils on volcanic uplands (NRCE, 2013). See Figure 10 for the USDA/NRCS Soil Associations Map.

The land based portion of the Auxiliary Terminal is located on a gently sloping hill that rises to its highest point at approximately +28 feet MSL (see Figure 11: USGS Topographic Map Superimposed over NOAA Nautical Chart Map).

Puerto Rico and its archipelago lie at the northern margin of the Caribbean Plate, north of which is the North America Plate. The fault line where both plates meet north of Puerto Rico, called the BownBunce/Main Ridge Fault and located approximately 100 miles north of Culebra, is a subduction zone that runs east to west, where the North America Plate is pushed under the Caribbean Plate. The Anegada Fault zone is located approximately 17 miles south of Culebra. The area between these faults has shown significant seismic activity in the entire region (USGS, 2008). Seismic activity is concentrated offshore Puerto Rico in the Mona and Passages, the Muertos Trough (south of Ponce), and the Puerto Rico trench (northwest of Aguadilla). The highest levels of onshore seismicity are in southwest Puerto Rico in the Lajas Valley (Jansma and Mattioli, 2003). The aforementioned conditions and seismic activity affect the entire Island of Culebra, and are not characteristic of one area or another. The existing Culebra Cargo Ramp is located approximately 1.3 miles from the location of the Auxiliary Terminal.

Sardinas Bay

According to the U.S. Department of Agriculture Soil Conservation Service (USDA/NRCS) Soil Survey of the Humacao Area of Eastern Puerto Rico, and the USDA/NRCS Web Soil Survey, the Sardinas Bay area contains 3 soil type series: Descalabrado clay loam (DeE2) with 20-40% slopes, eroded, Water (W) and areas where No Digital Data is Available (NOTCOM). See Figure 12: USDA/NRCS Soil Survey Map, Sardinas Bay.

San Ildefonso

The area near the Auxiliary Cargo Terminal in San Ildefonso site contains 3 soil series: Rock land (Rs), Water (W) and Tidal Swamp (TS). Figure 13: USDA/NRCS Soil Survey Map, San Ildefonso. No major appreciable impacts to soils are expected during the operation of the Culebra Auxiliary Cargo Ferry Terminal. The proposed location lies in an area previously impacted by the existing facilities, and has been under development since the beginning of the past century.

No Action Alternative

The no action alternative would have no effect on geology, soils and seismicity.

Proposed Action

In San Ildefonso, minor grading activities for the widening of the existing road are surface activities that do not affect geology and are not affected by geology. Erosion and sediment control Best Management Practices (BMPs) would be implemented in San Ildefonso during earth moving and construction activities to stabilize soils and prevent sediment from moving off-site and into Ensenada Honda Bay. The construction contractor will be required to follow a comprehensive Storm Water Pollution Prevention Plan (SWPPP) and adhere to the terms and conditions of the National Pollutant Discharge Elimination (NPDES) construction storm water permits.

Based on the nature of the projects in Sardinias Bay and San Ildefonso, the Proposed Actions would have no effect on geology or seismicity and are very unlikely to be affected by geologic or seismic events. Therefore, geology and seismicity are not considered further in this analysis.

5.2 Climate Change

Climate in general. Culebra has a tropical marine climate with year-round warm temperatures. The average daily temperature is about 80° Fahrenheit (°F), with summer months (May-October) being slightly warmer than other months. The average maximum and minimum temperatures are 86°F and 74°F, respectively. Average water temperature is about 80°F, with a yearly low of 77°F and a high of 83°F. The average yearly rainfall in the island is 36 inches, ranging from a low of 16 inches in 1967 to the 59 inches recorded in 1942. The heaviest average rainfall occurs during the months of October, May, September, and November, with August through November being the rainy season. The driest months are generally January through April. During the summer (May through

November), rainfall occurs more often in the form of brief showers. The average annual humidity is approximately 73%, with a daytime and nighttime average of approximately 65% and 80%, respectively.

The prevailing winds blow from the east-northeast November through January from the east all other months, with average wind speeds of 8 knots. The hurricane season lasts from June through November, with most storms occurring between July and September. These storms form well east of the Caribbean and frequently track near Puerto Rico as they move westward. Severe hurricanes occur every 10 to 20 years. The worse recent hurricane was Hugo, which struck in September of 1989 and caused extensive damage to Culebra and most of eastern Puerto Rico. Roosevelt Roads Naval Station recorded an all-time high wind gust of 104 knots during this hurricane.

5.2.1 Climate Change Caused By the Proposed Action

Climate change refers to changes in the climate of the planet caused by a general warming of the atmosphere. Climate change is capable of affecting temperature fluctuations, sea level, weather patterns, and species distribution. The primary causes for this general warming are carbon dioxide emission from fossil fuel burning, and methane emissions from a variety of sources. Global carbon emissions from the burning of fossil fuels (oil, coal and gas) are estimated at 9.5 billion tons per year (USDOE, 2014); five 200 horse-power horsepower diesel engines running continuously for twelve months would generate approximately 5,000 tons of carbon dioxide or 0.00006% of the global contribution, negligible by any measure.

The construction phase of the Proposed Action will contribute oil burning emissions from one pile driver, one crane and an undetermined number of trucks to transport the materials, and will not contribute even one hundredth of the example calculated above. The operation of the Proposed Action will not modify the frequency of the ferry transport, thus their carbon emissions. The trip to the Auxiliary Terminal is only 3.43 nautical miles longer (23.02 v. 19.59 nautical miles) from the Fajardo Terminal than to the Sardinas Bay Terminal, and it will last approximately 6 months. Therefore, the contribution to climate change of the construction and operation of the Proposed Action is negligible.

5.2.2 Climate Change Impacts on the Proposed Action.

The U.S. Army Corps of Engineers prepared Engineering Circular No. 1165-2-211 in July 2009 to provide guidance on incorporating sea level change considerations in civil works

programs (USACE 2009). The USACE document recommends that a low, intermediate, and high rate for sea level rise be calculated and considered for projects.

The “low” sea level rise rate is defined as the historic rate of relative sea level change at the local tide station. The National Oceanic and Atmospheric Administration (NOAA) has evaluated sea level rise trends for each tide station (NOAA 2014) and provides the data for the mean sea level trend at the San Juan tide gauge, station 9755371. The mean sea level trend has been calculated by NOAA to be 1.77 millimeters/year with a 95% confidence interval of plus or minus 0.43 mm/year based on monthly mean sea level data from 1962 to 2013. This is equivalent to a mean sea level trend of 0.27 foot in 50 years. The “intermediate” sea level rise rate is defined as the rate of local mean sea level change using the modified Natural Research Council (NRC) Curves I, and II and equations 2 and 3. The “high” sea level rise rate is defined as the rate of local mean sea level change using the modified Natural Research Council (NRC) Curve III and equations 2 and 3. Both the “intermediate” and “high” rates include a consideration for the future acceleration of sea level rise that is not considered when evaluating the historical (“low”) rate of relative sea level change. Sea level rise was calculated assuming a project life of 50 years, with the construction initiated and completed in 2015.

The increase in water level elevation as a result of the projected sea level rise will not affect future operation or maintenance of the Proposed Action. The existing Cargo Terminal reconstruction takes into consideration the ferry with the highest deck elevation above sea level (Cayo Largo) and the lowest (Isla Bonita) to determine the optimal ramp inclination and slope. The Auxiliary Cargo Terminal in San Ildefonso has been designed with a floating platform, which will provide for the highest and lowest estimates that may occur during the useful life of the project.

5.3 Air Quality

The Clean Air Act (CAA) of 1963 (42 U.S.C., Ch. 85), as amended, provides for federal protection of air quality by regulating air pollutant sources and setting emissions standards for certain air pollutants. Under the CAA, the United States Environmental Protection Agency (EPA) establishes primary and secondary air quality standards (42 U.S.C. Sections 7408 and 7409); and states adopt ambient air quality standards in order to protect the public from potentially harmful amounts of airborne pollutants. Primary air quality standards protect the public health, including the health of “sensitive populations, such as people with asthma, children, and older adults” (EPA, 2013). Secondary air quality standards protect the public welfare by promoting ecosystems health, and

preventing impaired visibility and reducing damage to crops and buildings (EPA, 2013). The EPA has set National Ambient Air Quality Standards (NAAQS) for the following six criteria pollutants: Ozone (O₃), particulate matter (PM_{2.5}, PM₁₀), nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), and lead (Pb) (EPA, 2013).

The EPA has designated specific areas as NAAQS attainment or non-attainment areas (NAAs). Non-attainment areas are any areas that do not meet the quality standard for a pollutant, while attainment areas do meet ambient air quality standards. NAAs are classified by the EPA as marginal, serious, severe, or extreme, based on the severity of the area's air quality problems. The basin for the entire Culebra area is an "attainment area," or an area where criteria pollutant standards are being met.

Other than temporary emissions from heavy construction equipment and potential fugitive dust during construction, the Proposed Action will not create additional pollutant emission sources.

No Action Alternative

The no action alternative will eventually result in the collapse of the Culebra Terminal Ramp. Potential air quality impacts would be associated with equipment used in emergency response and then ensuing clean-up and any reconstruction efforts. Similar with the proposed alternative, such impacts would be expected to be negligible to minor due to the prevailing trade winds and convection currents depending on the extent of emergency response efforts and temporary access if needed.

Alternative #1 (Proposed Action)

Sardinas Bay

During the reconstruction of the Cargo Ramp, temporary impacts to air quality from fugitive dust from the construction are expected to occur, as well as emissions from fossil fuel burning internal combustion engines used in heavy equipment, construction vehicles and boats, which are considered mobile sources. These emissions are of short duration, of intermittent occurrence, and are localized. Impacts are expected to be negligible due to prevailing trade winds and convection currents. The construction is expected to last 6 months.

San Ildefonso

During the construction of the Auxiliary Cargo Terminal in San Ildefonso, temporary impacts to air quality from fugitive dust during vegetation removal, grading/fill operations and from construction are expected to occur, as well as emissions from fossil fuel burning internal combustion engines used in heavy equipment, and earthmoving machinery, construction vehicles and boats, all considered mobile sources. These emissions are of short duration, of intermittent occurrence, and are localized. Impacts are expected to be negligible due to prevailing trade winds and convection currents.

To reduce emissions, the construction contractor will be required to keep all vehicle and mechanical equipment running times to a minimum and ensure that all engines are properly maintained. In addition, the fugitive dust that may be generated by the physical disturbance of soils caused by earth-moving and equipment/vehicle traffic at the land-based construction sites would be controlled using dust reduction measures, as required by a General Construction Permit.

The quality of the air at the San Ildefonso area is expected to intermittently change appreciably during the scheduled operation of the Auxiliary Cargo Terminal due to the increase in both land and maritime traffic. Additional road traffic to the area will be associated to the maritime movement of vehicles transported on the ferries, as well as public and private transportation moving passengers to and from San Ildefonso. Furthermore, the operation of the cargo ferry will add another diesel exhaust source into the area. This potential degradation of the air quality due to road and maritime traffic in San Ildefonso, which is an area with a very low population density, will have an equivalent emissions reduction in the main Culebra settlement of Dewey, the recipient of the entire road and maritime traffic, and the more densely populated part of the island. Once the demolition and construction operations in Sardinias Bay are completed, the cargo ferry traffic will return to the existing terminal, and the use of the Auxiliary Cargo Ferry Terminal will be limited to that of a back-up terminal.

5.4 Underwater Noise

Pile driving can have acoustic impacts upon marine life, including ESA-listed sea turtles and manatees. Acoustic impacts are dictated by a function of distance; the noise impact decreases with the cube of the distance (Distance^3) from the source. Acoustic effects as a result of noise created by construction activities can physically injure animals or change animal behavior in the affected areas. Injurious effects can occur in two ways. First, effects can result from a single noise event exceeding the threshold for direct physical

injury to animals, and these constitute an immediate adverse effect on these animals. These have been documented for detonations, but not for pile-driving activities, for sea turtles. Second, effects can result from prolonged exposure to noise levels that exceed the daily cumulative exposure threshold for the animals, and these can constitute adverse effects, if animals are exposed to the noise levels for extended periods. These have been documented for pile-driving noise and vibration. Behavioral effects can be adverse if such effects prevent animals from migrating, feeding, resting, or reproducing, for example.

Given the mobility of sea turtles and manatees, they are anticipated to move away (escape response) from noise disturbances. There are no restraining barriers in the area, so individuals of the ESA-listed species are free to move. If an individual chooses to remain within the behavioral response zone, it could be exposed to behavioral noise impacts during pile installation. Green or hawksbill sea turtles and manatees will be able to resume normal activities during quiet periods between pile installations and at night, since pile-driving will occur only during the day.

No Action Alternative

The No Action Alternative will result in the eventual collapse of the Culebra Terminal Ramp, dumping the vehicle that causes the subject collapse and its contents into the Sardinias Bay. Noise impacts will result from the ensuing salvage, clean-up and reconstruction effort. The air lift of emergency supplies and from evacuating an island without a port would also result in prolonged events of unwanted noise. Any impacts associated with responding to a collapse are anticipated to be minor to moderate as a result of reconstruction due to the mobility of the species of concern.

Alternative #1 (Proposed Action)

The Proposed Action includes pile driving only in the Sardinias Bay terminal. All pile-driving within San Ildefonso will use the auger drilling method, among other reasons, to minimize noise and vibration impacts in sensitive habitat areas. The process consists of placing a thick-walled steel pile that functions as a casing during drilling, a reinforcement cage built off site, and on-site concrete pouring. Drilling may be done with either a concentric or an eccentric method. Once the casing has been drilled, a reinforcement rebar cage built offsite is inserted in the casing, and concrete is poured from the bottom up. Drilling generates substantially lower noise and sound pressures than impact pile-driving and even vibratory hammers (CDOT, 2009; Dazey, et al., 2012). The use of auger

drilling instead of pile driving constitutes an avoidance, minimization and mitigation measure for underwater noise.

Other construction or operation activities are not anticipated to have a considerable underwater noise or vibration impact.

For the above-mentioned reasons, FEMA anticipates that any adverse effects from underwater noise and vibrations will be minor. However, an Underwater Noise Monitoring Plan will be implemented for all pile driving activities. The final plan will be coordinated with NMFS prior to commencement of any in water construction activity.

Any impacts that would occur due to pile driving operations in San Ildefonso are expected to be minor due to the above- mentioned minimization, mitigation and monitoring steps taken, in addition to the mobility of the species of concern.

5.5 Water Resources

This section provides an overview of the affected area and potential environmental effects of the alternatives considered upon water resources, including water quality, streams, wetlands, and floodplains.

5.5.1 Water Quality

No Action Alternative

The No Action Alternative will result in the eventual collapse of the Culebra Terminal Ramp, dumping the vehicle that causes the subject collapse and its contents into the Sardinias Bay. Adverse impacts to water quality will occur from the spilling of at least the gasoline or diesel in the fuel tank of the vehicle that causes the collapse of the ramp, from the engine oil, engine coolant, brake fluid, and perhaps from other substances transported in the vehicle that may be harmful in the aquatic environment. The collapsing structure, the vehicle and its content would also cause a massive sediment re-suspension event as they hit bottom. The ensuing salvage, clean-up and reconstruction effort will also result in additional potential oil and chemical spills and sediment resuspension.

The heaviest vehicles allowed in the ferries are approximately 80,000 pounds, which can be either an asphalt, rock, sand or fuel truck (approximately 8,000 gallon load). In any of these cases, the impact upon water quality would extend beyond Sardinias Bay, through the draw-bridge channel into Ensenada Honda, and into the adjacent Luis Peña Channel Natural Reserve, the first no-take marine reserve designated in Puerto Rico, and a

preferred destination for the SCUBA diving tourism. If the causal load is a fuel or asphalt truck it would leave a lasting minor to major water quality impact in all of these areas, depending on the incident.

Alternative #1 (Proposed Action)

Sardinas Bay

Potential minor impacts to surface water quality may result from pile driving operations, stormwater runoff from construction areas, and potential spills. Groundwater resources are not present in Sardinas Bay, and thus will not be impacted.

During the pile driving phase, best management practices will include the installation of a turbidity barrier to avoid any re-suspended sediments from spreading to the surrounding waters.

A Spill Prevention Control and Countermeasures Plan will also be prepared and implemented to prevent hydraulic fluid, diesel or other potential fluids from heavy equipment from reaching surface water bodies.

Once the reconstruction of the existing Cargo Ramp in Sardinas Bay is completed, the scheduled cargo ferry service will be restored to the terminal, and the existing impacts due to re-suspension of sediments due to ferry operations will be restored.

San Ildefonso

Potential minor impacts to surface water quality may result from pile driving operations, stormwater runoff from grading and construction areas, and potential spills. Groundwater resources are not present within the area proposed for the Culebra Auxiliary Cargo Ferry Terminal Facilities, and thus will not be impacted.

During the pile driving phase, best management practices will include the installation of a turbidity barrier to avoid any lifted sediments from spreading to the surrounding waters.

During construction of the upland section of the Auxiliary Terminal, best management practices for sediment control will be implemented, in accordance with an Erosion Sedimentation Control Plan required by the Consolidated Construction General Permit.

A Spill Prevention Control and Countermeasures Plan will also be prepared and implemented to prevent hydraulic fluid, diesel or other potential fluids from heavy equipment from reaching surface water bodies.

During the operation of the Auxiliary Terminal, negative water quality effects include the re-suspension of sediments during docking/undocking maneuvers of the cargo ferry. However, the propellers on the ferries have a mid-rear location on the ship that, once docked to the platform, will be at least in approximately -19 feet MSL (Appendix A, Figure 6: Proposed Layout Plan for the Auxiliary Cargo Ferry Terminal, San Ildefonso). With a minimum draft of 7 feet 6 inches for the largest cargo ferry in the fleet, the 158 feet LOA Isla Bonita cargo ferry, it has a clearance from the seafloor of approximately 10 feet 6 inches (Appendix A, Figure 7: Proposed Section for the Auxiliary Cargo Terminal, San Ildefonso).

After the reconstruction of the existing Cargo Ramp in Sardinas Bay, the cargo ferry service will be restored to the existing terminal, and the use of the Auxiliary Cargo Ferry Terminal will be limited to a back-up terminal.

Various avoidance, minimization and mitigation measures will be taken with regards to water quality impacts:

- Turbidity Monitoring During Construction (San Ildefonso & Sardinas Bay). To document turbidity impacts from construction activities, and to stop work if the activity is causing an exceedance of water quality standards.
- Turbidity & Seagrass Monitoring During Operation (San Ildefonso). To document turbidity impacts near the ferry operation and to evaluate actual impacts upon the adjacent seagrass bed.
- Ferry Approach & Departure Protocol. To inform the ferry captains about the impacts of sediment resuspension upon the aquatic environment, and to minimize this impact.

5.5.2 Wetlands

The United States Army Corps Engineers (USACE) regulates the discharge of dredged or fill material into waters of the U.S., including wetlands, pursuant to §§ 401 and 404 of the Clean Water Act (CWA) (33 U.S.C. § 1344). Section 402 of the CWA, entitled National Pollutant Discharge Elimination System (NPDES), authorizes and sets forth standards for state administered permitting programs regulating the discharge of pollutants into navigable waters within the state's jurisdiction (33 U.S.C. § 1342). The USACE also regulates the building of structures in waters of the U.S. pursuant to §§ 9 and 10 of the Rivers and Harbors Act (RHA) (33 U.S.C. § 403). Executive Order (E.O.) 11990,

Protection of Wetlands, directs Federal agencies to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the values of wetlands for federally funded projects (42 F.R. 26961, May 25, 1977).

Wetlands are identified as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (E.O. 11990, § 7[c]). FEMA regulations for compliance with E.O. 11990 are found at 44 CFR Part 9, Floodplain Management and Protection of Wetlands.

No Action Alternative

The no action alternative would have no effect on wetlands or other waters of the U.S., and would not require permits under Section 404 of the CWA or Section 10 of the RHA.

Alternative #1 (Proposed Action)

Sardinas Bay

According to the USFWS National Wetlands Inventory Maps, the area within Sardinas Bay is classified as a marine system with a continuously submerged substrate and an unconsolidated bottom. This location has been previously impacted by the development of the existing facilities. No wetlands are present within the Cargo Ramp location. See Appendix A, Figure 14: USFWS National Wetlands Inventory Map, of Sardinas Bay for the recognized wetlands at the site. The applicant is required to coordinate with the USACE for any permits or authorizations under § 404 of the Clean Water Act or § 10 of the Rivers and Harbors Act.

San Ildefonso

According to the National Wetlands Inventory Map, the Auxiliary Cargo Terminal will be located in an area that is currently mapped as estuarine, intertidal unconsolidated sandy shore and estuarine, sub-tidal unconsolidated bottom wetlands (USFWS, 2011).

No wetlands are present within the location of the proposed Auxiliary Cargo Terminal in San Ildefonso, as the area has been previously impacted by the development of the existing boat ramps, pier and waterfront facilities. A coastal fringe of red mangroves (*Rhizophora mangle*) lies at less than 100 feet east and west of the location. According to the USFWS National Wetlands Inventory, this fringe is classified as an estuarine, intertidal, forested, broad leafed-regularly flooded wetland. This coastal fringe will not be

directly impacted during the construction and operation of the Auxiliary Cargo Terminal. The applicant is required to coordinate with the USACE for any permits or authorizations under § 404 of the Clean Water Act or § 10 of the Rivers and Harbors Act.

5.5.3 Floodplains

Executive Order (EO) 11988 (Floodplain Management) requires federal agencies to avoid direct or indirect support of development within the 100-year floodplain whenever there is a practicable alternative. FEMA's EO 11988 compliance regulations are found at 44 CFR Part 9. FEMA uses Flood Insurance Rate Maps (FIRMs) to identify the regulatory 100-year floodplain for the National Flood Insurance Program. Consistent with EO 11988, the FIRMs for these sites were identified and examined during the preparation of this Environmental Assessment. The FIRM for the San Ildefonso in Ensenada Honda indicates that the area is located within a FEMA Flood Zone VE. Per 44 CFR 9.11(d)(6), no project should be built to a floodplain management standard that is less protective than what the community has adopted in local ordinances through their participation in the National Flood Insurance Program (NFIP). The Applicant is required to coordinate with the local floodplain administrator regarding floodplain permit(s). All coordination with the local floodplain administrator and, Applicant compliance, should be documented and copies forwarded to the FEMA for inclusion in the permanent project files. Per 44 CFR 9.11(d) (9), mitigation or minimization standards must be applied, where possible.

In compliance with EO 11988, an 8 Step-Process assessment was prepared by FEMA to evaluate the impacts related to the construction of the Proposed Action within the 100-year floodplain (see Appendix M)

No Action Alternative

The no action alternative would have impacts to the floodplain. Due to its structural deficiencies, the partial or complete collapse of the deck or its sections is imminent in the near future if repairs are not conducted in a timely manner (see Appendix A, Figure 2: Pier Underside, Existing Conditions, Sardinias Bay).

The scenario for a collapse would likely occur while a heavy vehicle is loading or unloading, such as a fuel tanker truck or an asphalt truck, which would result in damage to property, bodily harm, likely to life, and the spilling of fuels and other engine fluids, resulting in widespread marine contamination. Following such an incident, an ensuing salvage, cleanup and reconstruction operation would ensue, with its own impacts to the floodplain.

Alternative #1 (Proposed Action)

Sardinas Bay

The Cargo Ramp is located within the areas subject to inundation by the 1-percent-annual-chance flood event and storm-induced velocity wave action (see Figure 16: FEMA Flood Map, Sardinas Bay). FEMA may take this action in the floodplain, as the Proposed Action consists of reconstruction of the Culebra Cargo Ferry Terminal, a facility which is functionally dependent upon its location [44 CFR 9.11(d)(1)(i)], and the proposed location is the only practicable alternative [44 CFR 9.11(d)(5)]. Since the Proposed Action consists of the reconstruction of an existing port facility on pilings, it will not impact flood elevation levels during the reconstruction and operation of the Culebra Cargo Ferry Terminal.

San Ildefonso

As previously stated, the area has been impacted since the beginning of the past century. Minimal grading and no filling operations are planned for the landward section of the project. The Auxiliary Cargo Ferry Terminal is located within the areas VE Zone, an area subject to inundation by the 1-percent-annual-chance flood event elevation and storm-induced velocity wave action (see Appendix A: Figure 17: FEMA Flood Map, San Ildefonso). Since the Proposed Action consists of the construction of port facility in pilings, it will not impact flood elevation levels during the construction and operation. The Proposed Action consists of reconstruction of the Culebra Cargo Ferry Terminal, a facility which is functionally dependent upon its location [44 CFR 9.11(d)(1)(i)], and the proposed location is the only practicable alternative [44 CFR 9.11(d)(5)].

5.6 Coastal Resources

The Coastal Zone Management Act of 1972 (CZMA, or the Act, 16 U.S.C., Ch. 33) encourages the management of coastal zone areas and provides grants to be used in maintaining coastal zone areas. The Act requires that federal agencies be consistent in enforcing the policies of state coastal zone management programs when conducting or supporting activities that affect a coastal zone. It is intended to ensure that federal activities are consistent with state programs for the protection and, where, possible, enhancement of the nation's coastal zones (16 U.S.C. §§ 1451 and 1452).

The Act's definition of a coastal zone includes coastal waters extending to the outer limit of state submerged land title and ownership, adjacent shorelines, and land extending inward to the extent necessary to control shorelines. A coastal zone includes islands, beaches, transitional and intertidal areas, salt marshes, and wetlands (16 U.S.C. §

1453[1]). The Act requires that states develop a State Coastal Zone Management Plan (CZMP) or program and that any federal agency conducting or supporting activities affecting the coastal zone conduct or support those activities in a manner consistent with the approved state plan or program (16 U.S.C. § 1456[c][1][A]). The Act enables coastal states to designate state coastal zone boundaries and develop coastal management programs to improve protection of sensitive shoreline resources and guide sustainable use of coastal areas.

The Proposed Action is located in a coastal zone. Although the project is not expected to affect coastal zone natural resources, land uses or water uses, it requires federal coastal zone consistency reviews in accordance with the Act. The project is required to be consistent with the Commonwealth's CZMP of the Commonwealth, as required by the Puerto Rico Department of Natural and Environmental Resources (DNER). The applicant is required to coordinate with the State Coastal Zone Management Program, Puerto Rico Planning Board, for Coastal Use Permits, clearances, and /or authorizations.

No Action Alternative

The No Action Alternative will result in the eventual collapse of the Culebra Terminal Ramp, dumping the vehicle that causes the subject collapse and its contents into the Sardinias Bay. Adverse impacts to the coastal zone include the marine terminal interruption in service, by the obstruction caused by collapsing structure, the vehicle and its contents on the shoreline, and by the negative publicity it will have on the tourism industry. The heaviest vehicles allowed in the ferries are approximately 80,000 pounds, which can be either an asphalt, rock, sand or fuel truck (approximately 8,000 gallon load). In any of these cases, the impact upon the coastal zone would extend beyond Sardinias Bay, through the draw-bridge channel into Ensenada Honda, and into the adjacent Luis Peña Channel Natural Reserve, the first no-take marine reserve designated in Puerto Rico, and a preferred destination for the SCUBA diving tourism. If the causal load is a fuel or asphalt truck it would leave a lasting minor to major water quality impact in all of these areas.

Alternative #1 (Proposed Action)

The reconstruction of the Culebra Cargo Ramp and the construction of the Auxiliary Cargo Ferry Terminal are in accordance with the objectives of the Puerto Rico Coastal Management Program for infrastructure and natural areas conservation. The program

must assure optimum coordination among the agencies in order to comply with the following public policies:

- To assure optimum coordination among the public agencies responsible for providing infrastructure so that it may be available in the most adequate place and time in order to achieve the full judicious utilization of land un urban and rural areas.
- To assure the intensive use of infrastructure in urban and rural areas and direct the future development of lands to sites where the necessary infrastructure is already available, but is not being used to full capacity without adversely affecting other land use objective and policies.
- To identify and reserve lands for the location of infrastructure projects which, by virtue of their size and complexity, possible adverse impacts on the environment, or special requirements.

See Appendix C for the extensive coordination activities with the agencies.

5.7 Biological Resources

The Endangered Species Act (ESA) of 1973 prohibits the taking of listed, threatened, and endangered species unless specifically authorized by permit from the USFWS or the National Marine Fisheries Service (16 U.S.C., Ch. 35). “Take” is defined in ESA § 3 as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct” (16 U.S.C. § 1532[19]). The U.S. Fish and Wildlife Service (USFWS) has further defined “harm” in the definition of “take” to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. See 50 C.F.R. § 17.3; see also *Babbitt v. Sweet Home Chapter of Communities for a Greater Oregon*, 115 S.Ct. 2407 (1995).

The reconstruction of the Culebra Cargo Ramp Terminal within its existing footprint does not pose any threat to the Biological Resources at Sardinias Bay. Pursuant to the Proposed Action a benthic assessment was conducted for both terminals and discussed in Section 5.4.2 Aquatic Habitat, while a Biological Assessment was also conducted for potential impacts to Threatened and Endangered Species, and is further discussed in this section (see Appendices I and J).

The Culebra Auxiliary Cargo Ferry Terminal is located within Ensenada Honda Bay. Wildlife resources in the vicinity of the project site are generally seabirds such as terns,

gulls, and pelicans. The landward section of the project has been impacted since the late 1800s, and its continued occupancy for human activities has prevented the establishment of any significant vegetation growth. No threatened or endangered terrestrial species of flora and fauna was observed or present during the assessment.

5.7.1 Threatened and Endangered Species and Critical Habitat

A consultation with the Natural Heritage Section of the DNER, with the USFWS and with the National Marine Fisheries Service (NMFS) was conducted to identify the potential presence of and impacts to any listed flora and fauna species within the study area. Publications such as the Puerto Rico Critical Wildlife Areas by the DNER, and the Environmental Sensitivity Index by the NOAA, were also reviewed for this purpose (see Figure 18: NOAA Environmental Sensitivity Index Map).

According with the Environmental Sensitivity Index Atlas from the National Oceanic and Atmospheric Administration (NOAA) and to the Natural Heritage Office of the DNER, the following listed species may be found near the project site. The Commonwealth listed species included in Regulation 6766 are the Brown Pelican; the Least Tern (*Sterna antillarum*) (classified as “Data Deficient”) and the Roseate Tern (*Sterna dougallii dougallii*), a vulnerable species. The Roseate Tern (Threatened) is listed in the Federal scope. The occurrence of these species within the project site is anticipated to be limited to transient individuals. Most of them depend on specific resources (e.g. offshore rocky outcroppings, sandy beaches) which are close to, but not within the project site.

The information that follows regarding the Threatened & Endangered Species listed for the island of Culebra applies for both the Sardinias Bay and San Ildefonso areas.

No Action Alternative

The No Action Alternative will result in the eventual collapse of the Culebra Terminal Ramp, dumping the vehicle that causes the subject collapse and its contents into the Sardinias Bay. Adverse impacts to water quality will occur from the spilling of at least the gasoline or diesel in the fuel tank of the vehicle that causes the collapse of the ramp, from the engine oil, engine coolant, brake fluid, and perhaps from other harmful substances transported in the vehicle. The collapsing structure, the vehicle and its content would also cause a massive sediment resuspension event as they hit bottom. The ensuing salvage, clean-up and reconstruction effort will also result in additional potential oil and chemical spills and sediment resuspension.

The heaviest vehicles allowed in the ferries are approximately 80,000 pounds, which can be either an asphalt, rock, sand or fuel truck (approximately 8,000 gallon load). In any of these cases, the impact upon water quality would extend beyond Sardinas Bay, through the draw-bridge channel into Ensenada Honda, and into the adjacent Luis Peña Channel Natural Reserve. These waters are habitat or potential habitat for the above-listed endangered species, and a massive fuel spill has the potential to contaminate extensive areas, as the marine currents and tides broadcast these toxic contaminants, impacting the marine and estuarine food webs.

Alternative #1 (Proposed Action)

The Proposed Action is addressed for each listed species below, and applies for both the Sardinas Bay and San Ildefonso areas.

Loggerhead Sea Turtle (*Caretta caretta*): **Threatened**. Loggerheads nest on ocean beaches, generally preferring high energy, relatively narrow, steeply sloped, coarse-grained beaches, although no known records exist of nesting individuals in Puerto Rico (Rivero 1998). No Critical Habitat areas have been designated for the species in waters surrounding the island of Culebra. The occurrence of *C. caretta* at the project site is unlikely. Therefore, the Proposed Action is not likely to adversely affect this species. See **Appendices C and D** for the ESA Section 7 Consultation, agency determination and detailed information on the ESA species. Per Biological Opinion (Appendix N) dated August 2, 2016, NMFS concludes that the proposed action is not likely to adversely affect this species.

Green Sea Turtle (*Chelonia mydas*): **Threatened; Designated Critical Habitat (Culebra, PR)**. The National Marine Fisheries Service (NMFS) has designated critical habitat waters that extend seaward 3 nautical miles (3.45 miles) from the mean high water line of Culebra Island, including outlying keys. *C. mydas* are associated with a wide variety of habitats, from coastal feeding grounds and sandy beaches to pelagic open waters. Neonates and young juveniles occupy epipelagic habitat in the open sea at depths of over 656 feet, later recruiting to neritic habitats (depths less than 656 feet) associated with algae and seagrass, particularly *T. testudinum*, commonly called “turtle grass”. There are large *T. testudinum* beds near the project site, but none under the footprint of the project; therefore, potential impacts to *C. mydas* from the Proposed Action are likely limited to collisions with ferries or construction marine vessels, or noise from construction activities.

The project proposes a number of minimization and mitigation measures that will result in the protection of this species, including the posting of a trained observer at the construction site and a protocol that will stop work should a sea turtle be observed within 100 yards of the construction site. With the implementation of these measures, the Proposed Action is not likely to adversely affect this species. See **Appendices C and D** for the ESA Section 7 Consultation, agency determination and detailed information on the ESA species. Per Biological Opinion (Appendix N) dated August 2, 2016, NMFS concludes that the proposed action is not likely to adversely affect this species.

Leatherback Sea Turtle (*Dermochelys coriacea*): Endangered; Designated Critical Habitat (Sandy Point in St. Croix, USVI). The endangered Leatherback Sea Turtle is the largest, deepest diving, and most migratory and wide ranging of all sea turtles. Leatherbacks feed on soft-bodied animals, such as jellyfish and salps. Several times during a nesting season females will lay clutches of approximately 100 eggs, typically at 8-12 day intervals (DNER, 2004). No critical habitat areas have been designated for the species in waters surrounding the island of Culebra. The presence of *D. coriacea* within Ensenada Honda is unlikely, and thus, the Proposed Action is not likely to adversely affect this species.

See **Appendices C and D** for the ESA Section 7 Consultation, agency determination and detailed information on the ESA species. Per Biological Opinion (Appendix N) dated August 2, 2016, NMFS concludes that the proposed action is not likely to adversely affect this species.

Hawksbill Sea Turtle (*Eretmochelys imbricata*): Endangered; Designated Critical Habitat (Mona and Monito Islands). The endangered Hawksbill Sea Turtle is one of seven species of sea turtles found throughout the world. Hawksbills feed on algae, sponges and other invertebrates. Females return to the beaches where they were born to nest, which occurs every two to three years at night and approximately every 14-16 days during the nesting season (DNER, 2004). The USFWS has designated as critical habitat beachfront areas on the north shore of the island of Culebra but not in Ensenada Honda (USFWS 1982). There are potential feeding grounds for *E. imbricata* at the project site (sponges, algae); however, the project will have minimal impact upon this resource; therefore, potential impacts to *C.mydas* from the Proposed Action are likely limited to collisions with ferries or construction marine vessels, or noise from construction activities.

See **Appendices C and D** for the ESA Section 7 Consultation, agency determination and detailed information on the ESA species. Per Biological Opinion (Appendix N) dated

August 2, 2016, NMFS concludes that the proposed action is not likely to adversely affect this species.

Virgin Islands Boa (*Epicrates monensis granti*): **Endangered**. The Virgin Islands Boa's habitat consists of subtropical dry forests, but can also inhabit woodlands at coastal level or on steep slopes. Although the project does not impact such habitat per se, Virgin Island Boas have been observed in the area, and therefore, the project proposes a number of minimization and mitigation measures that will result in the protection of this species. Such measures were provided by the USFWS with their March 2, 2015 letter, and are titled Culebra Cargo Ferry VI boa Conservation Measures. With the implementation of these measures, the Proposed Action is not likely to adversely affect this species. See Appendix C Agency Coordination and Appendix D Section 7 ESA Consultation. Per correspondence dated September 2, 2015, USFWS concurs with FEMA's determination that the proposed action may affect but is not likely to affect this species.

Roseate Tern (*Sterna dougallii*): **Threatened**. Roseate Terns inhabit coastal and open waters following schools of predatory fish to capture the smaller fish that are forced to the surface. This species is listed as Threatened under the ESA, and is included under Regulation 6766 for the Threatened and Endangered Species of the Commonwealth of Puerto Rico (created under the Puerto Rico Wildlife Act, No. 241 of August 15, 1999), where it is classified as Vulnerable. This highly migratory species with a pantropical distribution. The distribution for this species within and around the project area is limited to transient individuals. Nesting in Culebra mostly occurs among boulders and cliffs on select sparsely vegetated, rocky offshore islands. No evidence of nesting was found at or near the project site.

The Proposed Action is not likely to adversely affect this species. See Appendix C Agency Coordination and Appendix D Section 7 ESA Consultation. Per correspondence dated March 2, 2015, the USFWS concurs with our determination.

West Indian Manatee (*Trichechus manatus manatus*): **Endangered**. The West Indian Manatee is a large, seal-shaped mammal with paired flippers and a round, paddle-shaped tail. Adult Manatees, on average, are about 9 feet long and weigh about 1,000 pounds. Manatees favor habitats that are protected from severe wave action, that harbor submerged aquatic vegetation, and that have some source of fresh water (Powell et al. 1981, Rathbun, et al., and 1985, Mignucci-Giannoni 1989).

There are large seagrass beds near the project site, but none under the project's footprint; there are paddle grass (*Halophila decipiens*) patches at very low densities (<10% cover) under the project's footprint, not sufficient to be attractive to *T. manatus manatus*. The USFWS states in their stock assessment (2014) that "there have been few sightings in Culebra Island", and does not consider Culebra "within the range of the species".

The Proposed Action is not likely to adversely affect this species. See Appendix C Agency Coordination and Appendix D Section 7 ESA Consultation. Per correspondence dated March 2, 2015, the USFWS concurs with our determination.

Nassau Grouper (*Epinephelus striatus*): Species of Concern. The Nassau grouper inhabits clear waters with high relief coral reefs to 130 meters (427 feet) depth. Nassau grouper eggs and larvae are planktonic, as juveniles they are found in nearshore shallow waters in macroalgal and seagrass habitats. They progressively move into deeper reef habitats as they mature. The NMFS has some concerns with this species regarding status and threats; however, the species is not listed under the Endangered Species Act (ESA) to date.

Given the near absence of habitat for the species within the footprint of the Proposed Action, and given that the Proposed Action does not pose an identified threat to the species we concluded the Proposed Action not likely to impact the Nassau grouper. See Appendix C Agency Coordination and Appendix D Section 7 ESA Consultation. Per Biological Opinion (Appendix N) dated August 2, 2016, NMFS concludes that the proposed action is not likely to adversely affect this species.

Elkhorn Coral (*Acropora palmata*) **Endangered, Designated Critical Habitat (Puerto Rico)**. A large, branching coral with thick and sturdy antler-like branches that may grow over six feet, the species highly contributes to reef growth and provides essential fish habitat. Colonies are fast growing, with branches increasing in length up to four inches per year, with maximum size reached at around 12 years.

The Proposed Action will likely have no impact upon *A. palmata* given its absence from the habitats available within the port facilities in Sardinias Bay and Ensenada Honda. See Appendix C Agency Coordination and Appendix D Section 7 ESA Consultation. Per Biological Opinion (Appendix N) dated August 2, 2016, NMFS concludes that the proposed action is not likely to adversely affect this species.

Staghorn Coral (*Acropora cervicornis*): **Endangered, Designated Critical Habitat (Puerto Rico)**. The species has similar habitat requirements as Elkhorn Coral (*A.*

palmata), with the exception that it occurs mostly in the back reef in depths from 0-100 feet (0 to 30 meters). Staghorn Coral exhibit the fastest growth of all known western Atlantic corals, with branches increasing in length by four to eight inches per year, and has one of the most important contributions to reef growth and fish habitat.

The Proposed Action will likely have no impact upon *A. cervicornis* given the absence of suitable habitat within the port facilities in Sardinias Bay and Ensenada Honda. See Appendix C Agency Coordination and Appendix D Section 7 ESA Consultation. Per Biological Opinion (Appendix N) dated August 2, 2016, NMFS concludes that the proposed action is not likely to adversely affect this species.

Pillar coral (*Dendrogyra cylindrus*): **Threatened**. Possible Critical Habitat designation due to its presence in the island of Culebra. The species has been listed as Threatened due to a low recruitment and survival rate among juveniles, and its vulnerability to bleaching and white plague disease. The Proposed Action will likely have no impact upon *D. cylindrus* given its absence from the habitats available within these port facilities. See Appendix C Agency Coordination and Appendix D Section 7 ESA Consultation. Per Biological Opinion (Appendix N) dated August 2, 2016, NMFS concludes that the proposed action is not likely to adversely affect this species.

Rough Cactus Coral (*Mycetophyllia ferox*): **Threatened**. *M. ferox* is most common in fore-reef environments from approximately 16 to 98 feet (5 to 30 meters), but is generally more abundant from between 33 to 65 feet (10 to 20 meters), also occurring in low abundance in certain deeper back reef habitats and deep lagoons. This species is common throughout its distribution range at intermediate abundances. The Proposed Action will likely have no impact upon *M. ferox* given its absence from the habitats available within these port facilities. See Appendix C Agency Coordination and Appendix D Section 7 ESA Consultation. Per Biological Opinion (Appendix N) dated August 2, 2016, NMFS concludes that the proposed action is not likely to adversely affect this species.

Lobed star coral *Orbicella annularis* (syn *Montastraea annularis*): **Threatened**. *O. annularis* is a common species, mostly found from 2 to 262 feet (0.5 to 82 meters) in depth and is often the most abundant coral from 3 to 33 feet (1 to 10 meters), especially in semi-protected reef environments where it is frequently a dominant species of lagoons and upper reef slopes.

Lobed star corals are present on the piles of the existing pier at the San Ildefonso site. The implementation of coral transplant plan and monitoring and water monitoring plans

are required by NMFS. Per the Biological Opinion (Appendix N) dated August 2, 2016, NMFS concludes that the proposed action is likely to adversely affect, but is not likely to jeopardize the continued existence of *O. annularis*.

Mountainous Star Coral (*Orbicella faveolata*): **Threatened**. *O. faveolata* is found from approximately 3.3 to 98 feet (1 to 30 meters) in back-reef and fore-reef habitats, and is often the most abundant coral between 33 to 65 feet (10 to 20 meters) in fore-reef environments. Major threats to *O. faveolata* are infectious diseases (e.g., plague, yellow band and black band disease) and bleaching, in addition to predation by *Sparisoma viride* (Stoplight Parrotfish), hurricane damage, and loss of habitat at the recruitment stage due to algal overgrowth and sedimentation, as well as localized impacts due to bio-erosion by sponges, other organisms, and diseases.

The Proposed Action will likely have no impact upon *O. faveolata* given its absence from the habitats available within the port facilities in Sardinias Bay and Ensenada Honda. See Appendix C Agency Coordination and Appendix D Section 7 ESA Consultation. Per Biological Opinion (Appendix N) dated August 2, 2016, NMFS concludes that the proposed action is not likely to adversely affect this species.

Boulder Star Coral (*Orbicella franksi*): **Threatened**. A common species, *O. franksi* is found from 16.4 to 164 feet (5 to 50 meters) and is often the most abundant coral from 50 to 98 feet (15 to 30 meters) in fore- reef environments. Major threats to *O. franksi* are infectious diseases (e.g., plague, yellow band and black band disease) and bleaching, as well as loss of habitat at the recruitment stage due to algal overgrowth and sedimentation, in addition to localized impacts due to bio-erosion by sponges and other organisms, and diseases.

The Proposed Action will likely have no impact upon *O. franksi* given its absence from the habitats available within the port facilities in Sardinias Bay and Ensenada Honda. See Appendix C Agency Coordination and Appendix D Section 7 ESA Consultation. Per Biological Opinion (Appendix N) dated August 2, 2016, NMFS concludes that the proposed action is not likely to adversely affect this species.

5.7.2 Aquatic Habitats

Sardinas Bay

The aquatic habitats at the area selected for the Proposed Action in Sardinas Bay has been impacted for years by the construction and operation of the existing ferry terminal. The benthic substrate immediately adjacent to the cargo ramp and to the seawall consists mainly of a mix of rock rubble intermixed with small amounts of sand (Atkins, 2013). With the exception of very small colonies of the encrusting coral *Siderastrea radians* observed on the rock rubble and a single colony on the substrate, no corals were observed on the substrate adjacent to the cargo ramp and seawall (see Appendix A: Figure 19A: Baseline Survey Map, Sardinas Bay, and Appendix J).

Moving away from the cargo ramp, the substrate transitioned to sandy habitat where seagrasses are present. Seagrass beds were observed northwest/west and southwest of the existing cargo ramp structure. The seagrass bed located northwest/west was dominated by *Syringodium filiforme* (manatee grass) mixed with *T. testudinum* (turtle grass) and *Halophila decipiens* (paddle grass). The seagrass bed located southwest was comprised of *S. filiforme*. The seagrass bed to the northwest is dense *S. filiforme* (50-100%) and the edges of the bed are mainly *H. decipiens* although not as dense (25-50%). The area to the south is much less dense *Syringodium* sp. (5-25%) in deeper water.

The cargo ramp support piles and the seawall were encrusted with a diverse invertebrate community, including corals, sponges, tunicates, macro algae, crustose coralline algae, bryozoans, worms, and snails. A total of ten coral colonies (10 cm in diameter or larger) were documented during the coral survey, which may be impacted by the construction. These colonies included the following species of coral: *Diploria strigosa*, *D. clivosa*, *D. labyrinthiformis*, *Colpophyllia natans*, *Meandrina meandrites*, *Eusmilia fastigiata*, *Porites astreoides*, *P. porites*, and *Agaricia* sp. None of these are listed as threatened or endangered.

In summary, the following aquatic (marine) habitats are present at the project site in Sardinas Bay: Colonized Artificial Hardbottom, Rubble, Sand, Seagrass (continuous >90% coverage), Seagrass (discontinuous 70≤90%), Seagrass (patchy ≤50%), Seagrass (marginal <10%), and pelagic.

San Ildefonso

The proposed construction of the Culebra Auxiliary Cargo Ferry Terminal is located in an area of Ensenada Honda that has been previously impacted by the construction and operation of the existing seawall and dock. The Auxiliary Cargo Terminal area is primarily has soft, sandy/muddy substrate colonized by various species of macroalgae and sessile and mobile macro-invertebrate taxa, including sponges, solitary and colonial tunicates, sea stars, polychaete worms, snails, and crustaceans (Atkins, 2014a). The soft-bottom (mud/sand) habitat is the most common within Ensenada Honda. Light availability is limited, with photosynthetic organisms such as seagrasses and zooxanthellate corals unlikely to be found below 15 feet MSL (see Figure 19B: Baseline Survey Map, San Ildefonso, and Figure 20: Benthic Habitat Map, San Ildefonso).

The benthic substrate immediately adjacent to the seawall structure west of the existing pier (within the impact area) consisted mainly of a mix of rip-rap (rock rubble) intermixed with small amounts of sand, which were colonized by patches no wider than 3 feet and 1 to 10 feet long of turtle grass (*T. testudinum*). With the exception of a few very small colonies of encrusting *Siderastrea radians* observed on the sparse rock rubble, no corals were documented on the substrate adjacent to the seawall (see Figure 21: Turtle Grass Cover Near the Project Area, San Ildefonso).

East of the existing pier outside of the impact area, a concrete slab that was originally part of the pier, lies -3 to -4 feet MSL and less than 30 feet from the seawall. This slab has a dense macroalgal growth mostly of *Dictyota* sp, and small colonies of *S. radians* adhered to its edges. A patchy, discontinuous growth of *T. testudinum* was documented at a distance of up to 13 feet from the seawall.

The existing pier support piles were encrusted with macroalgae, crustose coralline algae, mollusks, sponges, tunicates, bryozoans, and polychaete worms. Moving away from the seawall, the substrate generally transitioned to muddy/sandy habitat where various species of macroalgae, mostly a mix of *Dictyota* spp., *Halimeda* spp., and *Caulerpa prolifera* were present.

Besides the rock rubble, seawall, and the dock pilings, there is little to no structural complexity in the area that would provide suitable habitat for juvenile and adult reef fishes or spiny lobster. The poor light penetration and limited hard substrate makes this area ill-suited for coral settlement and growth. Coral diversity and abundance was higher in areas east of the existing dock, where the concrete slab and its remaining pilings have created

additional shallow (-3 to -4 feet MSL) hard substrate for them. Various individual coral colonies, such as those belonging to the Siderastrea, Diploria and Madracis families were identified on the area east of the existing dock which were not found west of the dock, where the auxiliary terminal will be located. No endangered species of coral, including those recently listed, and no seagrass beds were observed within the Proposed Action's footprint.

In summary, the following aquatic (lagoon) habitats are present at the project site in San Ildefonso: Colonized Artificial Hardbottom, Rubble, Mud/Sand, Seagrass (continuous >90% coverage), Seagrass (marginal <10%), Macroalgae (continuous >90%), Macroalgae (discontinuous 50≤90%), Macroalgae (sparse 10≤50%) and pelagic.

No Action Alternative

The No Action Alternative will result in the eventual collapse of the Culebra Terminal Ramp, dumping the vehicle that causes the subject collapse and its contents into the Sardinias Bay. Potentially major impacts to aquatic habitats in Sardinias Bay will result from the spilling of at least the gasoline or diesel in the fuel tank of the vehicle that causes the collapse of the ramp, from the engine oil, engine coolant, brake fluid, and perhaps from other substances that are harmful to the aquatic habitat that may be transported in the vehicle. Such would contaminate the open water habitat beyond Sardinias Bay, through the draw-bridge channel into Ensenada Honda, and into the adjacent Luis Peña Channel Natural Reserve, the first no-take marine reserve designated in Puerto Rico, and a preferred destination for the SCUBA diving tourism.

The collapsing structure, the vehicle and its content would also cause a massive sediment re-suspension event as they hit bottom. The ensuing salvage, clean-up and reconstruction effort will also result in additional potential oil and chemical spills and sediment re-suspension.

Alternative #1 (Proposed Action)

Habitat impacts from the Proposed Action are limited to projecting a shadow, which limit photosynthesis (primary productivity), and actually eliminating habitat, mainly by placing pilings over seafloor. The former does not limit the habitat to organisms that do not need light, like sponges, shrimp and bivalves. Well-lit habitat is limited in this environment due to limited water clarity.

Benthic habitat elimination is almost self-mitigating for this project: The piling's footprint in the seafloor is very small relative to the piling's surface area, which itself becomes habitat. A 30 inch piling needs to be only 7.5 inches high above the mud line to provide the same amount of surface area than the seafloor it impacts (4.9 feet²). While there are different kinds of habitat; the dominant habitat to be impacted by the Proposed Action is a bare, soft bottom, which is tri-dimensional, providing substrate for organisms that may use the top few feet, and is in abundant supply in the subject area. The piling's hard habitat is in much more limiting quantities, and thus may be more valuable; it also provides substrate for a variety of invertebrates and algae that cannot use soft bottoms, such as corals.

Additional benthic habitat impacts will be caused by the spuds that hold in position the construction barges. Those impacts are temporary, and will be mitigated by physically covering the holes using divers once the barge changes position.

Open water habitat will be impacted by sediment re-suspension from pile driving during construction, from land activities that allow erosion, and from propeller dredging during ferry or barge movements.

Sardinas Bay

The additional shadow impact caused by the Proposed Action in Sardinas Bay is approximately 1,894 feet² (0.04 acres).

The benthic habitat which will disappear under the pilings is approximately 81.4 feet² (0.0018 acres). New hard substrate created by those pilings is in the order of 1,437 feet² (0.033 acres).

San Ildefonso

The additional shadow impact caused by the Proposed Action in San Ildefonso is approximately 3,426 feet² (0.08 acres).

The benthic habitat which will disappear under the pilings is approximately 108.2 feet² (0.002 acres). New hard substrate created by those pilings is in the order of 2,640 feet² (0.06 acres).

5.7.3 Wildlife and Fish

Wildlife & fish species commonly found within the Sardinias Bay and San Ildefonso areas are typical of marine environments throughout the Caribbean basin. These include reef (for Sardinias Bay) and mangrove habitat (for San Ildefonso) common species, in addition to seabirds frequently observed fishing near shore, such as Brown Pelicans (*Pelecanus occidentalis*) Laughing Gulls (*Leucophaeus atricilla*) and Magnificent Frigatebirds (*Fregata magnificens*).

No Action Alternative

The No Action Alternative will result in the eventual collapse of the Culebra Terminal Ramp, which will result in a salvage and clean-up operation, and a reconstruction effort. A collapse of the Terminal will likely occur under the weight of a heavy vehicle, which means that its fuel tank contents, its engine oil, engine coolant, brake fluid, and perhaps other substances that may be harmful to the aquatic environment transported in the vehicle will also be spilled into Sardinias Bay. In the worst case scenario, a fuel truck with approximately 8,000 gallon load will cause the collapse of the Terminal, in which case, the impact upon wildlife and fish would extend beyond Sardinias Bay, through the draw-bridge channel into Ensenada Honda, and into the adjacent Luis Peña Channel Natural Reserve.

Wildlife and fish, under the No Action Alternative, could be subjected to a potentially major impact that would contaminate the aquatic habitat, impacting the food chain of marine organisms that depend upon the southwest coast of Culebra Island.

Alternative #1 (Proposed Action)

Sardinias Bay

The reconstruction of the Culebra Cargo Ramp would potentially have a minor, temporary impact to wildlife habitat due to pile driving noise and vibration during construction, returning back to normal once the construction is completed. The noise and vibration are anticipated to cause an avoidance response from most able wildlife and fish, instead of causing any consequential damage, particularly since the project is not located in a confined space, further reducing the likelihood of cumulative noise exposure.

San Ildefonso

The construction of the Auxiliary Cargo Terminal would potentially have a minor, temporary impact the wildlife habitat due to pile driving noise and vibration during construction, returning back to normal once the construction is completed. Operation for approximately six months of the ferry at the terminal may have an additional noise and sediment resuspension impact. The noise and vibration are anticipated to cause an avoidance response from most able wildlife and fish, instead of causing any consequential damage, particularly since the project is not located in a confined space, further reducing the likelihood of cumulative noise exposure.

All pile-driving within San Ildefonso will use the auger drilling method, among other reasons, to minimize noise and vibration impacts in this area of sensitive habitats. Auger drilling generates substantially lower noise and sound pressures than impact pile-driving and even vibratory hammers (CDOT, 2009; Dazey, et al., 2012); this constitutes avoidance, minimization and mitigation measure for underwater noise.

5.8 Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and implemented by 36 CFR Part 800, requires Federal agencies to consider the effects of their actions on historic properties, and provide the Advisory Council on Historic Preservation (ACHP), an opportunity to comment on federal projects that will have an effect on historic properties. This action must take place prior to the expenditure of federal funds. Historic properties include districts, buildings, structures, objects, landscapes, archaeological sites and traditional cultural properties that are listed in or eligible for listing in the National Register of Historic Places (NRHP).

5.8.1 Historic Properties

No Action Alternative

No adverse impact on historic properties would occur if the No Action Alternative is proposed.

Alternative #1 (Proposed Action)

Sardinas Bay

The proposed reconstruction of the Culebra Cargo Ramp, including the removal of old piles and installation of new HP piles, is within the footprint of the existing facilities and

has no potential to affect historic properties. Refer to Appendix F for correspondence associated with the cultural resources.

San Ildefonso

The area of potential effects for the San Ildefonso pier is located inside an archaeological and historical sensitive area. The totality of the peninsula can be considered a historic district that has the potential to present significant remains from at least three different occupations: the Late Cedrosan Saladoid prehistoric occupation as documented in the Lower Camp Site, with radio carbon date A.D. 642 (1350 years ago); the late Spanish Colonial occupation, represented by the town of San Ildefonso (1880-1903); and the United States Navy occupation represented by Camp Roosevelt (1903 to 1975). The Ensenada Honda Bay has been the scenario of navigation and trading activities for hundreds of years, with the potential to encounter underwater archaeological resources.

FEMA initiated NHPA Section 106 review in accordance with 36 CFR Part 800 and Stipulation II.B of FEMA's Puerto Rico Programmatic Agreement, executed May 9, 2011. The Puerto Rico State Historic Preservation Office (SHPO) concurred with FEMA's determination that further identification and evaluation efforts were necessary at the San Ildefonso location in order to assess the project effects on historic properties, and recommended that an intensive survey be carried out. Refer to Appendix F for correspondences dated August 11 and August 22, 2014.

The sub-grantee consultant presented a Phase I reconnaissance survey for the upland and underwater areas of the project. Refer to Appendix F. The terrestrial archaeology report contained a good historic and cartographic background for the town of San Ildefonso and Camp Roosevelt (Maurás 2014). The subsurface testing consisted of only three units, providing limited information. The report included a brief description and photographs of structures associated with the San Ildefonso and Navy occupation (1902 -1944). The underwater archaeology evaluation covered an area of 300 feet long x 122 feet wide (Fontánez 2014). No archaeological resources were identified in the five test pits excavated. The sunken section of the pedestrian pier is on the east side of the existing one. The remains of a Navy sunken metal ship were identified some 200 feet to the east.

An intensive survey was conducted for the San Ildefonso project area in October 2015 (Pantel 2015). Refer to Appendix F. The subsurface testing consisted of the excavation of 11 mechanical trenches and one manual excavation unit. A number of sub-surface elements were identified: a concrete floor slab, two subsurface structural remains, and a

cement layer. Previous interventions for the installation of underground utilities were observed in various trenches. Layers of stones, clay and gravel were reported for trenches underneath pavement, as well as trenches in the green areas, but no consistent stratigraphic sequence was identified. The sparse archaeological artifacts recovered were not associated to a cultural stratum. In summary, no significant cultural deposits or structural remains were identified below surface in the APE.

The intensive survey included an assessment of the standing structures inside the projects area. The structures/features identified inside the APE are primarily related to the Navy occupation, mostly related to the WW II repair period of the early 1940's. The wharf at San Ildefonso has the same configuration and dimensions as the wharf in the 1944 Navy map. However it is in poor condition, is not an outstanding feature or representative of historic building technology. The pedestrian pier, which includes a sunken platform, is related to the 1940's military constructions as well. There is a pair of inward curving retaining walls related to two boat ramps located on either side of what has always been wharf area. They increase in depth as they approach the water. Large segments of the east ramp wall, made of brick, is covered over with a Portland cement plaster. The retaining wall in the west boat ramp is thicker and made of stones.

The road and the other structures within the APE are related to the wharf and the military occupation of the island. The retaining wall along the east side of the access road extends the length of the project area. Two construction materials can be clearly distinguished to either side of a set of stairs: limestone and red brick. A drainage ditch is located in front of the retaining wall. There is an additional set of stairs at the southern end of the retaining wall. The two sets of stairs maintain the relationship of the access road and the wharf to the upland areas on the east side of the APE, where other Navy structures are located.

By themselves, it is questionable, given the condition of the wharf, and the relative insignificance of the standalone retaining walls, that the complex of features described above would rise to the level of significance required for eligibility to the National Register. However, the wharf area and the road leading to it are figured in the 1944 Navy map. The complex was vital to the military in its function and connection with the outside world, and its link to the interior working of the military base on the island and to other WWII related structures. There are no other structures of this type documented in Puerto Rico for the Navy occupation and period of significance associated to WW II. With consideration of the remaining features on the peninsula from this period, the Navy wharf area - not specifically the existing wharf and pedestrian pier as they have lost integrity - and

associated structures along the road are potentially eligible to the National Register of Historic Places as a Navy WW II period of significance under Criteria A and D as a multiple property listing. It should be noted, however, that pedestrian pier and wharf have lost integrity.

The construction of the alternate pier at San Ildefonso is needed to provide continuity of cargo service to the island of Culebra during the reconstruction of the Dewey cargo platform. This is a critical infrastructure facility. Avoidance is not feasible due to the nature of the project, to establish an alternate cargo pier. Given the deteriorated condition of the pier, seriously impacting its integrity and its safety, rehabilitation according to the Secretary of the Interior Standards is not feasible.

The proposed plan will reuse the wharf area and road leading to it, leaving other important World War II features intact. As a result, FEMA finds that the proposed scope of work will have **no adverse effect on historic properties with the following conditions:**

1. FEMA will insure coordination with the Sub-grantee and contractor to ensure that the buffer zone that exist are adequate to protect the retaining walls and stairs along the access road and the drainage ditch during construction activities.
2. To ensure the avoidance of potential impacts to historic elements during the construction phases, FEMA will coordinate with the Sub-grantee and contractor to provide clear construction restrictions, barriers, and modified “means and methods” as considerations in the construction contract.
3. Ensure that there is supervision by a person who meets the relevant Secretary of the Interior Standards in the relevant field to oversee the encapsulation of the wharf bulkhead and the covering of the retaining wall, and to document any unexpected discoveries.

SHPO concurred with the finding of **no adverse effect** on eligible properties within the former San Ildefonso/Camp Roosevelt conditioned to the implementation of the three protective measures cited above. Implementing the undertaken according to the documented findings fulfills FEMA’s responsibilities under Section 106. Refer to Appendix F, letter dated February 26, 2016.

5.9 Socio-Economic Resources

NEPA calls for the integrated use of the social sciences in assessing impacts on the human environment and requires the identification of methods and procedures which

insure that presently unquantified environmental amenities and values be given appropriate consideration. “Human environment has be comprehensively defined by the U.S. Council on Environmental Quality to include the natural and physical environment and the relationship of people with that environment, and includes the social and economic components and factors which determine the state, condition, and quality of living conditions, employment, and health of those affected directly or indirectly by the Proposed Action. Below we look at some of these aspects.

5.9.1 Environmental Justice

Executive Order 12898, entitled “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” was signed on February 11, 1994. The Executive Order directs federal agencies to make achieving environmental justice part of their missions by identifying and addressing, as appropriate, disproportionately high adverse human health, environmental, economic, and social effects of its programs, policies and activities on minority or low-income populations.

In order to ascertain the Proposed Action’s compliance with environmental justice principles we begin by looking at the affected population. Fifty two percent of Culebra residents are male, the median Culebra resident is 36 years old, 61% identify themselves as White, 21% as Black or African American, 1% as Asian and 13% as Some Other Race. However, 91% also identified him/herself as Hispanic. According to the Puerto Rico Community Survey, 34% of the families in Culebra have been living below the poverty level since approximately 1980. The per capita income for the island is approximately \$10,349, with the average wages at \$199 per week.

The goal of Environmental Justice is to ensure that the burdens of undesirable land uses are not borne disproportionately by communities that are currently socially or economically disadvantaged. That so many families (34%) live below the poverty level in Culebra certainly points to socially or economically disadvantage; however, only seven other Puerto Rico municipalities fared better than Culebra; the remaining seventy municipalities have a larger fraction of their population living below the poverty level, (up to 66% in Maricao). The peculiarity for Culebra residents and visitors is its isolation, its dependence upon the ferry to reach medical treatment and other services, obtain medicines and other supplies (Estudios Tecnicos, 2011; ENDI 2010, 2012, 2014, 2015). For most of the families that live in Culebra, their only method of transportation to the main island is through the ferry.

The Authorized Representative of the Puerto Rico Governor, on behalf of the PRPA, have proposed this project to provide safe and efficient cargo and passenger port facilities that are in compliance with state and federal standards, and that will provide for the needs of all Culebra population. The project would provide long-term benefits to the community by restoring lost services and providing a modern and improved facility benefitting the entire Culebra community.

No Action Alternative

The existing Culebra Cargo Ramp would continue its operation. However, the No Action Alternative would not change the existing cargo ramp conditions nor the shortcomings in maritime transport which limit the socioeconomic development of Culebra. Due to its structural deficiencies, the collapse of the entire structure is imminent if repairs are not completed in a timely manner. The No Action Alternative would cause further hardship to the Culebra residents, and would be contrary to the principles of Environmental Justice and potentially represent a major impact.

Alternative #1 (Proposed Action)

Sardinas Bay

Once the reconstruction period is complete, the cargo ferry service will be restored to Sardinas Bay. This will provide a safe and efficient cargo and passenger transportation that is in compliance with state and federal authorities and the needs of the population of Culebra. No adverse socioeconomic impacts are anticipated due to the construction or the operation of the Proposed Action.

San Ildefonso

The proposed project at San Ildefonso will provide the proper docking area for the cargo ferry for its scheduled trips from Fajardo to Culebra during the demolition and reconstruction of the existing cargo platform in Sardinas Bay. This action will provide a continued maritime transportation service, essential for the day-to-day living of the Culebra residents and visitors. Maintaining available the Auxiliary Cargo Terminal at San Ildefonso beyond the period of repairs at the main terminal will provide a back-up terminal for use during weather conditions that preclude the use of the Sardinas Bay facilities. It also provides a second terminal for Culebra to use in emergency situations, and diversifies (doubles) the number of port facilities for this captive population, providing

resilience to the supply of food, fuel and medicines to this island resulting in a positive impact.

5.9.2 Hazardous Materials

The management of hazardous materials is regulated under various federal and state environmental and transportation laws and regulations, including the Resource Conservation and Recovery Act (RCRA) (42 U.S.C., Ch. 82); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C., Ch. 103); the Toxic Substances Control Act of 1976 (TSCA) (15 U.S.C., Ch. 53); the Emergency Planning and Community Right-to-Know Act (42 U.S.C., Ch. 116); the Hazardous Materials Transportation Act (49 U.S.C., Ch. 51). The purpose of the regulatory requirements set forth under these laws is to ensure the protection of human health and the environment through proper management (identification, use, storage, treatment, transport, and disposal) of these materials. Some of these laws provide for the investigation and cleanup of sites already contaminated by releases of hazardous materials, wastes, or substances.

There is no presence of hazardous materials next to the project site; neither the project will generate hazardous materials.

No Action Alternative

The No Action Alternative will result in the eventual collapse of the Culebra Terminal Ramp, which will result in a salvage and clean-up operation, and a reconstruction effort. A collapse of the Terminal will likely occur under the weight of a heavy vehicle, which means that its fuel tank contents, its engine oil, engine coolant, brake fluid, and perhaps other substances that may be harmful to the aquatic environment transported in the vehicle will also be spilled into Sardinias Bay resulting in a potentially major impact.

Proposed Action

No impacts from the presence of hazardous materials are expected to occur in either Sardinias Bay and/or San Ildefonso for either alternative. No hazardous materials, wastes, or substances, including contaminated soil or groundwater, have been identified at the proposed site. If hazardous constituents are unexpectedly encountered in the project area during the proposed construction operations, appropriate measures for the proper assessment, remediation and management of the contamination should be initiated in accordance with applicable federal, state, and local rules and regulations.

Project construction may involve the use of small quantities of hazardous materials (i.e. cement, caustics, acids, solvents, paints, electronic components, pesticides/herbicides and fertilizers, treated timber), and may result in the generation of small amounts of hazardous wastes. Best management practices and appropriate measures to prevent, minimize, and control spills of hazardous materials should be taken, and any hazardous and non-hazardous wastes generated disposed of in accordance with applicable federal, state, and local requirements

5.9.3 Noise

Noise is generally defined as unwanted sound. Sound is most commonly measured in decibels (dB) on the A-weighted scale, which is the scale most similar to the range of sounds that the human ear can hear. EPA guidelines, and other federal agencies, indicate that noise levels of 55 dB outdoors and 45 dB indoors are identified as preventing activity interference and annoyance (EPA 1974). The levels are not a single event, or "peak" levels; instead, they are present averages of acoustic energy over periods of time such as 8 hours or 24 hours, and over long periods of time such as years. Noise levels for various areas are identified according to the use of the area. Levels of 45 dB are associated with indoor residential areas, hospitals and schools, whereas 55 dB is identified for certain outdoor areas where human activity takes place. The maximum level of 70 dB is recommended for all areas in order to prevent hearing loss.

No Action Alternative

The No Action Alternative will result in the eventual collapse of the Culebra Terminal Ramp, dumping the vehicle that causes the subject collapse and its contents into the Sardinias Bay. Adverse minor to moderate noise impacts include the collapse itself, the sirens from emergency vehicles, and that caused by the ensuing salvage, clean-up and reconstruction effort. The air lift of emergency supplies and from evacuating an island without a port to supply food, fuel and medicines would also result in prolonged events of unwanted sound.

Alternative #1 (Proposed Action)

Sardinias Bay

The proposed alternative would result in a temporary minor to moderate increase in noise levels in the vicinity of the project area due to heavy construction equipment, possibly including pile-driving. Several sensitive receptors are located near the project site: The

San Ildefonso Elementary School, the Luis Muñoz Rivera Middle School and the Antonio Barceló High School are all within a distance of approximately 0.4 miles (approximately 644 meters). The Nuestra Señora del Carmen Catholic Church is located approximately 480 feet from the project site, while the Adventist Church is nearly 0.70 miles (1,126 meters). No noise data has been collected; however, the project is expected to comply with applicable noise regulation with only diurnal construction activity. Also, the noise impacts described herein are temporary, during approximately six months at each site.

San Ildefonso

The construction of the Auxiliary Cargo Ferry Terminal at San Ildefonso will temporarily increase the noise level in this area. No sensitive receptors are found near the Auxiliary Cargo Terminal in San Ildefonso. The nearest sensitive areas are the San Ildefonso Elementary School, the Luis Muñoz Rivera Middle School and Antonio Barceló High School, located within a distance of approximately 1.25 miles (approximately 644 meters), and the Adventist Church, which is nearly 1.40 miles (2,011 meters) away in Barriada Clark, near the airport. This is a temporary impact, which will allow the restoration of the Sardinias Bay Cargo Ramp.

The operation of this terminal during the construction of the Sardinias Bay Cargo Ramp for approximately six months will also increase noise levels. Please note that the Sardinias Bay area is densely populated, thus the human receptors to this noise are closer and are more numerous than at San Ildefonso, which is a more remote and thinly populated area. Therefore, the operation of the Cargo Ferry at San Ildefonso temporarily shifts the noise impacts to a least sensitive area.

All pile-driving within San Ildefonso will use the auger drilling method, among other reasons, to minimize noise and vibration impacts of sensitive areas. Drilling generates substantially lower noise and sound pressures than impact pile-driving and even vibratory hammers (CDOT, 2009; Dazey, et al., 2012).

The distance to various noise receptors near the proposed project site are shown in Figure 24: Noise Receptors near the Proposed Project Site.

5.9.4 Traffic

There are no traffic lights in Culebra and 27% of the households do not own a motor vehicle. Current traffic patterns in Culebra Island are mostly congested at the town of Dewey during long holiday weekends, where the island receives a large amount of visitors

at the Sardinias Bay Ferry Terminal. However, this situation does not occur frequently and has no impact during peak hours during weekdays. In order to identify potential impacts to the traffic stream patterns, six intersections were included as part of the traffic study analysis, which are identified as the influence area (see Figure 25: Road Access & Influence Areas). The influence area currently operates at free-flow speed except at Intersection #3, where road PR-250 connects with PR-251, which generally operates at free-flow speeds, with some traffic stream restriction (see Appendix L Traffic Impact Study). The average peak hour vehicle volume along the influence area is approximately 72 vehicles per hour. Cyclists represent a legitimate mode of transportation along the influence area studied.

No Action Alternative

The No Action Alternative will result in the eventual collapse of the Culebra Terminal Ramp. Potentially major adverse traffic impacts include the congestion at the town of Dewey from emergency and other vehicles during the ensuing salvage, clean-up and reconstruction effort.

Alternative #1 (Proposed Action)

Sardinias Bay

During the construction and operation of the Auxiliary Cargo Ferry Terminal in San Ildefonso, traffic levels are expected to decrease in the Sardinias Bay area, since all cargo, vehicles and a small percentage of passenger movement will be diverted into San Ildefonso. This translates to reduced traffic congestion at the Sardinias Bay Terminal during the arrival of ferries.

San Ildefonso

During the opening year of the project, the influence areas are expected to operate well, only affecting the intersection of PR-250 and the San Ildefonso area access road; however, the impact consists of downgrading the level of service (LOS) during the afternoon peak hour from a LOS A to LOS B; nevertheless, this operating condition, LOS B is still very good. Cyclists will not be affected by the temporary relocation of the cargo ramp terminal to San Ildefonso due to the fact that this transportation mode is independent of the traffic redistribution that will result from the operation of the auxiliary terminal. (see Appendix L, Traffic Study).

Studies concluded (VAGTEC, 2014) that the proposed project will not adversely affect any of the influence areas. At present, Intersection of PR-250 and PR-251 (leading to Flamenco Beach and to the Airport) is the most congested, and will be the most affected influence area during the operation of the Auxiliary Cargo Terminal in San Ildefonso.

5.9.5 Public Service and Utilities

This section addresses potential impacts on public services (fire protection, emergency medical services and police protection) and public utilities (water services, wastewater, storm drains, solid waste, and electricity).

5.9.5.1 Public Services

Fire protection, emergency medical services and police protection for the existing Culebra Ferry Terminal Cargo Ramp will be exactly as presently. Neither the construction nor the operation will contribute substantial loads for the public service providers: Commercial craft and ferries are required to carry fire protection equipment, and have medical emergency procedures in place. Police patrols were observed at the Terminal during all Ferry landings and departures. Similarly, the Auxiliary Cargo Ferry Terminal in San Ildefonso will be covered by existing public services; there is presently a recreational facility at the proposed site, which is not out of the way, and police patrols were observed there during the investigations conducted for this EA.

Roads will not be impacted by the Proposed Action other than the access road to the San Ildefonso terminal, which will be widened. The other roads to town and elsewhere are the same roads that would deliver vehicles, equipment and supplies to the entire island should they arrive to the Sardinias Bay terminal; however, the use of the San Ildefonso site for the Auxiliary Terminal will alleviate traffic in the Town of Dewey, downtown Culebra, at the dead-end road where all cargo ferries currently arrive.

In summary, the Proposed Action will improve upon port facilities ergo port services, and will not adversely impact other existing public services.

5.9.5.2 Utilities

The Proposed Action will reconstruct one existing cargo ramp and build another to be used as an auxiliary to the first ramp. When the Auxiliary Terminal is in use will be because the main terminal is not in use; therefore, there may be a nominal increase in loads or demands due to the Auxiliary Terminal in stand-by mode, yet no appreciable increase in utility burdens.

The Auxiliary Terminal will not install sanitary or water facilities; instead, it will use portable systems while in active operation. The area proposed for the Auxiliary Terminal has electric service, water service, but no wastewater or storm sewer service available.

There is a potable water plant near the proposed Auxiliary Terminal that belongs to the Puerto Rico Aqueduct and Sewer Authority (PRASA), which has a sea-water intake structure adjacent to the proposed Auxiliary Cargo Ferry Terminal. The intake structure is located at the bulkhead, at approximately -4 feet MSL, and it consists of two discrete apertures in the concrete wall that open against the rubble and sediment bottom; both are approximately 12 inches high, one is approximately 3 feet wide and the other approximately 18 inches wide. Sediment re-suspension that may result from the construction and operation of the proposed facility may reach the PRASA intake. This treatment plant has not been in operation for approximately ten years, yet it is supposed to be a backup potable water system for Culebra; thus, steps must be taken to prevent adverse impacts to it. Since June, 2014, PRPA has made several attempts to consult with PRASA concerning this potential impact. A letter from the PRPA was addressed to PRASA on July 10, 2014 requesting a position on the matter. See Appendix C Agency Coordination for the relevant documentation.

During the construction of the Auxiliary Terminal, there may be additional sediment loads due to the grading required for the widening of the access road and additional parking areas, and from sediment re-suspension associated with pile driving. During operation, the additional impermeable areas will result in a greater stormwater volume and velocity, and potentially an additional sediment load that may reach Ensenada Honda. Since the proposed site is not provided with a storm sewer system, the project will design, as part of an Erosion-Sedimentation Control Plan for the construction phase, a temporary system to retain stormwater and settle sediments before they reach Ensenada Honda. For the operational phase, the project will provide a permanent system to manage the additional stormwater loads on site.

No Action Alternative

No adverse impacts to utilities are anticipated from the No Action Alternative.

Proposed Action

The Proposed Action will not have adverse impact to the water, wastewater, storm drains (not existent), solid waste and electric services. A turbidity screen will be installed to protect the PRASA intake structure from excessive turbidity that may result from ferry

operation. During the construction, turbidity screens or other measures may be required to reduce potential turbidity impacts to the PRASA intake, if the plant is operational during the construction or operation finite periods.

5.9.6 Public Health and Safety

The existing Culebra Ferry Terminal Cargo Ramp is a public health and safety hazard. The structural collapse of this facility is imminent. Left alone, the only questions are when it will happen and how many people will be affected when it happens. Reconstructing it and building the Auxiliary Cargo Ferry Terminal will provide safeguards to the resident and transient Culebra population, as well as to the PRMTA personnel that assist in the safe arrival and departure of passengers, vehicles and goods.

Construction projects have potential direct, indirect and cumulative public health and safety effects; however, the modern regulatory framework has addressed, controlled and contained many of these potential hazards through initiatives like fugitive dust emissions control, hazardous materials management, and worker safety requirements. The contractor will be required to have a health and safety plan that addresses any potential concerns, including: Perimeter fence to prevent the public from accessing active construction areas.

Finally, passengers presently embark and disembark using the same transit areas as the vehicles. The Proposed Action includes measures to segregate the flow of passengers and vehicles during these operations. With the Proposed Action, a safer operation will be designed and built.

No Action Alternative

Due to its structural deficiencies, the collapse of the Ferry Terminal is imminent. People on the ramp as it happens can be hurt or die, and property damage can be significant. Additionally, the flow of goods and supplies will be interrupted indefinitely with such an occurrence, removing the lifeline that the ferry provides for Culebra residents and visitors. Therefore, the No Action Alternative is not an acceptable alternative from the public health and safety standpoint.

Alternative #1 (Proposed Action)

No adverse effects to public health and safety are anticipated during reconstruction of the Cargo Ramp at Sardinas Bay, nor are they during the construction and operation of the Auxiliary Cargo Ferry Terminal at San Ildefonso.

6.0 Potential Impacts

The following table summarizes the potential impacts for each alternative considered. Then, cumulative impacts are discussed.

Table 2: Summary of Potential Impacts for Each Alternative

Affected Environment	Alternative #1 (Proposed Action)	No Action Alternative
Geology, Soils and Seismicity	No effect to geology & soils are expected during the reconstruction and operation of the Culebra Cargo ramp. No special seismicity hazard is present at the site.	No effect to geology & soils are expected during the reconstruction and operation of the Culebra Cargo ramp. No special seismicity hazard is present at the site.
Air Quality	Temporary impacts to air quality from fugitive dust and from diesel burning heavy equipment during demolition and construction (6 to 9 months) but are expected to be negligible due to prevailing trade winds and convection currents. Ferry emissions during ferry operation and from the vehicles loading and unloading. This impact is not an additional impact, since it presently occurs in Sardinias Bay, a much more densely populated area than San Ildefonso.	Temporary negligible to minor impacts to air quality from the salvage and clean-up operation after the eventual collapse of the terminal. During the re-construction of the Cargo Ramp at Sardinias Bay, temporary impacts to air quality from fugitive dust and from diesel burning heavy equipment during demolition and construction. Ferry emissions during ferry operation and from the vehicles loading and unloading. This impact is not an additional impact, since it presently occurs in Sardinias Bay, a much more densely populated area than San Ildefonso.
Climate Change	Negligible impact on climate change is expected. Potential impacts from climate change (sea level rise) upon the Proposed Action have been incorporated in the design.	Negligible impact on climate change is expected.
Wetlands & Floodplains	No impacts to wetlands are expected, as the ferry terminal location lies in a previously developed area. No impact to the floodplain is expected.	No impacts to wetlands are expected, as the ferry terminal location lies in a previously developed area. No impact to the floodplain is expected.

Table 2: Summary of Potential Impacts for Each Alternative

Affected Environment	Alternative #1 (Proposed Action)	No Action Alternative
Water Quality	<p>Temporary minor increase in turbidity due to re-suspended sediments.</p> <p>During its operation, re-suspension of sediments during docking maneuvers of the cargo ferry.</p> <p>Turbidity barriers would limit the reach of suspended sediments and would protect the PRASA desalination plant intake (if in operation).</p>	<p>The eventual collapse of the terminal would result in spilling at least the gasoline or diesel in the fuel tank of the vehicle that causes it; oil, coolant, and brake fluid from its engine; and perhaps from other harmful substances transported in the vehicle.</p> <p>The collapsing structure, the vehicle and its content would also cause sediment resuspension event as they hit bottom.</p> <p>The ensuing salvage, clean-up and reconstruction effort may also result in additional potential oil and chemical spills and sediment resuspension. While difficult to predict, the impacts could range from minor to major.</p>
Coastal Resources	<p>The reconstruction of the Culebra Cargo Ramp and the Auxiliary Cargo Ferry Terminal is in accordance with the objectives of the Puerto Rico Coastal Management Program for infrastructure and natural areas conservation.</p>	<p>Coastal resources would experience minor to major impacts by the eventual collapse of the ferry terminal; degradation of habitats and water quality from the physical fill and for the fuel and other contaminants that will be spilled, impacting the most important uses for the coastal zone here: Tourism, recreation, transportation and habitat.</p>

Table 2: Summary of Potential Impacts for Each Alternative

Affected Environment	Alternative #1 (Proposed Action)	No Action Alternative
Threatened & Endangered Corals (ESA Resources)	Threatened Lobe star coral colonies are present in the project area and are expected to experience impacts. These impacts are expected to be reduced to minor impacts with the implementation of conditions and conservation methods required by NMFS prior to and during construction activities.	Endangered species would experience minor to major impacts by the eventual collapse of the ferry terminal due to degradation of habitats and water quality from the physical fill and for the fuel and other contaminants that will be spilled, with the potential to contaminate extensive areas, as the marine currents and tides broadcast these toxic contaminants, impacting the marine and estuarine food webs.
Threatened & Endangered Sea Turtles & Manatees (ESA Resources)	No direct impacts are expected to Manatees and/or any species of Sea Turtles are anticipated during construction and operation. Impact areas will be protected by a turbidity barrier that will prevent any individuals from getting near the site. Conservation methods, as required by the USFWS, will be implemented during construction.	Endangered species would experience minor to major impacts by the eventual collapse of the ferry terminal due to degradation of habitats and water quality from the physical fill and for the fuel and other contaminants that will be spilled, with the potential to contaminate extensive areas, as the marine currents and tides broadcast these toxic contaminants, impacting the marine and estuarine food webs.

Table 2: Summary of Potential Impacts for Each Alternative

Affected Environment	Alternative #1 (Proposed Action)	No Action Alternative
Historic Properties	Moderate impact is expected. SHPO concurred with FEMA's finding of no adverse effect on eligible properties within the former San Ildefonso/Camp Roosevelt conditioned to the implementation of the three protective measures: adequate buffer zone to protect historic structures; avoidance of potential impacts to historic elements; and supervision by SOI qualified professional.	No effect. No historic/cultural resources will be affected with the No Action Alternative.
Environmental Justice	Culebra residents are similar to Puerto Rico residents; the peculiarity for Culebra residents is isolation and dependence upon the ferry for food, medicine, fuel and to reach medical attention. The Proposed Action will provide safe and efficient cargo and passenger port facilities that are in compliance with state and federal standards, and that will provide for the needs of the Culebra population. The Auxiliary Terminal is a critical component to the reliability of that service.	The eventual collapse of the Ferry Terminal puts in danger the health and safety of Culebra residents and visitors, given their critical dependence upon the Ferry Terminal, depriving Culebra residents and visitors of essential services and potentially represent a major impact.
Hazardous Material	There is no hazardous material at the project site; neither will the project generate hazardous wastes.	The eventual collapse of the Ferry Terminal may accidentally release hazardous materials within the vehicle or vehicles that are on the ramp at the time of the collapse resulting in a potentially major impact.

Table 2: Summary of Potential Impacts for Each Alternative

Affected Environment	Alternative #1 (Proposed Action)	No Action Alternative
Noise	Noise levels are expected to increase during the demolition and construction (pile driving) of the cargo platform facilities (6 to 9 months) as a minor impact. Noise levels may be reduced (from the cargo ferry and its activities) at Sardinias Bay during the period that the ferry will make port at San Ildefonso. Noise levels will return to normal/pre-existing levels once the Sardinias Bay cargo ramp is completed.	The eventual collapse of the Culebra Terminal will result in minor to moderate noise impacts from the collapse itself, the sirens from emergency vehicles, and from the ensuing salvage, clean-up and reconstruction effort. The air lift of emergency supplies and from evacuating an island without a port would also result in prolonged events of unwanted noise.
Land Traffic	Traffic studies concluded that the proposed project will not adversely impact the relevant areas. Traffic is not expected to increase significantly during the construction of the facilities. During the operation there will be additional traffic at San Ildefonso, an area with low population density. All construction equipment and supplies will be located on a barge.	No impacts to land traffic are expected.
Marine Traffic	The Proposed Action will cause an improvement in reliability of the maritime transport to Culebra. No adverse impacts are expected to marine traffic during the construction period, since both passenger and cargo ferries will keep their current schedule. The trip to the Auxiliary Terminal will add approximately 5.3 miles to the Fajardo-Culebra route during construction.	Marine traffic to Culebra will be critically impacted by the eventual collapse of the Culebra Terminal. For at least six months there will be no cargo service, and passenger service which will represent a major impact.

Table 2: Summary of Potential Impacts for Each Alternative

Affected Environment	Alternative #1 (Proposed Action)	No Action Alternative
Public Service & Utilities	<p>No direct impacts are expected to public services and utilities. No additional demands on existing utilities or public services are expected.</p> <p>The PRASA desalination plant intake must be protected from sediment resuspension impacts during the construction and operation at San Ildefonso in case it comes back in operation after ten inoperative years.</p> <p>At San Ildefonso, the project will use mobile restrooms during the construction and operation.</p>	<p>The eventual collapse of the Culebra Terminal will result in a reduced population in Culebra, which will alleviate the demand on public service and utilities.</p>
Public Health & Safety	<p>The Proposed Action resolves the imminent collapse of existing facilities that is a potential hazard to the passengers, property and employees that use the Terminal. It also solves the existing safety violation where passengers and vehicles use the same areas to embark and disembark due to the existing inadequate facilities.</p>	<p>Due to its structural deficiencies, the complete or partial collapse of the existing Cargo Ramp, the No Action Alternative poses an imminent risk to public health and safety.</p> <p>Also, the use of the same access route for vehicles and passengers to the ferry presents an ongoing risk to the passenger's health and safety.</p>

6.1 Cumulative Impacts

The Council on Environmental Quality regulations (CEQ, 1987) explicitly states that cumulative effects must be evaluated along with the direct and indirect effects of each alternative. Cumulative effects are the consequences on the environment that result from the incremental effects of the Proposed Action when added to other past, present and reasonably foreseeable future actions to be taken by Federal or non-Federal agencies. Cumulative effects can result from individually minor but collectively significant sets of actions taken over time. (40 CFR 1508.7).

In accordance with NEPA, this EA considers the overall cumulative impact of the Proposed Action and other actions that are related in order to continue cargo service to

Culebra uninterruptedly. Cumulative effects have been evaluated for the two cargo ramps, the No Action Alternative and for Alternative #1 (Proposed Action), considering potential direct and indirect effects during its construction and operation.

One of the anticipated outcomes of the Proposed Action would be a more reliable port service, which could translate into a more content resident community and possibly additional future tourist development. However, concerning the latter, so many parameters have a bearing on future potential development that it would be highly speculative to precisely contemplate future specific development scenarios.

Below we summarize the potential direct and indirect adverse effects of the Alternative #1 (Proposed Action) in order to extrapolate any cumulative impacts.

6.1.1 Direct and Indirect Impacts - Construction

1. Temporary impacts to air quality from fugitive dust during grading/fill operations and construction are expected to occur, as well as emissions from diesel burning internal combustion engines used in heavy equipment and earthmoving machinery. Emissions would be temporary and localized, with only minor impacts on air quality in the project area and few receptors in the area. There are no cumulative impacts associated.
2. Underwater noise and vibration impacts due to pile driving upon ESA listed species. There are no cumulative impacts associated.
3. Noise on land due to construction equipment. There are no cumulative impacts associated.
4. Erosion/sedimentation from construction of upland improvements and sediment re-suspension from demolition, pile driving and from anchoring of the project barge with spuds. There are no cumulative impacts associated.
5. Impacts to 22 coral colonies with a 10 inch diameter or greater, 4 of them are listed as threatened or endangered, and which will be transplanted. There are no cumulative impacts associated.
6. In Sardinias Bay, 81.4 feet² (0.0018 acres) of soft bottom seafloor will be permanently covered by pilings; on the other hand 1,437 feet² (0.033 acres) of hard substrate will be added. In San Ildefonso, approximately 108.2 feet² (0.002 acres) of soft bottom seafloor will be permanently covered by pilings; on the other hand 2,640 feet² (0.06 acres) of hard substrate will be added. There are no cumulative impacts associated.

7. In Sardinas Bay, the additional shadow impact cause by the Proposed Action is approximately 1,894 feet² (0.04 acres). In San Ildefonso, the additional shadow impact cause by the Proposed Action is approximately 3,426 feet² (0.08 acres). There are no cumulative impacts associated.

6.1.2 Direct and Indirect Impacts - Operation

1. New paved areas in San Ildefonso will increase stormwater runoff entering the bay. A new stormwater management system will be designed to collect and treat the more contaminated first flush from each storm event. There are no cumulative impacts associated.
2. Impact to marine organisms due to sediment re-suspension from the ferry at the Auxiliary Terminal. There are no cumulative impacts associated.
3. In Sardinas Bay, the additional shadow impact cause by the Proposed Action is approximately 1,894 feet² (0.04 acres). In San Ildefonso, the additional shadow impact cause by the Proposed Action is approximately 3,426 feet² (0.08 acres). There are no cumulative impacts associated.
4. Impact to the desalinization potable water plant (not in use for the last 10 years or so) due to sediment re-suspension from the ferry at the Auxiliary Terminal. There are no cumulative impacts associated.

6.1.1 Cumulative Impacts Summary

In summary no adverse cumulative impacts are anticipated for the Proposed Action, since all of the direct and indirect adverse impacts are either temporary or do not appear to cause incremental impacts when added to past, present and reasonably foreseeable future actions. However, one of the anticipated outcomes of the Proposed Action would be a more reliable port service, which could cumulatively result into a more content resident and transient community.

7.0 Agency Coordination and Public Involvement

An early Draft Environmental Assessment (EA) Report was released on May 26, 2015 for public review and comment period. A hard copy was made available for review at the Culebra Community Library. The public was invited to submit written comments by mail or email to the Puerto Rico Ports Authority.

Comments that were received from the public and/or agency reviewers have been addressed herein, and this Draft EA contains the subject changes.

7.1 Agency Coordination

FEMA and the proponents have expended substantial efforts to seek comments with the regulatory agencies with expertise with regards to the various potential impacts related to the Proposed Action. See Appendix C for the actual record of the various consultations.

Following is a list of meetings held with Federal, State and local agencies during the preparation and as a result of the circulation of the EA in this Proposed Action:

- a. January 9, 2013 Meeting at FEMA. Marine Fisheries NMFS requirements for the retrofit Cargo Pier at Culebra. Attendees: Sonny Beauchamp, Alwin Alvarado, José Ayala and José Lebrón-Fuentes DHS/FEMA, Nelson Rivera Calderon from GAR, Lisamarie Carruba from NMFS, Romel Pedraza, Agro. Lorraine de la Cruz, José Sierra and Ivelisse Lorenzo from PRPA.
- b. May 30, 2014 Meeting at FEMA. Discuss the status of environmental documents regarding FEMA-4017-DR-PR-0030. Attendees: Sonny Beauchamp, Alwin Alvarado, José Ayala and Marisol Meléndez from DHS/FEMA; Nelson Rivera Calderón from GAR; Francisco Pérez Aguiló from Atkins Caribe; Lisamarie Carruba from NMFS; Félix López from USFWS; Romel Pedraza, Agro. Lorraine De la Cruz, José Sierra and Flavio Silva Madera from PRPA.
- c. July 2, 2014. Interagency Meeting at USACE. Attendees: René Estévez Amador, Melanie Giuliani and Lisamarie Carruba from NMFS; Marisol Meléndez, José Ayala, and Alwin Alvarado from FEMA; Nelson Rivera from GAR, Miguel Bonini from SHPO; Evelyn S. Colón from FHWA; Johann M. Sasso and Edgar Garcia from USACE; Rose A. Ortíz Díaz from PR Planning Board; José Sierra, Flavio Silva and Lorraine De la Cruz from PRPA; William I. Solís, Nestor González, Milton Cofresí and Jorge Andrade from the Municipality of Culebra; Francisco Pérez Aguiló, Arturo Santiago and Gabriel

Hernández from Atkins; Efraín López, Kailie Benson, Efraín López and Ismael Torres from USCG; and Félix López from USFWS.

- d. July 14, 2014 Meeting at PRMTA. Attendees: Francisco Pérez Aguiló and Gabriel Hernández from Atkins, Romel Pedraza, and Flavio Silva Madera from PRPA José A. Ruiz-García of PRMTA;
- e. October 3, 2014. Meeting at DNER. Attendees: Ana Barea of DNER; Agro. Lorraine De la Cruz, Ing. Flavio Silva of PRPA; Francisco Pérez Aguiló, Adelís Cabán and Gabriel Hernández of Atkins Caribe.
- f. October 9, 2014. Meeting at OGPe. Attendees: Habriel Rodríguez, Jacqueline Herráns, Victor Rivera, Luis Morales and Julián Batista of OGPe; Agro. Lorraine De la Cruz, Ing. Flavio Silva of PRPA; Francisco Pérez Aguiló, Adelís Cabán of Atkins Caribe.
- g. October 15, 2014. Meeting at PREMA. Attendees: Sonny Beauchamp, Marisol Meléndez and Alwin Alvarado from FEMA; Lic. Javier Rivera from the Office of the Governor; José A. Ruíz, José A. Bonano, Lydia E. Rodríguez and Mabel Sanabria from MTAPR; Nadgie E. Zea from PRHTA; Julio Méndez, Mildred Sotomayor and Ana Barea from DNER, Miguel Bonini from SHPO; Jorge Suárez, Flavio Silva, Lorraine de la Cruz and Romel Pedraza from PRPA; Gabriel Hernández from Atkins Caribe; Iván Orlandi, Carel Velázquez, José de la Vega and Nelson Rivera from GAR; Rebecca Ramos, Special Assistant and via telephone Jessica Granell from the (Federal Transit Administration).

Following is a list of Federal, State, and local agencies that FEMA/PRPA consulted during the preparation of the EA:

- Coastal Zone Management Program
- Culebra Conservation and Development Authority
- Culebra National Wildlife Refuge
- Cultural Institute of Puerto Rico
- Federal Transportation Highway Administration.
- National Marine Fisheries Service
- Puerto Rico Aqueduct and Sewer Authority
- Puerto Rico Department of Natural and Environmental Resources
- Puerto Rico Emergency Management Agency

- Puerto Rico Maritime Transport Authority
- Puerto Rico National Guard
- Puerto Rico Planning Board
- State Historic Preservation Office
- United States Coast Guard
- United States Department of the Interior
- United States Fish and Wildlife Service – Caribbean Field Office
- United States Fish and Wildlife Service – Culebra National Wildlife Refuge

7.2 Public Involvement

The PRPA has installed posters in the Fajardo and Culebra Ferry Terminal since May 26, 2015 to present (December 3, 2015). These posters, in English and Spanish, informed the Culebra residents of Culebra and the general public alike about the Proposed Action objectives, alternatives considered, construction duration and benefits, as providing an email and regular mail addresses to direct any comments. Simultaneously with the placement of the posters, the Preliminary Environmental Assessment was provided to the Culebra Public Library.

The following summarizes the one comment received, which has been addressed within this EA:

1. Mary Ann Lucking (Coralations Inc.) via U.S. Postal Service. The DNER area (San Ildefonso pier) is located in shallow waters, could prop wash sea grass located in the close proximity to manatee nursery grounds. There would not be a problem on the back up pier located on the other side of the bay (Fulladosa) because is located in much deeper waters.

8.0 Permits and Conditions

The PRPA is responsible for obtaining all applicable Federal, State, and local permits and other authorizations for project implementation prior to construction and adherence to all permit conditions. FEMA expects that the PRPA and its construction contractors will conduct a construction process utilizing best management practices to limit noise, dust, habitat alteration and sedimentation and erosion during construction. OSHA standards would be followed closely during construction to avoid adverse impacts to worker health and safety.

8.1 Conditions

Any substantive change to the approved scope of work will require re-evaluations by FEMA for compliance with NEPA and other laws and executive orders. The grantee and sub-grantee must also adhere to the following conditions during project implementations and consider the below conservation recommendations. Failure to comply with grant conditions may jeopardize Federal funds:

1. Excavated soil and waste materials will be managed and disposed of in accordance with applicable local, state and federal regulations. If contaminated materials are discovered during construction activities, the work will cease until the appropriate procedures and permits are implemented.
2. The recipient and subrecipient agreed to the following conservation measures as conditions for the construction in both locations and the operation of the auxiliary cargo port as result of consultation with NMFS:
 - a. Turbidity barriers will be installed around in-water work areas prior to commencement of any pile-driving activities to contain any sediment suspended during pile-driving.
 - b. A Spill Prevention Control and Countermeasures Plan will be implemented to prevent hydraulic fluid, diesel, and other potential pollutants from heavy equipment from entering surface waters. The final plan must be approved by the USCG to ensure it is adequate to prevent contamination of surface waters due to accidental spills from vessels and facility operation.
 - c. A Turbidity Monitoring Plan and Erosion and Sedimentation Control Plan will be finalized in coordination with NMFS prior to commencement of any construction activities. The Erosion and Sedimentation Control Plan will be

implemented for sediment and erosion control during construction of the upland sections of the San Idelfonso Auxiliary Cargo Port portion of the project in order to minimize the potential transport of land-based contaminants, including sediments, to nearshore waters. The Turbidity Monitoring Plans will be implemented for monitoring turbidity levels outside the turbidity barriers in Sardinas and San Idelfonso to ensure that sediment resuspension and transport outside the in-water construction footprint at each site is minimal. In the event that these plans are modified in a manner that causes an effect on the ESA-listed species or designated critical habitats not considered in NMFS' Biological Opinion, reinitiating of ESA Section 7 consultation for the project may be necessary.

- d. Divers will backfill spud holes once the construction barge changes position. A new stormwater system will be constructed to collect and treat the first flush from each rain event at the new San Idelfonso Auxiliary Cargo Port facility.
- e. Turbidity barriers shall be constructed of a material that prevents entanglement by sea turtles and marine mammals. These barriers must be properly secured and regularly monitored to avoid entrapment of sea turtles and marine mammals.
- f. Compliance with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions* (dated March, 23, 2006)
- g. Compliance with NMFS's *Vessel Strike Avoidance Measures and Reporting for Mariners* (revised February 7, 2008)
- h. A protocol for the approach and departure from the auxiliary ferry terminal at San Idelfonso will be required for ferry captains. The protocol will emphasize the need for slow speed (8-10 knots) inside Ensenada Honda in part to reduce propeller impacts to seagrass and corals at the entrance to the bay and at the new facility.
- i. A 100-meter (m) safety zone will be established for monitoring for sea turtles during pile driving activities in both locations. A trained vessel crew will monitor and report observations of sea turtles within a 100-m radius of the pile driving barge. NMFS will be notified of sea turtle sightings. If a sea turtle is sighted within a 100-m radius of the pile driving activity, the activity will

cease until the turtle moves out of the exclusion zone and has not been sighted for 30 minutes.

- j. The auger drilling method will be used to install steel pile casings at the San Idelfonso site in Ensenada Honda. A double casing system will be required for pile driving in Sardinias Bay.
- k. An Underwater Noise Monitoring Plan will be implemented for all pile-driving activities. The final plan will be coordinated with NMFS prior to commencement of any in-water construction activities.
- l. In-water construction work will occur during daylight hours only.
- m. The subrecipient has reported that a Quit Claim Deed will be finalized in coordination with the U.S. Fish and Wildlife Service because of the auxiliary cargo port's location within a portion of the Culebra Island National Wildlife Refuge. The deed will restrict use to temporary operations during the reconstruction of the existing cargo facilities in Sardinias Bay and, upon completion of the reconstruction of the existing facilities, use only in the event that the facility in Sardinias Bay is damaged or inoperable or cannot be used due to inclement weather or another emergency.
- n. A monitoring plan will be implemented to assess the condition of ESA-listed corals at the entrance to Ensenada Honda and seagrass beds outside the construction footprint at San Idelfonso before and after the construction and operation of the auxiliary cargo port facilities. The plan is meant to determine whether the construction and operation of the auxiliary cargo port results in impacts to ESA-listed corals and green sea turtle critical habitat in order to develop additional minimization measures for any future temporary cargo operations at this facility. The final plan will be coordinated with NMFS prior to commencement of any in-water construction activities.
- o. A Coral Transplant Plan, including the transplant of 4 colonies of ESA-listed lobed star corals, will be implemented prior to commencement of any in-water construction at the San Idelfonso site. ESA-listed corals and other coral species are on the piles of the existing dock at the San Idelfonso site. All corals will be removed and relocated to a recipient site or sites determined in coordination with DNER and NMFS.

- p. The coral transplant and monitoring plan shall be finalized and implemented by recipient and sub-recipient in coordination with NMFS prior to commencement of any in-water construction activities. The plan shall include detailed procedures and measures for coral colony removal and transplant from the in-water construction footprint, as well as monitoring requirements. The 4 lobed star coral colonies on the piles of the existing pier at San Ildefonso shall be relocated to a recipient site or sites selected in Ensenada Honda as part of the finalization of the plan and shall be monitored to determine transplant success.
3. The USACE or FEMA must provide NMFS with all data collected as part of additional pre-construction benthic surveys, coral transplant activities, and the implementation of monitoring of monitoring plans. This information can be submitted to nmfs.ser.esa.consultation@noaa.gov with copy to the Consultation Biologist (lisamarie.carruba@noaa.gov). Data reports should be submitted within 30 calendar days of completion of surveys, transplant, and monitoring events.
4. During the period of construction, the recipient and subrecipient must follow the Ensenada Honda Navigational Channel Entrance ESA Corals & Fish Monitoring Plan to evaluate and avoid impacts of intensive ferry activities upon the reef located at the entrance of Ensenada Honda.
5. The recipient and subrecipient are responsible to carry out an Assessment of Requirements for Additional Navigational Aids for Ensenada Honda to evaluate the potential conflicts of recreational vessels and the navigation channel that may require additional ATONs.
6. The recipient and subrecipient are responsible of implementing the following conditions during construction as required by the Puerto Rico State Historic Preservation Office (PRSHPO):
 - a. adequate buffer zone to protect historic structures
 - b. avoidance of potential impacts to historic elements
 - c. supervision by SOI qualified professional
7. In the event that any archaeological resources are uncovered, the recipient and subrecipient will immediately halt construction activities in the vicinity of the

discovery, secure the site, and take reasonable measures to avoid or minimize harm to the finds. The recipient and subrecipient will immediately inform FEMA of any archaeological findings and FEMA will consult with PRSHPO. Construction work cannot resume until FEMA completes consultation and appropriate measures have been taken to ensure that the project is in compliance with the National Historic Preservation Act and other applicable Federal and State regulations.

8. The recipient and subrecipient must meet any project-specific conditions developed and agreed upon between FEMA and with the environmental planning or historic preservation resource and regulatory agencies during consultation and coordination.
9. The recipient and subrecipient are responsible for obtaining and complying with all required local, State and Federal permits and its approvals.

8.2 Permits Required

Permit applications will be submitted at the appropriate time for the following permits regulatory requirements:

- a. P.R. Department of Natural and Environmental Resources
 - i. Earth Crust Removal Permit
 - ii. Joint Permit (for dredging/filling submerged lands)
 - iii. Natural Habitat Certification
- b. P.R. Environmental Quality Board
 - i. The Proposed Action will have to request a water quality certificate from the EQB as part of the NPDES permitting process.
- c. P.R. Permits Management Office (OGPe, in its acronym in Spanish)
 - i. Compliance with the Environmental Policy Act (EIS, EA, Categorical Exclusions). Pursuant to Rule 115 C & D of the Regulation for the Evaluation and Processing of Environmental Documents of the Environmental Quality Board dated November 30, 2010, and as determined by OGPe during meeting held October 9, 2014, the NEPA process Final EA may be validated to comply with the PR Environmental Policy Act.
 - ii. Demolition Permit
 - iii. Construction Permit

- iv. Consolidated General Permit for Construction
 - v. Use Permit
 - vi. Earth Crust Removal Permit
 - vii. Tree-Cutting, Pruning & Transplant Permit (incidental and non-) and Mitigation Plan
-
- d. U.S. Army Corp of Engineers
 - i. Joint Permit (submitted in the DNER) for the compliance with Section 404 of the Clean Water Act (Dredge & Fill in Waters 404 of the Clean Water Act (33 U.S.C. 1344) and/or Section 10 of River and Harbors Act (33 U.S.C. 403).
 - e. U.S. Environmental Protection Agency
 - i. NPDES for Construction Permit
 - f. Coordination Center for Excavations and Demolitions
 - i. Notification of excavation or demolition
 - g. Solid Waste Administration
 - i. Recycling Plan according to Act 70 of 1992 and Regulation 682.

11.0 List of Preparers

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