November 2014

Endangered Species Act Section 7 Consultation

for the

Construction of the Sardinas Bay Cargo Platform and the Culebra Auxiliary Cargo Terminal at San Ildefonso

Culebra, Puerto Rico

Prepared For :

AUTORIDAD de los PUERTOS de PUERTO RICO

Prepared By:

ATKINS

Endangered Species Act Section 7 Consultation for the Culebra Auxiliary Cargo Ferry Terminal in San Ildefonso and the Reconstruction of the Cargo Ramp at Sardinas Bay Culebra, Puerto Rico

This document was prepared by Atkins Caribe, LLP for the Puerto Rico Ports Authority (PRPA) the Federal Transit Authority (FTA) and the Federal Emergency Management Agency (FEMA) for submittal to the United States Fish & Wildlife Service (USFWS), a Bureau in the Department of the Interior.

Prepared By:

Prepared For:

Contents

List of Figures

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1. Introduction

Pursuant to the damages experienced at the Culebra Passenger Ferry Terminal Platform in Sardinas Bay after Hurricane Irene on 2010, the Puerto Rico Ports Authority (PRPA) started to evaluate the structural condition of the cargo platform and ramp. A site visit was conducted in August 2010 to assess the conditions of these structures and a report, dated September 2010 was submitted to the Maritime Transport Authority (MTAPR)

Advanced deterioration was found in the deck slab and concrete beams, which has probably spread to the entire concrete surface. This appears to be 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, if the repair and reconstruction of the cargo terminal is not conducted promptly, structural failure may occur.

Being the only heavy commercial cargo transportation port in Culebra, the cargo ferry provides an essential service to the residents of the island. The PRPA has prepared this document for the reconstruction and repair of the cargo platform in the Municipality of Culebra. An evaluation of potential temporary cargo operations resulted in the proposed construction of an auxiliary cargo pier at San Ildefonso in Ensenada Honda, which is the safest harbor in the region, the historic location of the first settlement in the island, and the site for Camp Roosevelt, the US Navy operation that lasted from 1903 until their departure in 1975.

The proposed Culebra Auxiliary Cargo Ferry Terminal Facilities are located in the Flamingo Ward, on a peninsula in the northern shoreline of Ensenada Honda. 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. Its coordinates are **Latitude *18°18'22.63"N* and Longitude *65°17'00.44"W*.** (***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 construction will take place within the previously impacted area, originally modified by the by the US Navy to established the Culebra Naval Reservation ***Figure 2*** is an

Aerial Photograph of San Ildefosno taken in 1964 showing the area during its occupation by the US Navy.

The site is presently used for passive recreation and includes two boat ramps, a pier on pilings with a maximum depth of 13 feet, a seawall approximately 140 feet in length, three heavy duty bollards, an intake structure for a desalination plant, concrete park benches and roofed areas. Its maritime access is through Ensenada Honda, which encompasses approximately 700 acres, with a marked navigation channel and proper aids (outer and inner range channel markers and seven navigation buoys).

The proposed project is a two-phased construction; the first is the construction of the Auxiliary Terminal at San Ildefonso, and the second phase, which will be the reconstruction of the existing Cargo Ferry Terminal, which would commence once the Auxiliary Terminal at San Ildefonso is completely operational.

FEMA and the Governor's Authorized Representative, on behalf of the PRPA, have proposed this project to 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.
One of the main missions of the Federal Emergency Management Agency (FEMA) is to support the citizens of the United States of America and first responders to ensure that as a nation, we work together to build, sustain and improve our capability to prepare for, protect against, respond to, recover from and mitigate all hazards from natural disasters. The Hazard Mitigation Grant Program (HMGP) provides grants to states and local governments 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*.
However no funds have being granted to the proposed project.

In order to comply with the New Wildlife Act of Puerto Rico (Act 241 of 1999), in addition to the Endangered Species Act, a Terrestrial Flora and Fauna and Benthic Habitat surveys were conducted on the existing port facilities at Sardinas Bay and in San Ildefonso. These studies were performed during November 2013 and August 2014, to ensure the proposed actions do

not jeopardize the existence of any listed species. The methodology employed followed the Department of Natural and Environmental Resources (DNER) recommendations (close-fitting methods for physical characteristics and conditions to the study areas).

2. Proposed Project Location

2.1. San Ildefonso, Ensenada Honda

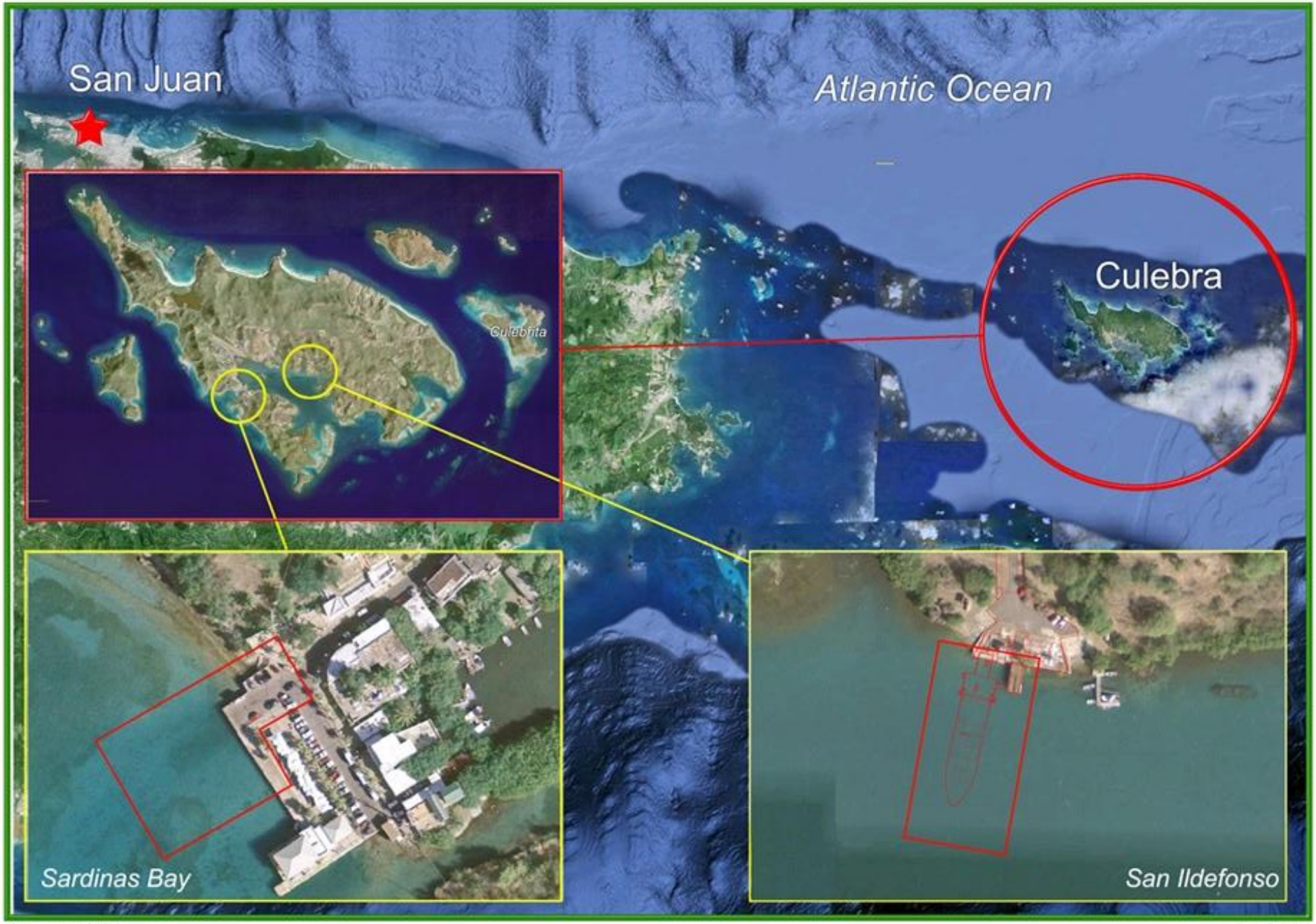
The proposed Culebra Auxiliary Cargo Ferry Terminal Facilities are located in San Ildefonso in the Flamingo Ward, on a peninsula in the northern shoreline of Ensenada Honda in the island municipality of Culebra, Puerto Rico. It is bordered to the north by Road 250, to the east by Caño Quebrado, on the west by Ensenada del Cementerio, and on the south by Ensenada Honda. This area is the historic location of the first settlement in the island, named San Ildefonso de la Culebra. Located at coordinates **Latitude *18°18'22.63"N*** and **Longitude *65°17'00.44"W*,** the project site exhibits its highest point on the "Y" intersection, approximately 28 feet above mean sea level (msl). (***Figure 1, Location Map***)

The proposed Culebra Auxiliary Cargo Ferry Terminal includes the construction of a floating pontoon platform measuring approximately 40 feet in length with a width of 56 feet (2,335 square feet) and 4 to 6 round steel pipes with a diameter of 14 to 18 inches, driven into the bottom 35 to 38 feet below msl. A vehicular bridge (platform) measuring approximately 35 feet long by 22 feet wide (770 square feet) will connect the pontoon platform to land. A structural aluminum catwalk will connect the existing pier and the pontoon platform, allowing passengers to board and disembark the ferry while docked. A pile cap and fender measuring approximately 56 feet in length by 6 feet in width (336 square feet) with approximately ten H-piles that will measure 14 to 18 inches will be installed on the seaward side of the pontoon platform, with two new cast steel bollards installed at its ends. This structure will allow the cargo ferry to dock with the pontoon platform without damaging the structure. A mooring dolphin will be added for improved docking safety, which includes 3 pilings 20 inches in diameter. Partial demolition work of an existing concrete deck is required. No dredging will take place in the area.

2.2. Sardinas Bay

The proposed reconstruction of the Culebra Cargo Ramp is located in the Sardinas I ward (Dewey) at the Port of Culebra, Puerto Rico. It is bounded in the northeast by State Road PR-250 at its terminus and by Bahía de Sardinas on the southwest. Its coordinates are **Latitude *18°18'05.53"N*** and **Longitude *65°18'09.77"W*** (***Figure 1, Location Map*****).**

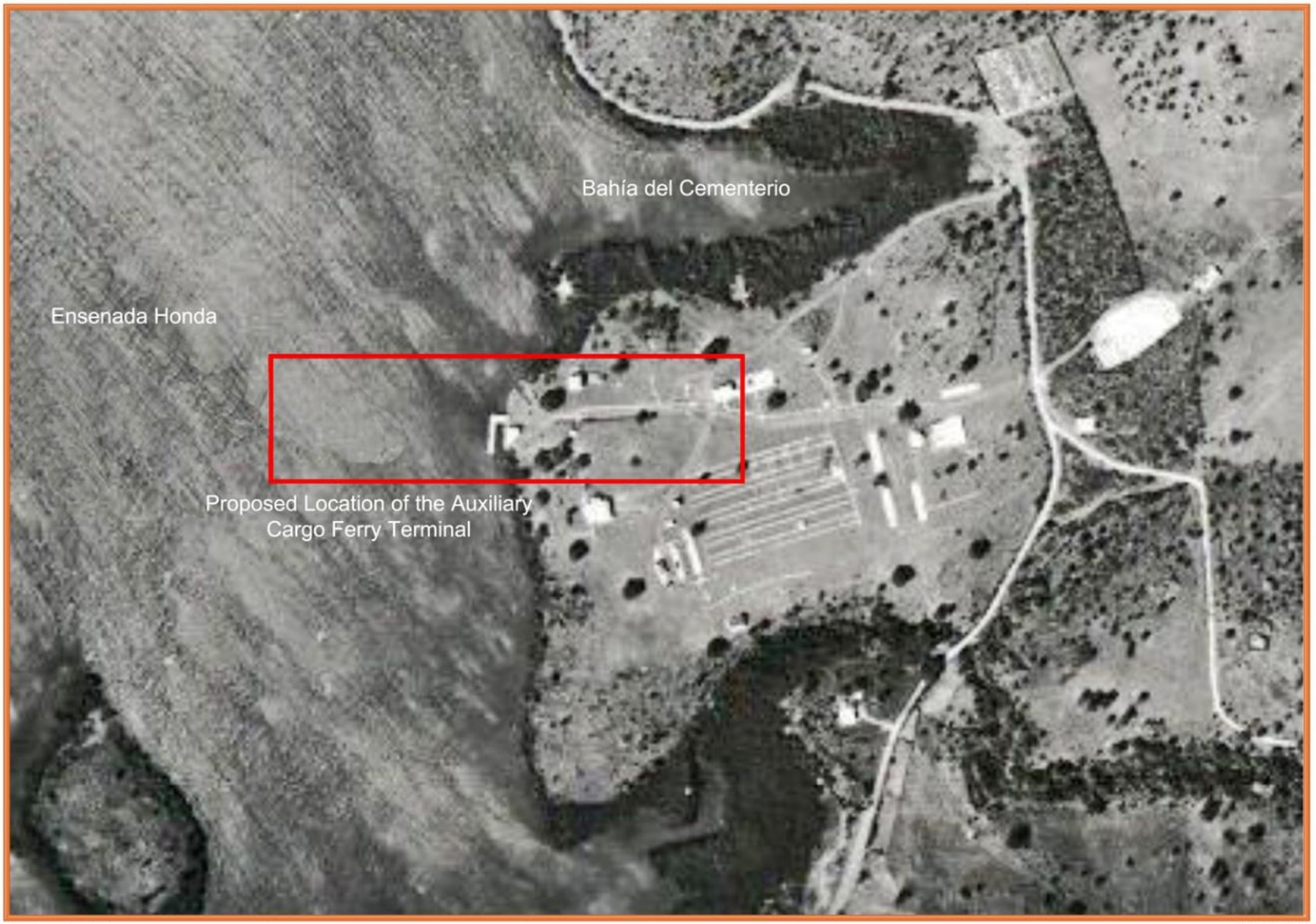
The project improvements consists of approximately twenty-seven 15x15 H-piles that will be cut at the mudline and removed; the existing concrete platform, which measures approximately 4,907 square feet, will be demolished; 25 replacement piles with a diameter of 20 inches will be driven over the existing Cargo Ramp footprint; and build the replacement Cargo Ramp, which will measure approximately 5,501 square feet. A catwalk measuring approximately 10 feet in width will be built to allow passengers to board and disembark through the side of the cargo ferry, as required by the US Coast Guard enforcement, per Maritime Transportation Security Act. Two mooring dolphins will be located; one at the end of the cargo/passenger catwalk, and one for the passenger ferry vessel, which will also serve for improved docking safety and usability of the passenger ferry platform. For this upgrade, 12 pilings 16 to 18 inches in diameter will be added.



*Drawing not to Scale

Source: Atkins

AUTORIDAD de PUERTOS de PUERTO RICO	CULEBRA CARGO RAMP TERMINAL IMPROVEMENTS ESA SECTION 7 CONSULTATION	LOCATION MAP	ATKINS	FIGURE 1



*Drawing not to Scale

Source: Atkins

AUTORIDAD de los PUERTOS de PUERTO RICO

CULEBRA CARGO RAMP
TERMINAL IMPROVEMENTS
ESA SECTION 7 CONSULTATION

1964 AERIAL PHOTOGRAPH,
SAN ILDEFONSO

ATKINS

FIGURE
2

3. Purpose of Document

In accordance with the Endangered Species Act (ESA), it is our purpose to conserve the ecosystems of Culebra and to protect endangered and threatened species. PRPA completed a comprehensive evaluation of the possible effects on the following species:

- West Indian Manatee *(Trichechus manatus manatus)*
- Loggerhead Turtle *(Caretta caretta)*
- Green Turtle *(Chelonia mydas)*
- Leatherback Turtle *(Dermochelys coriacea)*
- Hawksbill Turtle *(Eretmochelys imbricata)*
- Roseate Tern *(Sterna dougalii)*
- Elkhorn Coral *(Acropora palmata)*
- Staghorn Coral *(Acropora cervicronis)*
- Pillar Coral *(Dendrogyra cylindrus)*
- Lobed star coral *(Orbicella annularis*)
- Rough Cactus Coral *(Mycetophyllia ferox)*
- Mountainous Star Coral *(Orbicella faveolata)*
- Boulder Star Coral *(Orbicella franksi)*

4. Description of the Affected Environment

4.1.1. San Ildefonso, Ensenada Honda

The proposed San Ildefonso Auxiliary Terminal is located in an area presently used for passive recreation and includes two boat ramps, a pier on pilings with a maximum depth of 13 feet, a seawall approximately 140 in length, three heavy duty bollards, a water intake structure for a desalination plant, concrete park benches and roofed areas. Its maritime access is through Ensenada Honda, one of the safest harbors in the region that encompasses approximately 700 acres, with a marked navigation channel with the proper aids (outer and inner range channel markers and seven navigation buoys).

The general bottom composition of the area is soft, silty clay, with a limited light penetration which restricts primary productivity at the seafloor. Other than certain areas, the substrate is uniformly bare, often riddled with infaunal burrows. Benthic submerged rooted vegetation (seagrass) within the project area totals approximately 705 square feet (0.016 acres). A continuous patch of nearly 665 square feet is located east of the existing dock, between the concrete slab and the seawall, and a total of nearly 40 square feet of small, fragmented patches can be found west of the existing dock in sandy areas among the rock rubble. Both locations are at a depth of less than 2 feet. A continuous seagrass bed of approximately 0.83 acres is found just west of the project area. This seagrass bed continues west to Bahía del Cementerio.

Small, sparse (less than 10% cover) to marginal patches of paddle grass (*Halophila decipiens*) were found within the project area, around 15 to 20 feet in depth, mostly near or at the western boundary of the project area (see ***Figure 3, Benthic Habitat Map, San Ildefonso***). Other cover organisms present at depths of less than 15 feet include macroalgae such as *Dictyota spp*., *Caulerpa spp.* and invertebrates such as, sponges, and ascidians. West of the existing dock, the bottom composition changes from a rock rubble area at less than 15 from the seawall to mud and sand, with a presence of macroalagae that diminishes with the distance from the seawall as a function of depth. Beyond the stretch of rock rubble, the project area is devoid of any significant growth of seagrasses and/or coral colonies. East of the existing dock, a concrete slab (at a depth of approximately 3 to 4 feet) has a continuous macroalgae cover, which transitions to a mostly barren mud and sand bottom substrate with a presence of macroalagae

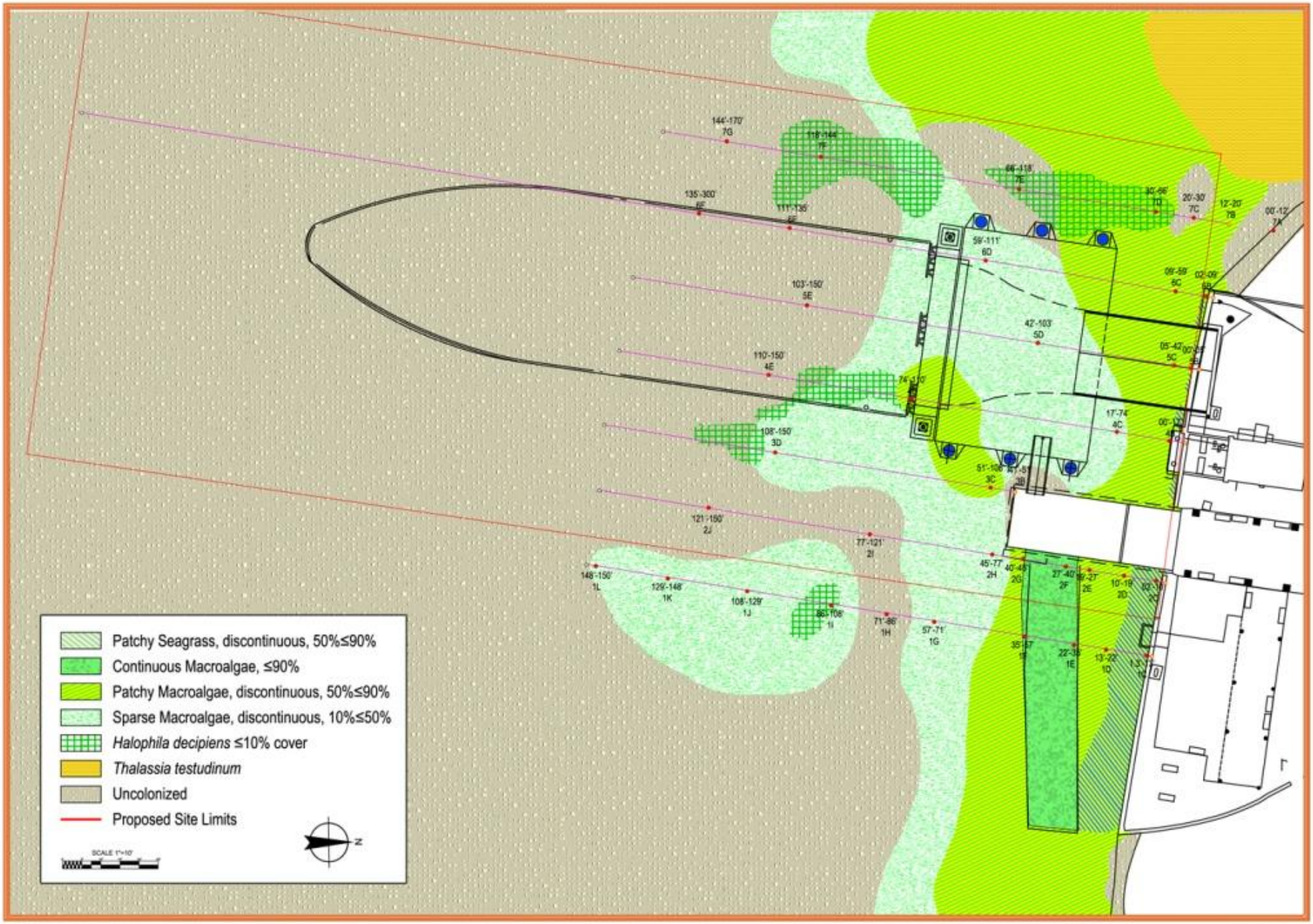
that diminishes as a function of depth. There was a minimal presence of *Halophila decipiens* at depths of 15 to 20 feet.

The *(Halophila decipiens)* present in the project area are small, monotypic patches sparse to marginal in coverage, that only provide a limited grazing resource for herbivores. Live- and hard-bottom habitat in the project area is limited and almost exclusively consists of man-made structures such as the rock rubble/riprap, the existing seawall, the concrete slab and the dock pilings. Aside from these, 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.

4.1.2. Sardinas Bay

The existing Ferry Terminal is located at the dead-end of PR-205 in the town of Dewey with maritime access through Sardinas Bay, a semi-protected embayment with a wide opening to the southwest. Its benthic substrate immediately adjacent to the cargo ramp structure consisted mainly of a mix of rock rubble intermixed with small amounts of sand. Sand and rock rubble were also observed adjacent to the seawall located immediately southeast of the cargo ramp structure. With the exception of very small colonies of encrusting *Siderastrea radians* observed on the rock rubble and a single colony on the substrate between Pilings 2 and 3 (***Figure 4, Baseline Survey, Sardinas Bay***) of the existing cargo ramp, no corals were observed on the substrate adjacent to the cargo ramp and seawall. Moving away from the cargo ramp, the substrate transitioned to sandy habitat where seagrasses are present.

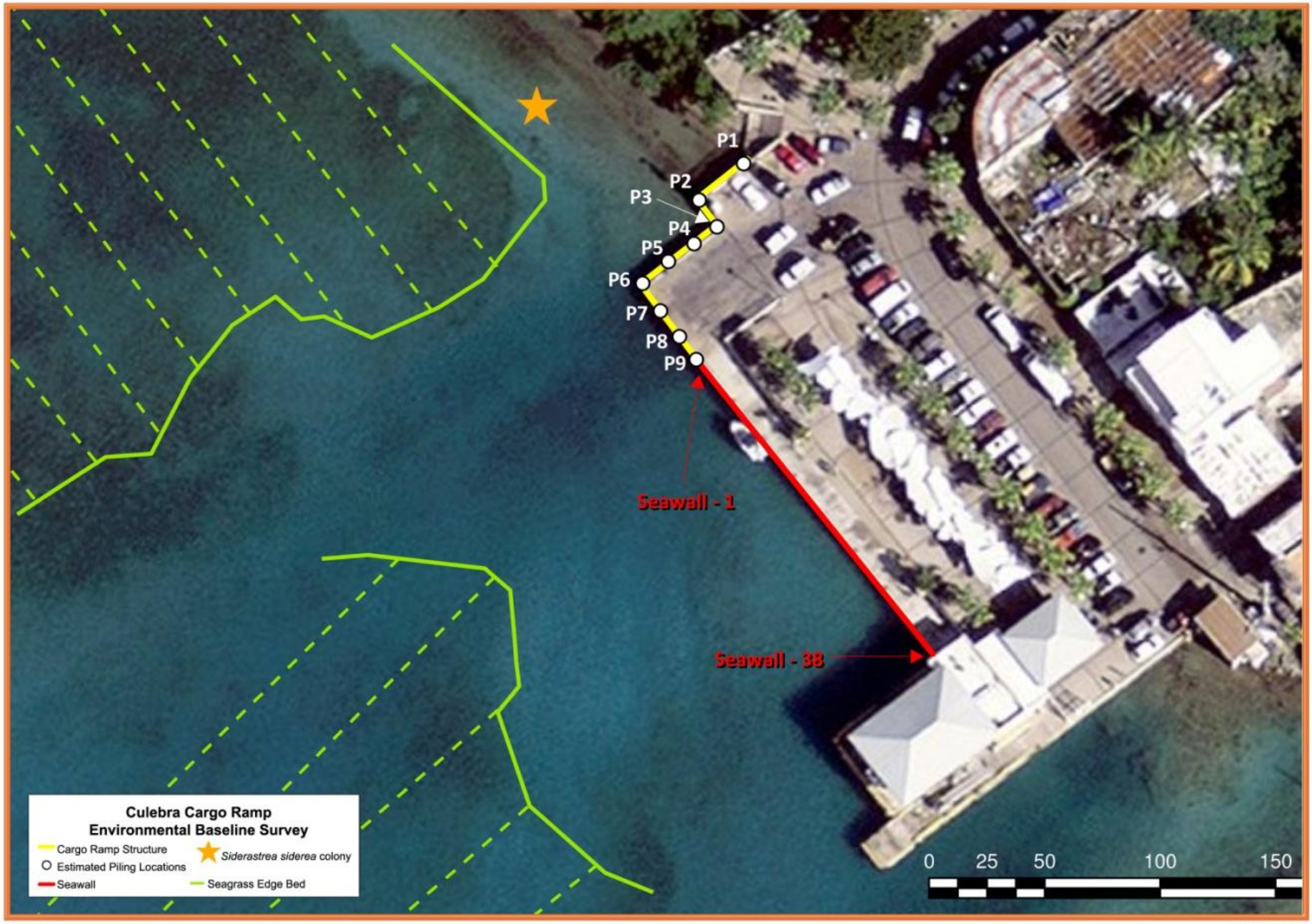
In addition, a very large dome-shaped colony of *Siderastrea siderea* was observed in shallow water northwest of the cargo ramp structure. The cargo ramp support piles and the seawall were encrusted with a diverse invertebrate community comprised of varied organisms, including corals, sponges, tunicates, macro algae, crustose coralline algae, bryozoans, worms, snails, urchins, to name a few. ***Figure 4, Baseline Survey, Sardinas Bay***, shows the arrangement of benthic communities within Sardinas Bay.



*Drawing not to Scale

Source: Atkins

AUTORIDAD de los PUERTOS de PUERTO RICO	CULEBRA CARGO RAMP TERMINAL IMPROVEMENTS ESA SECTION 7 CONSULTATION	BENTHIC HABITAT MAP SAN ILDEFONSO	ATKINS	FIGURE 3



*Drawing not to Scale

Source: Atkins

AUTORIDAD de los PUERTOS de PUERTO RICO	CULEBRA CARGO RAMP TERMINAL IMPROVEMENTS ESA SECTION 7 CONSULTATION	BASELINE SURVEY SARDINAS BAY	ATKINS	FIGURE 4

4.2. Interrelated and Interdependent Actions in Relation to the Affected Environment.

4.2.1. San Ildefonso, Ensenada Honda

The proposed construction will take place within a previously impacted area that was originally modified by the by the US Navy to established the Culebra Naval Reservation. See ***Figure 2***, ***Aerial Photograph of San Ildefonso taken in 1964***.

The proposed Culebra Auxiliary Cargo Ferry Terminal includes the construction of a floating pontoon platform measuring 40 feet in length with a width of 56 feet (2,334.18 square feet) and 4 to 6 round steel pipes with a diameter of 14 inches, driven into the bottom 35 to 38 feet below msl. A vehicular bridge (platform) measuring 35 feet long by 22 feet wide (770 square feet) will connect the pontoon platform to land. An aluminum catwalk will connect the existing pier and the pontoon platform, allowing passengers to board and disembark the ferry while docked. A pile cap and fender measuring 56 feet in length by 6 feet in width (336 square feet) with approximately ten H-piles that will measure 14 inches will be installed on the seaward side of the pontoon platform, with two new cast steel bollards installed at its ends. This structure will allow the cargo ferry to dock with the pontoon platform without damaging the structure. No demolition work or dredging will take place at the area.

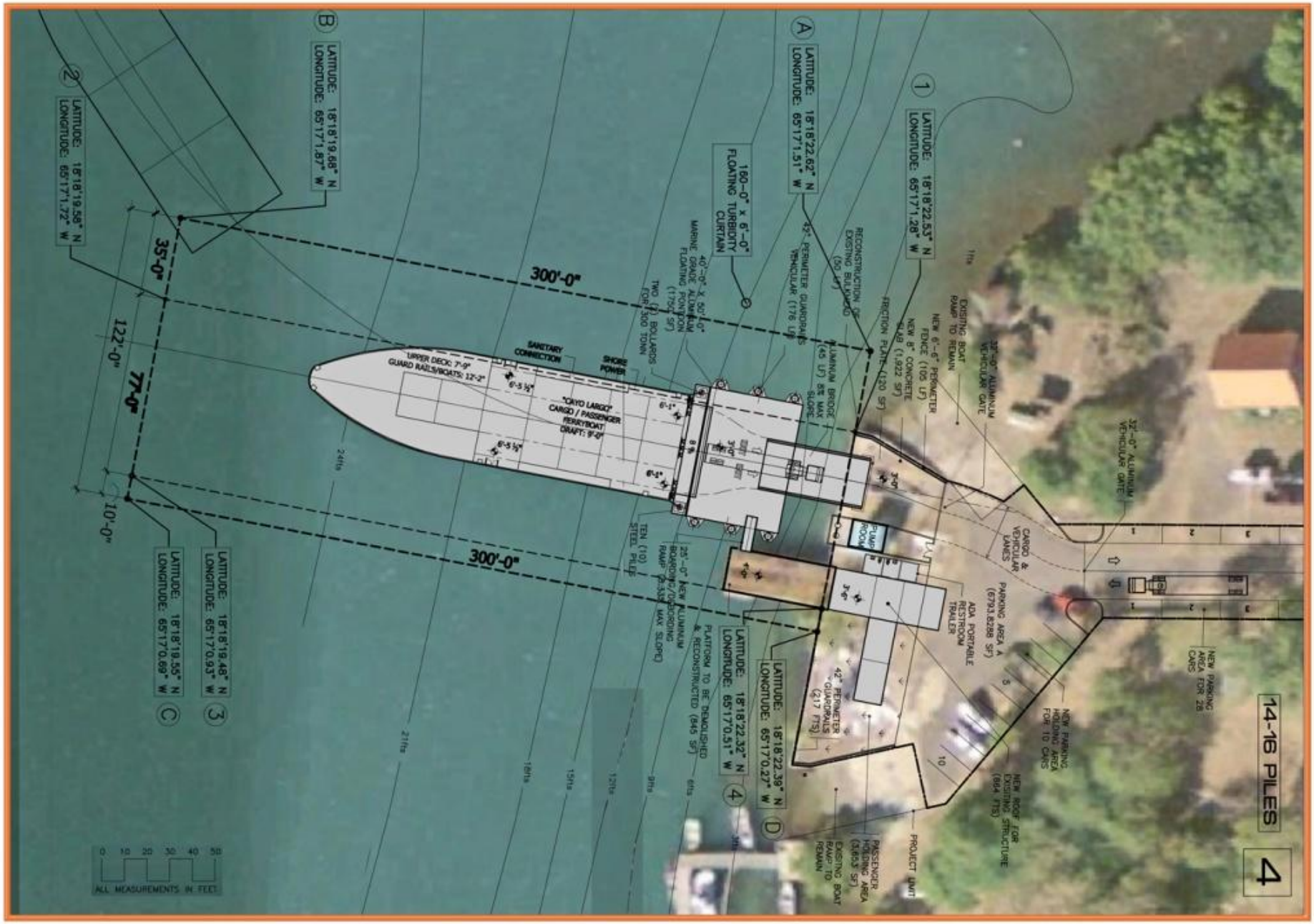
See ***Figure 5***, ***Proposed Layout Plan for the Auxiliary Cargo Ferry Terminal, San Ildefonso***, ***Figure 6, Proposed Plan for the Auxiliary Cargo Ferry Terminal, San Ildefonso*** and ***Figure 7, Proposed Section for the Auxiliary Cargo Ferry Terminal, San Ildefonso.***

The construction is estimated to last 6 months. During this period, one barge will use retrievable spuds to secure itself in position, temporarily impacting the sandy bottom. Once this auxiliary platform is completed, the scheduled cargo ferry service from Fajardo to Culebra will dock at San Ildefonso while the existing cargo platform in Sardinas Bay is demolished and rebuilt.

Approximately twelve construction workers are expected to find lodging within Culebra for the duration of the works, or may arrive daily using the passenger ferry service or via the daily scheduled flights that serve the Island. This number of workers is insignificant when compared

to the number of tourists that visit Culebra, and thus are not anticipated to result in any action that may impact endangered species in the area.

There are no permanent actions that are interrelated or interdependent with the reconstruction of the Auxiliary Cargo Ferry Terminal. After the demolition and construction operations in Sardinas Bay are completed, the scheduled cargo ferry traffic will be restored to the existing terminal, and the use of the Auxiliary Cargo Ferry Terminal will be limited to a back-up resource during emergency situations.



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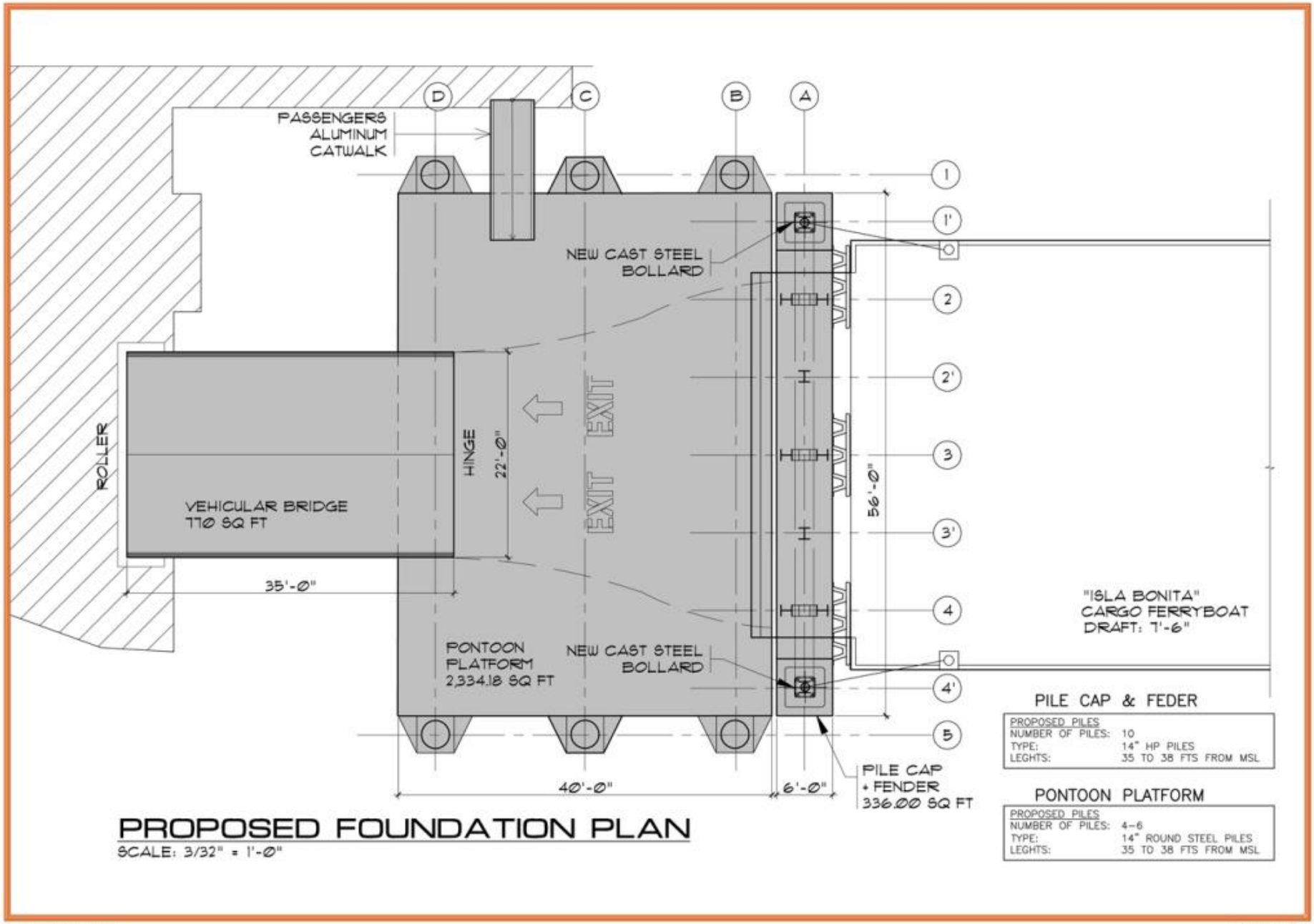
Source: Atkins

AUTORIDAD de los PUERTOS de PUERTO RICO	CULEBRA CARGO RAMP TERMINAL IMPROVEMENTS ESA SECTION 7 CONSULTATION	PROPOSED LAYOUT PLAN FOR THE AUXILIARY CARGO FERRY	ATKINS	FIGURE 5



PROPOSED FOUNDATION PLAN

SCALE: 3/32" = 1'-Ø"

PILE CAP & FEDER

PROPOSED PILES	
NUMBER OF PILES:	10
TYPE:	14" HP PILES
LEGHTS:	35 TO 38 FTS FROM MSL

PONTOON PLATFORM

PROPOSED PILES	
NUMBER OF PILES:	4-6
TYPE:	14" ROUND STEEL PILES
LEGHTS:	35 TO 38 FTS FROM MSL

*Drawing not to Scale

Source: Atkins

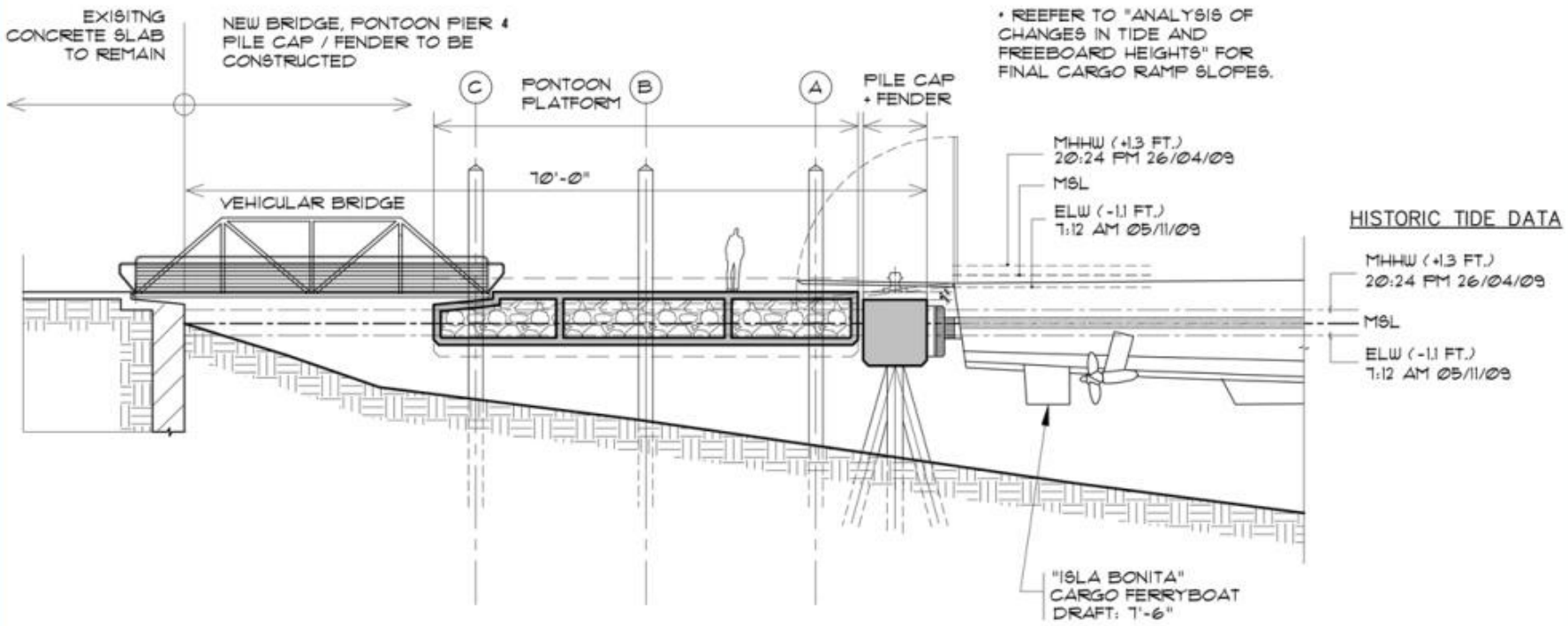
AUTORIDAD de los PUERTOS de PUERTO RICO

CULEBRA CARGO RAMP TERMINAL IMPROVEMENTS ESA SECTION 7 CONSULTATION

PROPOSED PLAN FOR THE AUXILIARY CARGO TERMINAL IN SAN ILDEFONSO

ATKINS

FIGURE 6



PROPOSED SECTION A-A

SCALE: 3/32" = 1'-0"

*Drawing not to Scale

Source: Atkins

AUTORIDAD de los PUERTOS de PUERTO RICO	CULEBRA CARGO RAMP TERMINAL IMPROVEMENTS ESA SECTION 7 CONSULTATION	PROPOSED SECTION FOR THE AUXILIARY CARGO FERRY TERMINAL, SAN ILDEFONSO	ATKINS	FIGURE 7

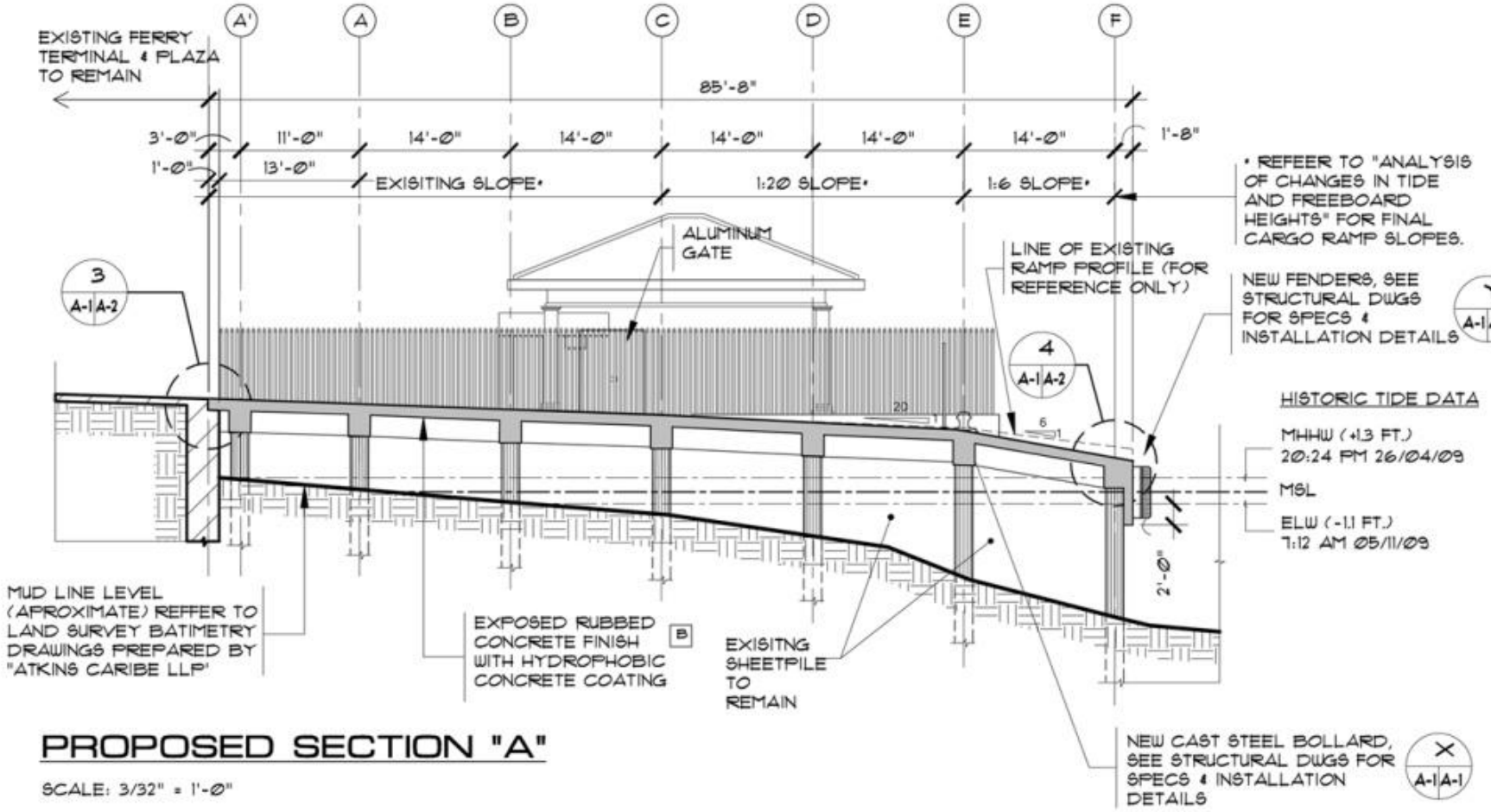
4.2.2. Sardinas Bay

The proposed action consists of the reconstruction of the Culebra Cargo Ramp and the addition of a catwalk or narrow bridge for the safe boarding of passengers. The existing cargo ramp is to be demolished and reconstructed. All 27 existing 15 by 15 inch H-piles will be cut at the mudline, demolition of the existing concrete platform that measures approximately 4,907 square feet, driving 25 replacement piles 20 inches in diameter over the existing Cargo Ramp footprint, and construction of a replacement Cargo Ramp of approximately 5,501 square feet. The demolished, uncontaminated material, with an estimated volume of 204 cubic yards, will be disposed at the Culebra Landfill or a previously approved location where it could be used as bank-stabilizing rip rap.

In order to upgrade to current codes and standards, an approximately 3 by 30 meter (9.8 by 98.4 feet) catwalk is proposed to be added to the project footprint that will allow ferry passengers to board and disembark safely and not through the cargo ramp. At the end of the catwalk, there will be a mooring dolphin for improved docking safety and usability of the Cargo Ramp, adding 3 pilings 20 inches in diameter. The catwalk will be narrow for its height above msl, approximately 6 feet; however, it will project a shadow over the sandy seafloor. ***Figure 8*** is the ***Proposed Section for the Cargo Platform in Sardinas Bay*** and ***Figure 9, Proposed Layout Plan for Cargo Ferry Terminal in Sardinas Bay***.

The estimated construction period is six months. During this time, one barge will use retrievable spuds to secure itself in position, temporarily impacting the sandy bottom. In the meantime, the cargo ferry traffic will be taken elsewhere, therefore reducing the ferry traffic in Sardinas Bay. Approximately 12 construction workers are expected to find lodging within Culebra for the duration of the works, or may arrive daily using the passenger ferry service or via the daily scheduled flights that serve the Island. This number of workers is insignificant when compared to the number of tourists that visit Culebra, and thus are not anticipated to result in any action that may impact the endangered species in the area.

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



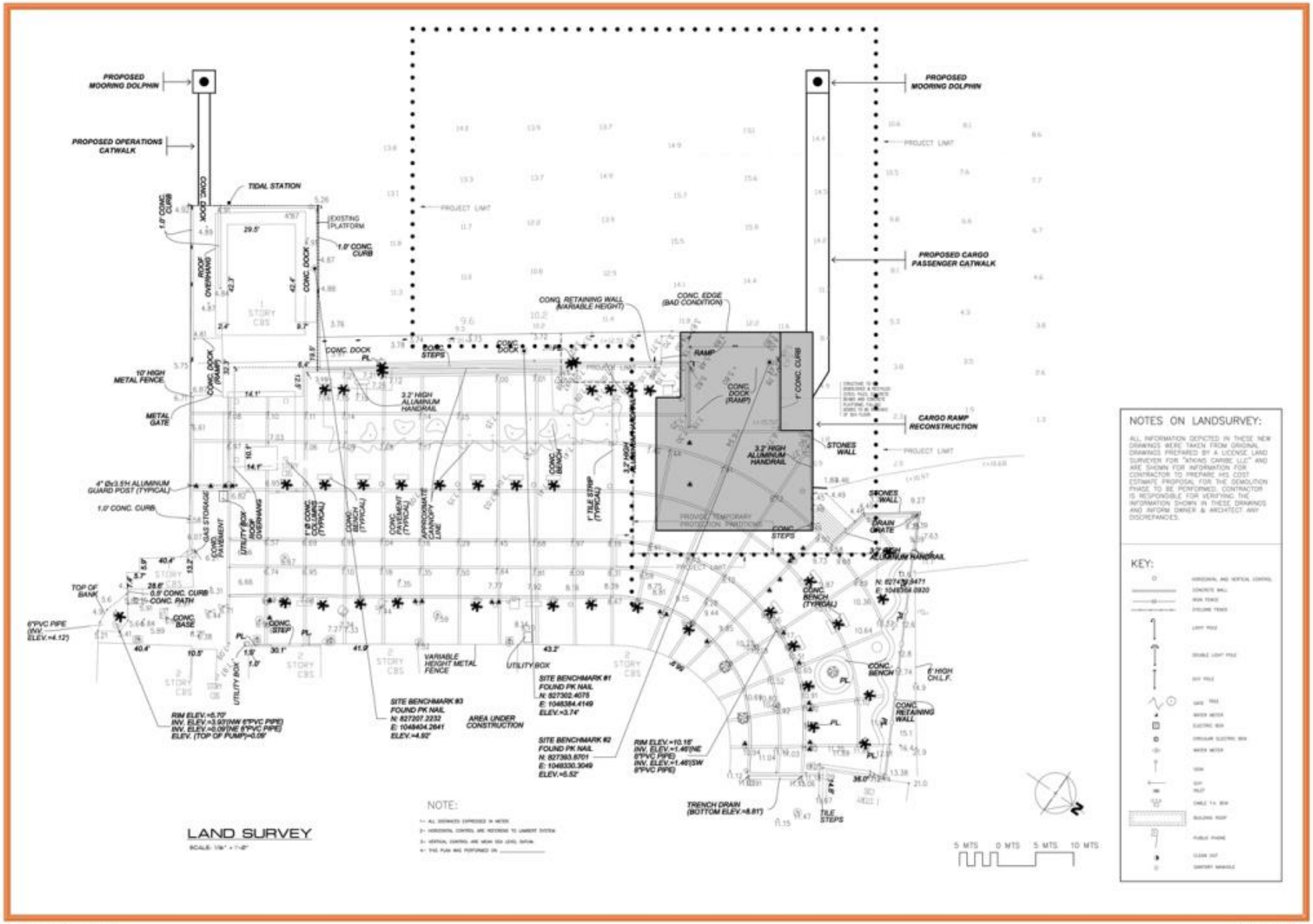
PROPOSED SECTION "A"

SCALE: 3/32" = 1'-0"

*Drawing not to Scale

Source: Atkins

AUTORIDAD de los PUERTOS de PUERTO RICO	CULEBRA CARGO RAMP TERMINAL IMPROVEMENTS ESA SECTION 7 CONSULTATION	PROPOSED SECTION FOR THE CARGO PLATFORM SARDINAS BAY	ATKINS	FIGURE 8



*Drawing not to Scale

Source: Atkins

AUTORIDAD de los PUERTOS de PUERTO RICO	CULEBRA CARGO RAMP TERMINAL IMPROVEMENTS ESA SECTION 7 CONSULTATION	PROPOSED LAYOUT PLAN FOR CARGO FERRY TERMINAL IN SARDINAS BAY	ATKINS	FIGURE 9

4.3. Summary of Alternatives Analysis

Direct Impacts	EXISTING CARGO RAMP RECONSTRUCTION			EXISTING CARGO RAMP RECONSTRUCTION		Auxiliary Facilities Fulladosa Dock	Auxiliary Facilities San Ildefonso, *(Selected Option)*	No Action Alternative
	Auxiliary Facility at Sardinas Bay	Pilings *(Restore Existing)*	Pilings *(Replace-Leave Standing)*	Reconstruction of Cargo Ramp at Sardinas Bay	Pilings *(Cut @ Mudline & Remove),*			
Project Cost	$10-13 million			$2.3 million		$8-9 million	$2.4 million	N/A
Practicability Feasibility	This is not a viable option due to logistic and operational concerns. The area suggested for the arrival and unloading of goods is not designed to withstand the weight of vehicles and would create a logistics disaster for the operation of the passenger ferry. In addition, the existing dock would require modifications to the passenger area, such as the demolition of existing structures, which would allow the installation of a ramp to offload vehicles. These would significantly increase costs.	Currently, the restoration of the pilings is not considered a safe option due to the advanced state of corrosion. If these pilings are restored, they would soon need replacement due to their shortened useful lifespan.	This option is not viable due to the limited space that will be available between the actual and proposed pilings; the probability of damaging the structures that are left standing during the placement of new pilings is extremely high, and the potential to damage encrusting organisms is high (the reason to leave pilings standing to begin with).	A full reconstruction is the only viable option for the existing cargo ramp. Currently, the cargo ramp is not safe for the ferry to disembark its cargo; most pilings are rotted, with exposed structural elements (rebar) and a generally weakened structure. To proceed with the cargo ramp reconstruction, the existing cargo operations must be relocated to an auxiliary facility off site.	The most viable option under consideration; the existing piles would be cut at the mudline and removed for proper disposal. No endangered species of coral were found within the existing pilings.	Currently, the Fulladosa Dock is not a viable option due to the required dredging, and ample modifications required for the existing dock; no areas available for public facilities, no room for staging areas, no water or electric connections, and the excessive disruption of local traffic during use.	Best option available. San Ildefonso currently has available public facilities, an existing dock, staging area, and water/electric services, as well as an adequate road access. Located within Ensenada Honda, no dredging will be required for the cargo ferry to dock.	Under the No Action Alternative, the existing cargo terminal would remain in its actual condition. The cargo ferry would continue using a cargo ramp that is not safe or suitable for use. If a structural failure occurs, the residents of Culebra would be left without any supplies or fuel, as there is no other suitable port for the cargo ferry.
Estimated Duration	N/A	N/A	N/A	6 months	N/A	N/A	6 months	N/A
Wetlands & Floodplains	No impacts to wetlands are expected, as the proposed location for the temporary docking facilities lie in a previously developed and impacted (asphalted) area.	None. The proposed location for the temporary docking facilities lie in a previously developed (asphalted) area.	None. The proposed location for the temporary docking facilities lie in a previously developed (asphalted) area.	None. The proposed location for the temporary docking facilities lie in a previously developed (asphalted) area.	None. The proposed location for the temporary docking facilities lie in a previously developed (asphalted) area.	Approximately two acres of bottom would require dredging to accommodate the berthing area.	No impacts to wetlands are expected, as the proposed location for the temporary docking facilities does not require dredging.	No impacts to wetlands & floodplains are expected if the No Action Alternative is selected.
Water Quality	Temporary impacts on surface waters of Sardinas Bay could occur during the demolition of the existing dock and during the construction of the proposed dock, increasing turbidity due to resuspended sediments. No dredging activities are proposed for the project. The placement of a turbidity barrier would limit the reach of suspended sediments into the outer bay.	Temporary impacts on surface waters of Sardinas Bay could occur during the restoration of the existing pilings due to the resuspension of bottom sediments during the operation, increasing turbidity. No dredging activities are proposed for the project. The placement of a turbidity barrier would limit the reach of suspended sediments into the outer bay.	Temporary impacts on surface waters of Sardinas Bay could occur during the restoration of the existing pilings due to the resuspension of bottom sediments during the operation, increasing turbidity. No dredging activities are proposed for the project. The placement of a turbidity barrier would limit the reach of suspended sediments into the outer bay.	Temporary impacts on surface waters of Sardinas Bay could occur during the demolition of the existing dock and during the construction of the proposed dock, increasing turbidity due to suspended sediments. No dredging activities are proposed for the project. The placement of a turbidity barrier would limit the reach of suspended sediments into the outer bay.	Temporary impacts on surface waters of Sardinas Bay could occur during the restoration of the existing pilings due to the resuspension of bottom sediments during the operation, increasing turbidity. No dredging activities are proposed for the project. The placement of a turbidity barrier would limit the reach of suspended sediments into the outer bay.	Temporary impacts on surface waters of areas near the Fulladosa Dock in Ensenada Honda could occur during improvements required for the existing dock, increasing turbidity due to suspended sediments. No dredging activities are proposed. To prevent the dispersion of sediments, a turbidity barrier will be placed surrounding the work area.	Temporary impacts on surface waters of Ensenada Honda could occur during improvements required for the existing dock, increasing turbidity due to suspended sediments. No dredging activities are proposed for the project. To prevent the dispersion of sediments, a turbidity barrier will be placed surrounding the work area.	No impacts to water quality are expected if the No Action Alternative is selected.
Historic Properties	No historic/cultural resources will be affected during project construction. This location has been under development since before the US Navy moved the town of Culebra from its previous location in San Ildefonso to Sardinas Bay.	No historic/cultural resources will be affected during project construction. This location has been under development since before the US Navy moved the town of Culebra from its previous location in San Ildefonso to Sardinas Bay.	No historic/cultural resources will be affected during project construction. This location has been under development since before the US Navy moved the town of Culebra from its previous location in San Ildefonso to Sardinas Bay.	No historic/cultural resources will be affected during project construction. This location has been under development since before the US Navy moved the town of Culebra from its previous location in San Ildefonso to Sardinas Bay.	No historic/cultural resources will be affected during project construction. This location has been under development since before the US Navy moved the town of Culebra from its previous location in San Ildefonso to Sardinas Bay.	No historic/ cultural resources will be affected during project construction.	No historic/cultural resources will be affected during project construction. Historic resources at the site have been identified and will be avoided.	No impacts to historic properties are expected if the No Action Alternative is selected.

Direct Impacts	EXISTING CARGO RAMP RECONSTRUCTION			EXISTING CARGO RAMP RECONSTRUCTION		Auxiliary Facilities Fulladosa Dock	Auxiliary Facilities San Ildefonso, *(Selected Option)*	No Action Alternative
	Auxiliary Facility at Sardinas Bay	Pilings *(Restore Existing)*	Pilings *(Replace-Leave Standing)*	Reconstruction of Cargo Ramp at Sardinas Bay	Pilings *(Cut @ Mudline & Remove),*			
Minorities & Low Income Population	No direct impacts to minorities & low income population are expected as a result of the construction.	No direct impacts to minorities & low income population.	No direct impacts to minorities & low income population.	On average, Culebra residents have a lower income than the rest of the Puerto Rico residents. Due to the demolition and construction of the existing cargo ramp, it is necessary to identify an alternative area to use as an offsite auxiliary cargo ramp that will allow an uninterrupted cargo ferry service to the Culebra population.	No direct impacts to minorities & low income population.	No direct impacts to minorities & low income population.	This alternative will offer an uninterrupted service to the island residents and will decrease air quality and noise impacts to the town of Dewey, a densely populated town center. This project will generate revenue for the local economy during construction.	If the No Action Alternative is chosen, low income population will be affected if the structure of the existing cargo ramp fails; this segment of the population does not have the purchasing power to use alternative means of transportation for their daily needs.
Threatened & Endangered (T&E) Corals (ESA Resources)	Among the 6 families of corals that were identified on the pilings and along the seawall, no T&E corals are present. The colonies that are attached to the pilings and sections of the seawall that could be affected could be removed and relocated to another agreeable area.	Among the 6 families of corals that were identified on the pilings and along the seawall, no T&E corals are present. The colonies that are attached to the pilings and sections of the seawall that could be affected could be removed and relocated to another agreeable area.	Among the 6 families of corals that were identified on the pilings and along the seawall, no T&E corals are present. The colonies that are attached to the pilings and sections of the seawall that could be affected could be removed and relocated to another agreeable area.	Among the 6 families of corals that were identified on the pilings and along the seawall, no T&E corals are present. The colonies that are attached to the pilings and sections of the seawall that could be affected could be removed and relocated to another agreeable area.	Among the 6 families of corals that were identified on the pilings and along the seawall, no T&E corals are present. The colonies that are attached to the pilings and sections of the seawall that could be affected could be removed and relocated to another agreeable area.	Although the use of this location is not a viable option, an assessment could be made to confirm if any T&E coral colonies are present within this site's project footprint. .	No T&E corals are present within the proposed project footprint. The colonies that are attached to the pilings and sections of the seawall that could be affected could be removed and relocated to another agreeable area.	No impacts to T&E Corals are expected if the No Action Alternative is selected.
T&E Sea Turtles & Manatees (ESA Resources)	No direct impacts are expected to Manatees and/or any species of Sea Turtles.	No direct impacts are expected to Manatees and/or any species of Sea Turtles.	No direct impacts are expected to Manatees and/or any species of Sea Turtles.	No direct impacts are expected to Manatees and/or any species of Sea Turtles.	No direct impacts are expected to Manatees and/or any species of Sea Turtles.	No direct impacts are expected to Manatees and/or any species of Sea Turtles.	No direct impacts are expected to Manatees and/or any species of Sea Turtles.	No direct impacts are expected to Manatees and/or any species of Sea Turtles.
PRASA Intake	N/A	N/A	N/A	N/A	N/A	N/A	Sediment re-suspension that may result from the construction and operation of the proposed facility may reach the PRASA intake. Turbidity screens may reduce this potential impact. This PRASA plant has not operated in over one year, yet it has several filtration	No impacts to the PRASA desalination plant are expected if the No Action Alternative is selected.
Land Traffic	Traffic is not expected to increase during the construction of the facilities, due to the fact that all of the required demolition and construction operations will be performed away from transited areas. In addition, all construction equipment and supplies will be located on a barge that will be moored to the terminal.	Traffic is not expected to increase during the construction of the facilities, due to the fact that all of the required demolition and construction operations will be performed away from transited areas. In addition, all construction equipment and supplies will be located on a barge that will be moored to the terminal.	Traffic is not expected to increase during the construction of the facilities, due to the fact that all of the required demolition and construction operations will be performed away from transited areas. In addition, all construction equipment and supplies will be located on a barge that will be moored to the terminal.	Traffic is not expected to increase during the construction of the facilities, due to the fact that all of the required demolition and construction operations will be performed away from transited areas. In addition, all construction equipment and supplies will be located on a barge that will be moored to the terminal.	Traffic is not expected to increase during the construction of the facilities, due to the fact that all of the required demolition and construction operations will be performed away from transited areas. In addition, all construction equipment and supplies will be located on a barge that will be moored to the terminal.	This alternative would significantly interrupt street traffic during its improvements and operation. In addition, most of the arriving cargo would have to travel through narrow roads before reaching Culebra Town.	Traffic is not expected to increase during the construction of the facilities, due to the fact that all of the required demolition and construction operations will be performed away from transited areas. In addition, all construction equipment and supplies will be located on a barge that will be moored to the terminal.	No impacts to land traffic are expected if the No Action Alternative is selected.

Direct Impacts	EXISTING CARGO RAMP RECONSTRUCTION			EXISTING CARGO RAMP RECONSTRUCTION		Auxiliary Facilities Fulladosa Dock	Auxiliary Facilities San Ildefonso, *(Selected Option)*	No Action Alternative
	Auxiliary Facility at Sardinas Bay	Pilings *(Restore Existing)*	Pilings *(Replace-Leave Standing)*	Reconstruction of Cargo Ramp at Sardinas Bay	Pilings *(Cut @ Mudline & Remove),*			
Marine Traffic	Both passenger and cargo ferries will keep their current schedule.	No direct impacts are expected to marine traffic. Both passenger and cargo ferries will keep their current schedule.	No direct impacts are expected to marine traffic. Both passenger and cargo ferries will keep their current schedule.	No direct impacts are expected to marine traffic. Both passenger and cargo ferries will keep their current schedule. However, the trip to the Auxiliary Terminal in San Ildefonso will add a distance of approximately 5.3 miles to the Fajardo-Culebra route since the cargo ferry will have to head southeast and travel around Punta Soldado, before heading north and entering the channel that leads to Ensenada Honda.	No direct impacts are expected to marine traffic. Both passenger and cargo ferries will keep their current schedule.		Marine traffic may be affected by the scheduled arrival of the cargo ferry at San Ildefonso in Ensenada Honda. Anchored vessels may be affected by the wake of the passing vessel. Properly marked buoys identifying the navigational channel and "no wake zone" should be placed for navigational safety. Navigation/marker buoys are presently found in the entrance to Ensenada Honda.	No impacts to marine traffic are expected if the No Action Alternative is selected.
Public Health & Safety	This alternative does not pose a public health and safety risk.	This alternative does not pose a public health and safety risk.	This alternative does not pose a public health and safety risk.	This alternative does not pose a public health and safety risk.	This alternative does not pose a public health and safety risk.	This alternative does not pose a public health and safety risk.	Does not represent a direct impact on public health. However, the rocking motion caused by the wake of the arriving ferry may pose a risk to vessels anchored within Ensenada Honda, although there is a relatively long distance from the proposed cargo ferry dock and the anchorage areas within Ensenada Honda.	No impacts to public health & safety are expected if the No Action Alternative is selected.
Noise	Noise levels are expected to increase during the demolition and construction of the cargo platform facilities. Approximately 25 concrete piles with a diameter of nearly 16 inches will be driven into the seafloor; the noise generated by the impact hammer can be reduced by the use of cushion blocks/caps. Noise levels will return to normal/pre-existing levels once the Sardinas Bay cargo ramp is completed.	Noise levels are expected to increase during the demolition and construction of the cargo platform facilities.	Noise levels are expected to increase during the demolition and construction of the cargo platform facilities.	Noise levels are expected to increase during the demolition and construction of the cargo platform facilities. Approximately 25 concrete piles with a diameter of nearly 16 inches will be driven into the seafloor; the noise generated by the impact hammer can be reduced by the use of cushion blocks/caps Noise levels will return to normal/pre-existing levels once the Sardinas Bay cargo ramp is completed.	Noise levels are expected to increase during the demolition and construction of the cargo platform facilities.	Noise levels are expected to increase during the construction and operation of the temporary facilities. Four steel piles will be driven into the seafloor to anchor the temporary dock into position; the noise generated by the impact hammer can be reduced by the use of cushion blocks/caps Noise levels will return to normal once the Sardinas Bay cargo ramp is completed	Noise levels are expected to increase during the construction and operation of the temporary facilities. Between 14-16 steel piles will be driven into the seafloor to anchor the temporary dock and stabilizing beam into position; the noise generated by the impact hammer can be reduced by the use of cushion blocks/caps. Noise levels will return to normal in the San Ildefonso area once the Sardinas Bay cargo ramp is completed.	No impacts to noise are expected if the No Action Alternative is selected.

5. Biology of the Species

5.1. West Indian Manatee – (E)

The West Indian Manatee (*Trichechus manatus manatus*) is a large, fully aquatic, slow moving, mostly herbivorous mammal with paired flippers and a round, paddle-shaped tail. Three living species within the family Trichechidae (order Sirenia) are known to exist; the Amazonian Manatee (*T. inunguis*), the West African Manatee (*T. senegalensis*) and the West Indian Manatee (*T. manatus manatus*). The Florida Manatee (*T. manatus latirostris*) is considered a subspecies of the West Indian Manatee. The 4th species within the order Sirenia is the Dugong (*Dugong dugon*), which inhabits coastal areas throughout the Indo-Pacific Oceans.

5.1.1. Species Biology:

On average, adult *T. manatus* reaches lengths between 8 to 15 feet and weighs approximately 1,000 pounds. They are generally grey in color, ranging from black to light brown and are occasionally spotted with barnacles or colored by patches of green or red algae. *T. manatus* has a large snout covered in stiff whiskers called vibrissae, which are used as sensory tools. Their lips are uniquely shaped to allow them to manipulate and grasp their food, mostly seagrasses such as turtle grass *(Thalassia testudinum)*, manatee grass *(Syringodium filiforme)*, paddle grass *(Halophila decipiens)*, and other aquatic plants that grow in shallow coastal waters. Manatees occasionally feed on mangrove leaves.

The sex of *T. manatus* is distinguished by the position of their genital openings and the presence or absence of mammary glands. In addition, females appear bulkier than males of the same length. *T. manatus* generally breeds once every two years, occurring throughout the year. Females reach sexual maturity at five years of age, while males mature at approximately nine years. The gestation period is approximately 13 months. At birth, calves are between 3 to 4 feet long and weigh between 40 to 60 pounds, nursing for up to two years. In the wild, *T. manatus* may reach the age of 30 years.

5.1.2. Current Conditions:

a. Range-Wide: *T. manatus* ranges freely between marine, estuarine, and freshwater environments in Puerto Rico. The species is most abundant along the south and east coasts of Puerto Rico, particularly in the area of Fajardo and Ceiba (Roosevelt Roads Naval Station) and in the Jobos Bay area between Guayama and Salinas. In general, manatees are not abundant on the north coast, although they are rarely seen in areas immediately to the west of San Juan[1] . *T. manatus* is generally absent from Mona Island and the Virgin Islands and are rarely seen near Culebra[2]. Besides stromwater drains, Culebra does not have any freshwater sources available, one of the specific habitat requirements for *T. manatus* to thrive, in addition to feeding areas (seagrass beds) and areas protected from surf and wind, where they rest. *T. manatus* may spend between six and eight hours a day feeding in shallow water, consuming approximately five to ten percent of their body weight each day.

b. In Project Area:

San Ildefonso, Ensenada Honda: *T. manatus* has been documented entering Ensenada Honda. Currently, the area provides most of the habitat requirements, as described in the Affected Environment Section. Ensenada Honda has an abundance of seagrass beds along its shoreline; however, no significant coverage is found within the proposed project area and its navigable waters. The paddle grass *(H. decipiens)* present in the project area are small, sparse to marginal in coverage, monotypic patches that provide a very limited grazing resource for herbivores such as *T. manatus*. A healthy, continuous seagrass bed of approximately 0.83 acres is located just west of the project, continuing west into Bahía del Cementerio. (see ***Figure 3, Benthic Habitat Map at San Ildefonso***).

Sardinas Bay: Although rare, *T. manatus* has been observed near Sardinas Bay. Currently, the area provides some of the habitat requirements, as described in the Affected Environment Section. Seagrass beds were documented northwest/west and southwest of the existing cargo ramp structure (***Figure 4, Baseline Survey at Sardinas Bay***); however,

[1] Mignucci Giannoni, 1989, Caribbean Stranding Network, unpubl. data
[2] Caribbean Stranding Network, unpubl. data

no significant coverage is found within the proposed project area. The seagrass beds closest to the project area are located approximately 150 feet northwest of the site.

c. Cumulative Effects of State and Private Actions in the Project Area:

San Ildefonso, Ensenada Honda: One of the largest threats to manatee safety are watercraft impacts and propellers. This puts any *T. manatus* individuals in danger of collision if they wander into waters with motorboat traffic; however, the species is rarely documented in the island of Culebra[3]. Although there is abundance of seagrass habitats and areas protected from surf and wind within Culebra, there are very limited sources of fresh water. Since individual Manatees have been sporadically documented within Ensenada Honda, a risk of collision between ships and *T. manatus* exists under any scenario. The action is anticipated to bring to Ensenada Honda ferries transporting both cargo and passengers (simultaneously), which are generally slow moving, compared to smaller crafts. Low ferry speeds generally provide more time for *T. manatus* to dodge the craft.

Furthermore, the proposed Auxiliary Cargo Terminal operation is temporary, thus decreasing the potential for cumulative effects. Once the construction at Sardinas Bay is completed, cargo operations will resume on the Sardinas Bay terminal, and the use of the auxiliary terminal in San Ildefonso will be reduced to emergency situations, minimizing the probability of any impact in the area.

Sardinas Bay: The presence of *T. manatus* in the area is not common, as the species is rarely seen in the island of Culebra[3]. Seagrass beds were documented northwest/west and southwest of the existing cargo ramp structure; however, no significant seagrass cover is found within the proposed project area.

d. Consultations of the Federal Action Agency in the Area to Date:

The project was presented at the monthly Interagency Taskforce Meeting of July 2nd, 2014. At that time, the following Federal and State Agencies were represented: The US Army

[3] USFWS Ecological Services in the Caribbean; *Trichechus manatus manatus* Factsheet (http://www.fws.gov/caribbean/es/manatee_factsheet.html)

Corp of Engineers (USACE), the US Fish and Wildlife Service (USFWS), the US Environmental Protection Agency (EPA), NOAA-National Marine Fisheries Service (NMFS) Federal Emergency Management Agency (FEMA), State Historic Preservation Office (SHPO) Federal Highway Administration (FHWA), the PR Environmental Quality Board (JCA), the PR Ports Authority (PRPA), the PR Planning Board and the Municipality of Culebra, including its Mayor.

5.1.3. Describe Critical Habitat:

No critical habitat rules have been officially published for the West Indian Manatee *(T. manatus manatus)*.

5.1.4. Describe the Effects of the Proposed Action on the Species:

There are three potential adverse effects associated with the construction of the auxiliary terminal and replacement of the cargo platform:

- Collisions with moving vessels related to the construction
- Squeezing of individuals between vessels and the terminal
- Noise and vibrations

The proposed Sardinas Bay project site does not have the characteristics of a “habitat of interest” or “suitability” for *T. manatus;* therefore, no negative effects are anticipated on the species.

The proposed project of the San Ildefonso site in Ensenada Honda is located in an area where the species has been sporadically observed. It does not harbor a regular manatee population, and sightings of individuals have been infrequent and sporadic, so there is very limited possibility that individuals may travel by the site. Up to three individuals (August 18, 2014 personal communication by USFWS biologist Ricardo J. Colón) have been sighted within the last two months in Ensenada Honda.

a. **Direct Effects:** During construction of the project, any incoming or outgoing vessels maneuvering in or near the areas of Sardinas Bay and San Ildefonso in Ensenada

Honda poses a collision and squeezing risk to individuals that enter the area. However, the construction is anticipated to generate very few vessel movements, averaging less than one per day. This, in combination with rare presence of individual manatees, makes this a very low risk scenario. A barge with the required construction equipment will be docked at the site, limiting maritime traffic in the area. In addition, turbidity barriers will be installed surrounding both construction sites in Sardinas and Ensenada Hondas, to prevent any *T. manatus* from entering the immediate area. The chance of collision with an individual will remain the same during the project operation.

Almost all marine traffic into Sardinas Bay is produced by ATM ferries providing transportation (passengers and cargo) service to and from Fajardo. The following table is a current schedule for the ATM ferry trips from Culebra to Fajardo.

Table 1: Scheduled Ferry Trips Fajardo/Culebra

Days	Fajardo to Culebra	Culebra to Fajardo
Monday through Friday	4:00 am; 9:30 am	6:30 am; 1:00 pm
Wednesday through Friday	5:00 pm	7:00 pm
Saturday and Sunday	7:00 pm	6:30 am

Currently, no scheduled boat services are operating in Ensenada Honda. However, the area is a favorite anchoring location for sailors and local boaters due to the natural protection it offers. Presently, individual manatees that enter Ensenada Honda are at risk of collision with the existing maritime traffic. This risk is not expected to increase during the operation of the Auxiliary Cargo Ferry Terminal, due to the limited presence of the species, the limited number of trips by the cargo ferry and the slow travelling speed of the vessel, compared to recreational motorboats.

Manatees are mobile individuals, traveling up to 45 miles in a single day (STMC, 2013). Noise and vibrations produced during the pile driving operation has the potential to scare the manatees away from the disturbance source. Given the rare occurrence of *T. manatus* individuals in either Sardinas Bay or San Ildefonso in Ensenada Honda and their ability to move away from threats, the proposed project does not appear to be a risk to individual manatees or to the species. Additionally, both Sardinas Bay and the San

Ildefonso in Ensenada Honda projects will be surrounded by a synthetic turbidity barrier from the water surface to the bottom, which should provide at least some dampening and physical barrier to prevent individual manatees from approaching the impact area.

The risk of squeezing of individuals between vessels and the terminal is very low. There is a minimum distance of approximately six feet between the barge and the seawall, including three feet between the bull rail and the pilings and the stand-off fender system. Six feet is sufficient distance to prevent manatees from physically getting squeezed in these spaces, particularly considering the escape response ability of *T. manatus*. In addition, no vessel movements are expected once the turbidity barrier is set. This risk decreases further considering the general absence of manatees in Culebra.

b. **Indirect Effects:**

No indirect effects are expected for the species from the proposed action in either Sardinas Bay or San Ildefonso in Ensenada Honda projects.

c. **Potential Incidental Take Resulting from Project Activities:**

No incidental takes of *T. manatus* are expected to occur during project activities in either Sardinas Bay or San Ildefonso in Ensenada Honda projects.

5.1.5. Conservation Measures:

The proposed action includes the implementation of the NOAA protocol for the identification and response to the presence of manatee individuals within the construction. Refer to **Section 6.1.1.** for further details. Although there is a very low probability of any *T. manatus* occurring within the sites at Sardinas Bay and San Ildefonso in Ensenada Honda, a dedicated manatee monitor should be assigned to watch for manatee conflicts while construction is underway.

5.1.6. Conclusions:

The proposed actions are not likely to affect individuals of this species or the species itself due to the rare presence of *T. manatus* individuals within the project areas of Sardinas Bay and San Ildefonso in Ensenada Honda.

5.2. Sea Turtles – (T & E)

Three species of sea turtle commonly occur in waters of Puerto Rico: the Green *(Chelonia mydas)*, Hawksbill *(Eretmochelys imbricata)*, and Leatherback *(Dermochelys coriacea)* Sea Turtles. All three are listed as **E** (endangered) under the Puerto Rico Regulation 6766. Under the federal ESA, the population of the Green Sea Turtle *(Chelonia mydas)* in Puerto Rico is classified as **T** (Threatened), while populations of both Hawksbill Sea Turtle *(Eretmochelys imbricata)* and Leatherback Sea Turtle *(Dermochelys coriacea)* are classified as **E** (Endangered).

Sea turtles are under the joint jurisdiction of the National Marine Fisheries Services and the U.S. Fish and Wildlife Service (DNER, 2004). The National Oceanographic and Atmospheric Administration's National Marine Fisheris Service (NMFS) has designated the waters surrounding the island of Culebra from the mean high water line seaward to 3 nautical miles (5.6 km) as Critical Habitat for the Green Sea Turtle (*Chelonia mydas)*. These waters include its outlying Keys of the island including Cayo Norte, Cayo Ballena, Cayos Geñiqui, Isla Culebrita, Arrecife Culebrita, Cayo de Luis Peña, Las Hermanas, El Mono, Cayo Lobo, Cayo Lobito, Cayo Botijuela, Alcarraza, Los Gemelos, and Piedra Steven[4].

- **Hawksbill Sea Turtle** *(Eretmochelys imbricata)* **E**: The endangered Hawksbill Sea Turtle is one of seven species of sea turtles found throughout the world. One of the smaller sea turtles, it has overlapping scutes (plates) that are thicker than those of other sea turtles. This protects them from being battered against sharp coral and rocks during storm events. Adults range in size from 30-36 inches (0.8-1.0 meters) carapace length, and weigh 100-200 pounds (45-90 kilograms). Its carapace (upper shell) shows an attractive dark brown with faint yellow streaks and blotches and a yellow plastron (under shell). The name "hawksbill" refers to its prominent hooked beak, useful for its diet of sponges and other invertebrates. Females return to the beaches where they

[4] Federal Register/ Vol. 63, No. 170 / Wednesday, September 02, 1998 (46693-46701) US Fish and Wildlife Service

were born (natal beaches) to nest, which occurs every two to trhee years at night and approximately every 14-16 days during the nesting season (DNER, 2004).

At sea, *E. imbricata* typically occur in hard-bottom and reef-dominated habitats, as well as seagrass and algal beds, but are also found in mangrove lagoons and shallow inlets, remote oceanic islands, offshore cays, and mainland shores. Commonly, nesting sites are located above high tide levels, females preferring sandy beaches with well-developed maritime forest, generally proximal to nearshore coral reef areas. After an epipelagic post-hatchling phase of unknown duration, but presumed to be several years, immature *E. imbricata* recruit to benthic continental shelf habitats in what has been termed an “oceanic-neritic development pattern”, the early juvenile development in the oceanic zone and later juvenile development in the neritic zone. *E. imbricata* have been characterized as obligate spongivores, but are also known to prey upon invertebrates such as corallimorpharians as mushroom coral, and zoanthids as colonial anemone-like polyps (Diez & van Dam 2002, 2005 and 2011; Blumenthal et al. 2009; Rincón-Díaz et al. 2011). Although seagrass habitats are not the most common habitat for *E. imbricata*, these habitats may become more important as coral reefs continue to decline (Diez et al. 2003; Bjorndal & Bolten 2010).

- **Green Sea Turtle** *(Chelonia mydas)* **T**: The Green Sea Turtle grows to a maximum size of about 4 feet and a weight of 440 pounds. It has a heart-shaped shell, small head, and single-clawed flippers. Color is variable. Hatchlings generally have a black carapace (upper shell), white plastron (under shell), and white margins along the shell and limbs. The adult carapace is smooth, keel-less, and light to dark brown with dark mottling; the plastron is whitish to light yellow. Adult heads are light brown with yellow markings. Identifying characteristics include four pairs of costal scutes, none of which borders the nuchal scute, and only one pair of prefrontal scales between the eyes. Females return to the same beaches where they were born ("natal" beaches) every two to four years to lay

eggs, generally in the summer months (DNER, 2004). Nesting typically occurs on high energy beaches with relatively deep, loose sand that are free of debris. Successful sites are located above high tide levels. *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". Individuals around Puerto Rico and the U.S. Virgin Islands forage frequently along extensive continuous or discontinuous bands of seagrass between deep coral reef habitats or barren mud bottoms, and dense seagrass beds. In extensive seagrass beds, feeding behavior of green turtles is limited to deeper zones; however, juveniles graze from shallow (3 feet) to deep areas (50 feet) in exposed and protected beds. In addition to seagrass beds, coral reef areas and other benthic features serve as refuge from predators and provide shelter between bouts of foraging.

- **Leatherback Sea Turtle** ***(Dermochelys coriacea)*** **E**: The endangered Leatherback Sea Turtle is the largest, deepest diving, and most migratory and wide ranging of all sea turtles. Adult Leatherback Sea Turtles can reach four to eight feet in length and weigh between 500-2000 pounds. The shell of this species is composed of a mosaic of small bones covered by firm, rubbery skin with seven longitudinal ridges or keels. The skin is predominantly black with varying degrees of pale spotting; including a notable pink spot on the dorsal surface of the head in adults. A toothlike cusp is located on each side of the gray upper jaw; while the lower jaw is hooked anteriorly. The paddle-like clawless limbs are black with white margins and pale spotting. Several times during a nesting season females will lay clutches of approximately 100 eggs, typically at 8-12 day intervals (DNER, 2004). *D. coriacea* feeds primarily eat jellyfish and other coelenterates that inhabit the water column in the open ocean and pelagic colonial tunicates. The

species is capable of maintaining elevated internal body temperature and therefore able to extend its distribution to cold northern waters; e.g., seasonal aggregations of *D. coriacea* are detected at temperate and boreal regions of the Atlantic in shelf and slope waters. Cold, open ocean waters have relatively high zooplankton productivity, including large cnidarians (e.g., *Cyanea capillata, Aurelia aurita*), which are favored as main prey items. These conditions are not present within the projects areas.

5.2.1. Describe Current Conditions:

a. **Range-Wide:** All three species of sea turtles are entirely marine. Only females return to land, usually to the same sandy beach where they were born, to lay their eggs.

- **Green Sea Turtle** *(Chelonia mydas)*: The species is often associated with algae and seagrass beds. Nesting, which typically occurs on high energy beaches with relatively deep, loose sand, free of debris, and successful sites are located above high tide levels, is rare on mainland Puerto Rico. However, two large nesting colonies have been identified in Vieques and one in Mona Island. Although nesting is not frequently documented on the island of Culebra, the largest sub-adult and adult populations are found in its surrounding waters (DNER 2009, USFWS). The island of Culebra and its outlying keys have been designated as Critical Habitat for the species. They are generally threatened by harvesting of their eggs, hunting, and incidental capture in fishing gear and in some regions, disease (fibropapillomatosis, a benign tumor disease) (NMFS, 2014).

- **Hawksbill Sea Turtle** (*Eretmochelys imbricata*): This species is the most abundant throughout Puerto Rico. It uses different habitats at different stages of their life cycle, but is most commonly associated with healthy coral reefs. Nesting peaks in Puerto Rico are from September to December. *E. imbricata* is generally threatened by habitat loss of coral reef communities, harvesting of their eggs, hunting, and incidental capture in fishing gear.

- **Leatherback Sea Turtle** *(Dermochelys coriacea):* This highly pelagic species nests during the summer in typically wide, sandy, dynamic (high energy) beaches

with cyclical patterns of erosion and accretion. Successful nests have been reported throughout the Puerto Rico from Isabela to Arecibo in the north coast, Mayagüez to Aguada on the west, and Humacao to Maunabo on the east. Their nests are dug above the high tide level, in areas of moderate to steep slopes that are free of debris. The largest nesting occurs in the northern beaches of Culebra (Zoní, Resaca and Brava beaches) and in Vieques (DNER 2009, USFWS). Major threats include the harvest of eggs and incidental capture in fishing gear (NMFS, 2014).

b. In Project Area:

San Ildefonso, Ensenada Honda: Ensenada Honda exhibits the habitat requirements for the Green *(Chelonia mydas)* and Hawksbill (*Eretmochelys imbricata*) Sea Turtles. The bay has an abundance of seagrass beds along its entire shoreline, which are typical feeding grounds, particularly for *Chelonia mydas*, a herbivore that mainly feeds on seagrasses.

- **Green Sea Turtle** *(Chelonia mydas)*: The species is frequently observed in Ensenada Honda, as it provides shelter and seagrasses, its main food source. Juveniles are known to feed on the seagrass beds throughout the bay and at Bahía Mosquito, near the entrance to Ensenada Honda. No nesting ground is available for the species in the area.

- **Hawksbill Sea Turtle** (*Eretmochelys imbricata*): The species is commonly found among reef habitats in western Culebra. However, they are also known to occur in Ensenada Honda, as some of their selected prey (sponges) are found in habitats such as those within. Ensenada Honda does not provide adequate nesting grounds for the species.

- **Leatherback Sea Turtle** *(Dermochelys coriacea)*: The species is known to occur around the waters of Culebra. Nevertheless, they mostly feed offshore on jellyfish, and come near shore to nest, preferring to use open access beaches such as those in northern Culebra (Zoni, Resaca and Brava beaches), more

than 10 miles away from the access to Ensenada Honda. Ensenada Honda does not provide adequate nesting ground for the species.

Sardinas Bay: Areas near Sardinas Bay provide some of the habitat requirements, as described in the Affected Environment Section. The western coast of Culebra is known to offer the habitat requirements for two of the three species of sea turtles commonly found in the surrounding waters of the island. Less than half a mile from the Sardinas Bay Ferry Terminal is Cayo Luis Peña Nature Reserve, part of the Culebra National Wildlife Refuge (see ***Figure 10, Federal and State Reserves in Culebra***). This Natural Reserve provides seagrass and coral reef habitats where both the Green *(Chelonia mydas)* and Hawksbill (*Eretmochelys imbricata*) Sea Turtles thrive.

Seagrass beds were documented northwest/west and southwest of the existing cargo ramp structure during the benthic surveys conducted at the site; however, no significant coverage is found within the proposed project area.

- **Green Sea Turtle** *(Chelonia mydas)*: This species inhabits areas near the proposed project site, particularly to the north/northwest, where seagrass habitats are abundant. (Carlos Rosario and Tamarindo beaches)

- **Hawksbill Sea Turtle** (*Eretmochelys imbricata*): This species has been documented throughout the western coastline of Culebra, including prime habitat sites for the species, such as Carlos Rosario and the Cayo Luis Peña channel to the northwest and Punta Soldado to the southwest.

- **Leatherback Sea Turtle** *(Dermochelys coriacea)*: The species in known to occur around the waters of Culebra. However, they mostly feed offshore on jellyfish, and come near shore to nest, preferring to use open access beaches such as those in northern Culebra (Zoní, Resaca and Brava beaches), more than 8 miles away from the entrance to Ensenada Honda. Ensenada Honda does not provide adequate nesting ground for the species.

5.2.2. Describe Critical Habitat:

- **Green Sea Turtle** (*Chelonia mydas*): Critical habitat was designated in 1998 for this species in coastal waters surrounding the island of Culebra, Puerto Rico, including Cayo Norte, Cayo Ballena, Cayos Geñiqui, Isla Culebrita, Arrecife Culebrita, Cayo de Luis Peña, Las Hermanas, El Mono, Cayo Lobo, Cayo Lobito, Cayo Botijuela, Alcarraza, Los Gemelos, and Piedra Steven (DNER, 2004, USFWS).

- **Hawksbill Sea Turtle** (*Eretmochelys imbricata*): Critical habitat was designated in 1998 for this species in coastal waters surrounding the islands of Mona and Monito, Puerto Rico (DNER, 2004, USFWS), over 170 miles west of the site.

- **Leatherback Sea Turtle** (*Dermochelys coriacea*): No critical habitat has been officially designated in Puerto Rico for this species (DNER, 2004; USFWS, 2014).

5.2.3. Describe the Effects of the Proposed Action on the Species

There are mainly two potential adverse effects associated with the construction and operation of the Auxiliary Cargo Terminal in San Ildefonso and the demolition and construction of the Sardinas Bay cargo platform: Collisions, noise and vibrations.

San Ildefonso, Ensenada Honda: As described in **Section 5.2.1b**, Ensenada Honda provides the habitat requirements for the Green *(Chelonia mydas)* and Hawksbill (*Eretmochelys imbricata*) Sea Turtles. The bay has an abundance of seagrass beds along its entire shoreline, which are typical feeding grounds, particularly for *Chelonia mydas*, a herbivore whose main diet are seagrasses. The proposed Auxiliary Cargo Terminal is located within designated critical habitat (as is the entire archipelago of Culebra) for the Green Turtle *(Chelonia mydas)*, two reserves are found east and west of the site: Los Caños Mangroves (east, Federal Reserve) and Bahía del Cementerio (west, State Reserve) (see ***Figure 10, Federal and State Reserves in Culebra***). Still, the project perimeter lacks significant seagrass growth. Constant use of the existing boat ramps in the facility and maritime traffic cause sediment to be suspended in the water column, increasing turbidity and decreasing light penetration.

In addition, assessed seagrass areas adjacent to Bahía del Cementerio did not show evidence of being grazed by any of the aforementioned species. For these reasons, it is not expected that *C. mydas* and or *E. imbricata* may frequent areas near the proposed location for the Auxiliary Cargo Terminal in San Ildefonso.

No fueling facilities will be constructed and no dredging works will be necessary.

San Ildefonso, Ensenada Honda:

a. **Direct Effects**:

Both *E. imbricata* and *C. mydas* inhabit seagrass areas of Ensenada Honda. However, it is highly unlikely that *D. coriacea* is present in the area since adequate habitat is not available (refer to **Section 5.2.1a**). Nevertheless, it is unlikely that the construction of the proposed project will have a direct effect on *E. imbricata,* and *C. mydas,* due to the fact that the preferred habitat for the species (seagrasses) are not available within the boundaries of the proposed project area. However, if an individual of any of the aforementioned species happens to occur in the area during the construction of the project, any incoming or outgoing vessels maneuvering in or near the area and the noise generated by such activities may pose a risk of directly impacting the species. Still, the potential direct impact will decrease once the construction of the facilities are completed, since there will be a limited number of daily scheduled ferry trips. In addition, the auxiliary terminal in San Ildefonso will provide daily scheduled trips only during the construction on the Sardinas Bay cargo ramp. During the construction of the auxiliary terminal, turbidity barriers will be installed surrounding the zone, to prevent access of any turtle species to the immediate area.

Noise impact is not anticipated. *D. coriacea, E. imbricata,* and *C. mydas* are highly migratory and agile sea turtle species. Numerous studies have shown that individuals of *D. coriacea, E. imbricata,* and *C. mydas* have the ability to travel long distances daily, and have the ability to move away from the sources of disturbance. In addition, a turbidity barrier will surround the construction site on water from surface to bottom, which should provide at least some dampening and physical barrier to prevent any individuals from approaching the impact area.

During the 6 month period of the operation of the Auxiliary Cargo Terminal in San Ildefonso (while the existing facilities at Bahía Sardinas is under construction), the risk of collisions during the construction of the facilities is low, due to the fact that the project area will be surrounded by a turbidity barrier that will prevent any of the aforementioned species from reaching the area. Sea turtles cannot breathe under water and their regular ascent to the surface puts them directly in the path of boat traffic. The US National Marine Fisheries Service has recognized that *"sea turtles are highly susceptible to vessel collisions because they regularly surface to breathe and often rest at or near the surface"*. Although vessel strikes with sea turtles are not uncommon, sea turtles generally have the agility and speed to evade an incoming vessel. Recreational vessel traffic in Ensenada Honda is relatively high, as the various coves and inlets provide safe anchoring for operators. Once the Auxiliary Cargo Terminal in San Ildefonso is completed, the cargo/passenger ferry will make an average of 6 daily movements (3 daily scheduled trips from Fajardo), which may increase the chances for strikes with sea turtles. However, Port regulations limit speeds in these areas to 8 knots (9.2 mph), slow enough for any healthy sea turtle to evade an incoming vessel. Reducing speeds to 10 knots or less also helps to prevent deadly ship strikes; and a 10% speed reduction achieves 23% emissions reductions[5].

b. **Indirect Effects**:

It is highly unlikely that the construction of the proposed project will have any indirect effects on *D. coriacea, E. imbricata,* and/or *C. mydas* due to the fact that the preferred habitat for the species is not present within the proposed project area. In addition, the immediate location for the Auxiliary Cargo Terminal does not provide the habitat requirements that these species need for survival.

c. **Potential Incidental Take Resulting From Project Activities**:

No incidental takes of *D. coriacea, E. imbricata,* and/or *C. mydas* are expected to occur during the construction of the proposed project.

Sardinas Bay: As described in **Section 5.2.1b**, the western coast of Culebra is known to possess the habitat requirements for two of the three sea turtle species commonly found in the surrounding waters of the island. Less than half a mile from the Sardinas Bay Ferry Terminal is

[5] Sea Turtle Restoration Project www.seaturtles.live.radicaldesigns.org

the Cayo Luis Peña Nature Reserve, part of the Culebra National Wildlife Refuge. This Natural Reserve provides seagrass and coral reef habitats where both the Green *(Chelonia mydas)* and Hawksbill (*Eretmochelys imbricata*) Sea Turtles thrive (see ***Figure 10, Federal and State Reserves in Culebra***).

Sardinas Bay:

a. **Direct Effects**:

Both *E. imbricata* and *C. mydas* inhabit seagrass and coral reef habitats that are near the existing Sardinas Bay ferry terminal. However, it is highly unlikely that *D. coriacea* is present in the area since its adequate habitat requirements are not available (refer to **Section 5.2.1a**). Nevertheless, it is unlikely that the construction of the proposed project will have a direct effect on *E. imbricata,* and *C. mydas,* due to the fact that the preferred habitat for the species (seagrasses and coral reefs) are not available within the boundaries of the proposed project area. However, if an individual of any of the aforementioned species happens to occur in the area during construction of the project, any incoming or outgoing vessels maneuvering in or near the area and the noise generated by such activities pose a risk of directly impacting the species. Still, the potential direct impact will decrease once the construction of the facilities are completed, since there will be a limited number of daily scheduled trips (see ***Table 1***) by the cargo ferries. In addition, turbidity barriers will be installed surrounding the area under construction, which will also prevent any individuals from the aforementioned species from entering the immediate area.

D. coriacea, E. imbricata, and *C. mydas* are highly migratory and agile sea turtle species. Numerous studies have shown that individuals of *D. coriacea, E. imbricata,* and *C. mydas* have the ability to travel long distances daily, and have the ability to move away from the source of disturbance. In addition, the project area will be surrounded by a synthetic turbidity barrier from surface to bottom, which should provide at least some dampening and physical barrier to prevent any individuals from approaching the impact area.

The risk of collisions during the construction in Sardinas Bay is unlikely, for the aforementioned turbidity barriers will also prevent these species from reaching the area under construction. Sea turtles cannot breathe under water and their regular ascent to the surface puts them directly in the path of boat traffic. The US National Marine Fisheries

Service has recognized that *"sea turtles are highly susceptible to vessel collisions because they regularly surface to breathe and often rest at or near the surface"*. Although vessel strikes with sea turtles are not uncommon, sea turtles generally have the agility and speed to evade an incoming vessel. During the scheduled operation of the cargo and passenger ferries, the chances of impact exist. However, Port regulations limit the approach speed of these vessels to 8 knots (9.2 mph), slow enough for any sea turtle to evade. Slowing down to 10 knots or less helps prevent deadly ship strikes; and a 10% speed reduction achieves 23% emissions reductions[6].

b. **Indirect Effects**:

It is highly unlikely that the construction of the proposed project will have any indirect effects on *D. coriacea, E. imbricata,* and/or *C. mydas* due to the fact that their preferred habitat is not present within the proposed project area. In addition, the area has been the main (and only) port in Culebra for nearly a century, and there has been no documented impact to these species from port activities.

c. **Potential Incidental Take Resulting From Project Activities**:

No incidental takes of *D. coriacea, E. imbricata,* and/or *C. mydas* are expected during the construction of the proposed project.

[6] Sea Turtle Restoration Project www.seaturtles.live.radicaldesigns.org

*Drawing not to Scale

Source: Atkins

AUTORIDAD de los PUERTOS de PUERTO RICO	CULEBRA CARGO RAMP TERMINAL IMPROVEMENTS ESA SECTION 7 CONSULTATION	FEDERAL AND STATE RESERVES IN CULEBRA	ATKINS	FIGURE 10

5.2.4. Conservation Measures:

San Ildefonso, Ensenada Honda: Sightings of *Chelonia mydas* within Ensenada Honda are fairly common due to the abundance of seagrasses, which is typical habitat for the species. *Eretmochelys imbricata* is less common within the bay due to limited resources (reef habitat) for the species in the area. However, measures will be taken to protect individuals from both species from project construction impacts.

The turbidity barrier that will be surrounding the project area will also control access of any individuals of *E. imbricata* and/or *C. mydas* to the area under construction, protecting the species from possible harm. *D. coriacea* is not expected to be found near the project site due to the unavailability of pelagic habitat conditions in Ensenada Honda.

The identification of endangered species within the construction area and suitable response actions will follow the protocol drafted by the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service. Please refer to **Section 6.1.1** for details.

5.2.5. Conclusions

It is very unlikely that the proposed project will affect any individuals of *D. coriacea* due to the limited habitat requirements found in Ensenada Honda for the species. Nevertheless, the habitat requirements for *E. imbricata,* and/or *C. mydas*, particularly *C. mydas*, are present. If any individuals of *D. coriacea, E. imbricata,* and/or *C. mydas* are observed near the proposed project area, the protocol drafted by the NOAA-National Marine Fisheries Service for the identification and removal of individuals within the construction area will be implemented.

5.3. Virgin Islands Boa - (E)

5.3.1. Affected Environment

(See **Section 4.1.1** for San Ildefonso in Ensenada Honda and **Section 4.1.2** for Sardinas Bay).

5.3.2. Description of Species Biology:

- **Virgin Islands Boa** *(Epicrates monensis granti)*: The adult body color of this endangered species is a light plumbeous brown with darker blotches partially edged with black. The ventral surface is greyish-brown, speckled with darker spots. The Virgin Islands Boa may reach a snout-vent length of slightly less than a meter. The Virgin Islands Boa was listed as Endangered in 1979 under the Endangered Species Act due to its restricted and fragmented distribution, increased

5.3.3. Current Conditions

a. Range-Wide: This species was initially classified as a subspecies of the Puerto Rican Boa *(Epicrates inornatus)*. The species is found in the British and US Virgin Islands, as well as the main island of Puerto Rico in the foothills of the Sierra Luquillo, in Cayo Diablo and in Culebra, although the number of individuals has not been determined. Its primary habitat are subtropical dry forests, but can also inhabit woodlands at coastal level or on steep slopes. The species can be found in habitats from sea level to 100 meters above sea level.


Photo Credit: USFWS

b. In Project Area:

San Ildefonso, Ensenada Honda: *Epicrates monensis granti* is not expected to be found in the project area.

Sardinas Bay: *Epicrates monensis granti* is not expected to be found in the project area.

c. Cumulative Effects of State and Private Actions in the Project Area:

San Ildefonso, Ensenada Honda: No threats are expected to occur upon the species due to its absence in the area.

Sardinas Bay: No threats are expected to occur to *Epicrates monensis granti* due to its absence in the area.

d. Consultations of the Federal Action Agency in the Area to Date:

The project was presented at the monthly Interagency Taskforce Meeting of July 2nd, 2014. At that time, the following Federal and State Agencies were represented: The US Army Corp of Engineers (USACE), the US Fish and Wildlife Service (USFWS), NOAA-National Marine Fisheries Service (NMFS) Federal Emergency Management Agency (FEMA), State Historic Preservation Office (SHPO) Federal Highway Administration (FHWA), the PR Planning Board and the Mayor of Culebra.

5.3.4. Describe Critical Habitat:

No critical habitat rules have been officially published for the Virgin Islands Boa *(E. monensis grantii))*.

5.3.5. Describe the Effects of the Proposed Action on the Species:

No negative effects are expected to occur upon the species due to its absence in either Sardinas Bay or San Ildefonso in Ensenada Honda projects.

e. **Direct Effects:** No direct effects are expected to occur on *Epicrates monensis granti* due to its absence in either Sardinas Bay or San Ildefonso in Ensenada Honda.

f. **Indirect Effects:** No indirect effects on the species are expected as a consequence of the proposed action in either Sardinas Bay or San Ildefonso in Ensenada Honda projects.

g. **Potential Incidental Take Resulting from Project Activities:** No incidental takes of *Epicrates monensis granti* are expected to occur during project activities in either Sardinas Bay or San Ildefonso in Ensenada Honda projects.

5.3.6. Conservation Measures:

No conservation measures are required for *Epicrates monensis granti* due to its absence in both Sardinas Bay and San Ildefonso in Ensenada Honda projects.

5.4. Roseate Tern - (T)

5.4.1. Affected Environment

(See **Section 4.1.1** for San Ildefonso in Ensenada Honda and **Section 4.1.2** for Sardinas Bay)

5.4.2. Description of Species Biology

- **Roseate Tern** *(Sterna dougallii):* A migratory coastal seabird, *S. dougallii* is a white tern with a long, forked tail and orange legs. It has a black bill with variable amounts of red at the base. In breeding plumage it has a black cap and a pink tinge to the undersides, although the forehead turns white when not breeding. The species can reach to 16.1 inches in length and weigh 0.22 pounds. *S. dougallii* has an extremely large range, inhabiting coastal and open waters following schools of predatory fish to capture the smaller fish that are forced to the surface. *S. dougallii* breeds in large, dense single- or mixed-species colonies that may contain several thousands of pairs on coasts and islands, building its nests in a ground scrape, often in a hollow or under dense vegetation. Commonly lays one or two (rarely three) eggs.

5.4.3. Current Conditions

San Ildefonso, Ensenada Honda: *S. dougallii* is not expected to be found in the project area. However, its presence may be limited to a few transient individuals.

Sardinas Bay: *S. dougallii* is not expected to be found in the project area. However, its presence may be limited to a few transient individuals.

a. Cumulative Effects of State and Private Actions in the Project Area:

San Ildefonso, Ensenada Honda: No threats are expected to occur upon the species due to its absence in the area.

Sardinas Bay: No threats are expected to occur to *S. dougallii* due to its absence in the area.

b. Consultations of the Federal Action Agency in the Area to Date:

The project was presented at the monthly Interagency Taskforce Meeting of July 2nd, 2014. The following Federal and State Agencies were represented: The US Army Corp of Engineers (USACE), the US Fish and Wildlife Service (USFWS), the US Environmental Protection Agency (EPA), NOAA-National Marine Fisheries Service (NMFS) Federal Emergency Management Agency (FEMA), State Historic Preservation Office (SHPO) Federal Highway Administration (FHWA), the PR Planning Board and the Mayor of Culebra.

5.4.4. Describe Critical Habitat

No critical habitat rules have been officially published for *S. dougallii.*

5.4.5. Describe the Effects of the Proposed Action on the Species:

No negative effects are expected to occur to *S. dougallii* due to its absence in either Sardinas Bay or San Ildefonso in Ensenada Honda projects.

c. Direct Effects: No direct effects are expected to occur on *S. dougallii* due to its absence in either Sardinas Bay or San Ildefonso in Ensenada Honda area.

d. Indirect Effects: No indirect effects are expected for the species from the proposed action in either Sardinas Bay or San Ildefonso in Ensenada Honda projects.

e. **Potential Incidental Take Resulting from Project Activities:** No incidental takes of *S. dougallii* are expected to occur during project activities in either Sardinas Bay or San Ildefonso in Ensenada Honda projects.

5.4.6. Conservation Measures:

No conservation measures are required for *S. dougallii* due to its absence in either Sardinas Bay or San Ildefonso in Ensenada Honda projects.

5.5. Corals – (T&E)

Seven species of coral are listed as Threatened under the Federal Endangered Species Act: *Acropora palmata* (Elkhorn Coral), *Acropora cervicornis* (Staghorn Coral), Pillar coral (Dendrogyra cylindrus), Rough Cactus Coral (Mycetophyllia ferox), Lobed star coral Orbicella annularis (syn Montastraea annularis), Mountainous Star Coral (Orbicella faveolata), and Boulder Star Coral (Orbicella franksi). The Puerto Rico Regulation 6766 for the Threatened and Endangered Species of the Commonwealth of Puerto Rico (created under the Puerto Rico Wildlife Act, Number 241 of August 15, 1999) does not list any of these species (DNER, 2005).

5.5.1. Affected Environment

(See **Section 4.1.1** for San Ildefonso in Ensenada Honda and **Section 4.1.2** for Sardinas Bay)

5.5.2. Description of Species Biology:

- **Elkhorn Coral** (*Acropora palmata*): A large, branching coral with thick and sturdy antler-like branches that may grow over six feet, the species highly contributes to reef growth, providing essential fish habitat. Colonies are fast growing, with branches increasing in length tow to four inches per year, with maximum size being reached at around 12 years in age. Formerly the dominant species in coastal waters 3-16 feet deep throughout the Caribbean in areas of heavy surf, since 1980s, populations have collapsed greatly (90–95% reduction in abundance), due in part to the effects of diseases, climate change and human related factors. The once characteristic "*Acropora palmata* zones" have been mostly transformed into reef rubble fields with few living colonies left (NOAA).

- **Staghorn Coral** (*Acropora cervicornis*): The species has similar habitat requirements as *A. palmata*, with the exception that it occurs mostly in the back reef in depths from 0-100 feet. *A. cervicornis* exhibits 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. There has been a population reduction exceeding 80-98% in the Caribbean region over the past 30 years due to the effects of diseases, climate change and human related factors. *A. cervicornis* is very susceptible to coral bleaching (loss of intracellular endosymbionts (*Symbiodinium*, also known as zooxanthellae) through either expulsion or loss of algal pigmentation). Threats to *A. cervicornis* include disease, such as white band disease hurricanes, predation, bleaching, algae overgrowth, sedimentation, temperature and salinity variation, and low genetic diversity (NOAA).

- **Pillar coral** *(Dendrogyra cylindrus)* – *D. cylindrus* is a hard coral found in the western Atlantic Ocean and the Caribbean Sea. It is a digitate coral, growing up from the sea floor without any secondary branching. *D. cylindrus* can grow on both flat and sloping surfaces at depths down to 20 m (65 ft). It is one of the few types of hard coral in which the polyps can commonly be seen feeding during the day. *D. cylindrus* forms an encrusted base from which they grow vertical cylindrical, round-ended columns, reaching nearly 3 m (10 ft) with pillars more than 10 cm (4 in) wide, although these sizes are not common. The corallites from which the polyps protrude are smaller than 1 cm (0.4 in) in diameter and arranged in shallow meandering valleys with low ridges in between. The skeleton of the coral is not usually visible due to the fact that the polyps are typically extended during the daytime (unlike most other coral species), giving it a furry appearance. This coral is usually some shade of beige or brown.

D. cylindrus is a slow-growing, long-lived species. A number of columns grow up from a basal plate; new cylindrical pillars can grow vertically from fallen coral. It has been listed as *Threatened* due to a low recruitment and survival rate among juveniles, and its vulnerability to bleaching and white plague disease.

- **Rough Cactus Coral** *(Mycetophyllia ferox*): *M. ferox* is most common in fore reef environments from 5 to 30 meters, but is generally more abundant from 10 to 20 meters, also occurring in low abundance in certain deeper back reef habitats and deep lagoons. *M. ferox* forms thin plates or encrusting colonies, presenting a series of well developed valleys that completely cover the surface of the coral. The walls of its valleys normally meet and form closed valleys, a characteristic not commonly observed on other *Mycetophyllia* species. Crests are usually square-shaped and small, presenting creases on the top. The valley walls are very thin and irregularly shaped. Typical coloration is light gray, reddish-brown, dark green, brown; poylps generally present a lighter tone. Colonies reach a maximum diameter of 3.2 feet (1 meter). This species is common throughout its distribution range at intermediate abundances. There is no species specific population information available for *M. ferox*. However, there is evidence that overall coral reef habitat has declined, and this is used as a proxy for population decline for this species. *M. ferox* is particularly susceptible to bleaching, disease, and other threats and therefore population decline is based on both the percentage of destroyed reefs and critical reefs that are likely to be destroyed within 20 years.

- **Lobed star coral** *Orbicella annularis* (syn *Montastraea annularis*): Colonies of *Orbicella* are formed by densely grouped nodules or by wide, separated columns. This species complex has long been considered a generalist that exists at depths between 0 and 80 meters that grew into varying colony shapes (heads, columns,

plates) in response to differing light conditions. Only recently with the help of molecular techniques has *O. annularis* been shown to be a complex of at least three separate species, divided into *O. annularis*, *O. faveolata*, and *O. franksi*. The three species of *Orbicella* are distinguished mostly by the shape of its small calices. *O. annularis* is a common species, mostly found from 0.5 to 82 meters in depth and is often the most abundant coral from 1 to 10 meters, especially in semi-protected reef environments where it is frequently a dominant species of lagoons and upper reef slopes.

- **Mountainous Star Coral** *(Orbicella faveolata)*: *O.* faveolata is found from 1 to 30 meters in backreef and fore-reef habitats, and is often the most abundant coral between 10 to 20 m in fore-reef environments. Major threats to *O. faveolata*, as with all coral species, 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 bioerosion by sponges, other organisms, and diseases.

- **Boulder Star Coral** *(Orbicella franksi)*: A common species. *O. franksi* is found from 5 to 50 meters and is often the most abundant coral from 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 bioerosion by sponges and other organisms, and diseases.

5.5.3. Current Conditions

The aforementioned species *A. palmata*, *A. cervicornis, Dendrogyra cylindrus, Mycetophyllia ferox, Orbicella annularis, Orbicella faveolata and Orbicella franksi* are strictly from marine environments.

a. Range-wide:

- **Elkhorn Coral** *(Acropora palmata)*: Formerly the dominant species in shallow waters between 3-16 feet deep throughout the Caribbean and on the Florida Reef Tract, forming extensive, densely aggregated stands in areas of heavy surf. Coral colonies prefer exposed reef crest and fore reef environments in depths of less than 20 feet, although isolated corals may occur to depths of 65 feet (DNER, 2000).

- **Staghorn Coral** *(Acropora cervicornis)*: The species occur in back reef and fore reef environments from 0-100 feet deep. The upper limit of establishment is defined by wave forces, and the lower limit is controlled by suspended sediments and the availability of light that enters the water (DNER, 2000).

- **Pillar coral** *(Dendrogyra cylindrus)*: Colonies of this species are normally found on flat or gently sloping back reef and fore reef environments from depths of 1 to 25 meters in depth, most commonly from 5 to 15 meters, and do not occur in extremely exposed locations. These conditions are not present a either site.

- **Rough Cactus Coral** *(Mycetophyllia ferox): M. ferox* is most common in fore reef environments from 5 to 30 meters, but is normally more abundant from 10 to 20 meters in depth, also occuring in low abundance in certain deeper back reef habitats and deep lagoons. These conditions are not present a either site.

- **Lobed star coral** *(Orbicella annularis*): A fairly common species, mostly found from 0.5 to 82 meters in depth, often the most abundant coral from 1 to 10 meters, especially in semi-protected reef environments where it is frequently a dominant

species of lagoons and upper reef slopes, nevertheless, these conditions are not present at either sites

- **Mountainous Star Coral** *(Orbicella faveolata):* Colonies are mostly found from 1 to 30 meters in depth in backreef and fore-reef habitats, and is often the most abundant coral between 10 to 20 meters in depth in fore-reef environments. These conditions are not present a either site.

- **Boulder Star Coral** *(Orbicella franksi):* is normally found from 5 to 50 meters, and is often the most abundant coral from 15 to 30 meters in fore-reef environments. These conditions are not present a either site.

b. In Project Area

Neither *A. palmata, A. cervicornis, D. cylindrus, M. ferox, O. annularis, O. faveolata,* and/or *O. franksi*, were found within the Sardinas Bay and/or the San Ildefonso in Ensenada Honda project areas (Atkins 2014). Growing conditions for these species are not present; colonies of *A. palmata* prefer exposed reef crests and fore reef environments located in depths of less than 20 feet, although isolated corals may occur to depths of 65 feet (NMFS, 2014); *A. cervicornis* generally occur in back reef and fore reef environments from 0-100 feet deep. The upper limit is defined by wave forces, and the lower limit is controlled by suspended sediments and light availability. Fore reef zones at intermediate depths of 15-80 feet (NMFS, 2014). *D. cylindrus* are normally found on flat or gently sloping back reef and fore reef environments from depths of 1 to 25 meters in depth, most commonly from 5 to 15 meters. Colonies do not occur in extremely exposed locations; *M. ferox* is most common in fore reef environments from 5 to 30 meters, but is normally more abundant from 10 to 20 meters in depth, also occuring in low abundance in certain deeper back reef habitats and deep lagoons; *O. annularis* is a common species, mostly found from 0.5 to 82 meters in depth and is often the most abundant coral from 1 to 10 meters, especially in semi-protected reef environments where it is frequently a dominant species of lagoons and upper reef slopes, nevertheless, these conditions are not present at either sites; *O. faveolata* is mostly found from 1 to 30 meters in depth in backreef and fore-reef habitats, and is often the most abundant coral between 10 to 20 meters in depth in fore-reef environments; *O. franksi* is

normally found from 5 to 50 meters, and is often the most abundant coral from 15 to 30 meters in fore-reef environments.

c. Cumulative Effects of State and Private Actions in Project Area:

- **Elkhorn Coral** *(Acropora palmata)*: As their presence within the Sardinas Bay and the San Ildefonso in Ensenada Honda project areas has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no cumulative impacts to *A. palmata* colonies (Atkins, 2014).

- **Staghorn Coral** *(Acropora cervicornis)*: As their presence within the Sardinas Bay and the San Ildefonso in Ensenada Honda project areas has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no cumulative impacts to *A. cervicornis* colonies (Atkins, 2014).

- **Pillar coral** *(Dendrogyra cylindrus)*: As their presence within the Sardinas Bay and the San Ildefonso in Ensenada Honda project areas has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no cumulative impacts to *D. cylindrus* colonies (Atkins, 2014).

- **Rough Cactus Coral** *(Mycetophyllia ferox):* As their presence within the Sardinas Bay and the San Ildefonso in Ensenada Honda project areas has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no cumulative impacts to *M. ferox* colonies (Atkins, 2014).

- **Lobed star coral** *(Orbicella annularis*): As their presence within the Sardinas Bay and the San Ildefonso in Ensenada Honda project areas has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no cumulative impacts to *O. annularis* colonies (Atkins, 2014).

- **Mountainous Star Coral** *(Orbicella faveolata):* As their presence within the Sardinas Bay and the San Ildefonso in Ensenada Honda project areas has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no cumulative impacts to *O. annularis* colonies (Atkins, 2014).

- **Boulder Star Coral** *(Orbicella franksi):* As their presence within the Sardinas Bay and the San Ildefonso in Ensenada Honda project areas has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no cumulative impacts to *O. annularis* colonies (Atkins, 2014).

5.5.4. Describe Critical Habitat

- **Elkhorn Coral** *(Acropora palmata)*: Approximately 1,383 square miles of marine habitat in waters surrounding the island of Puerto Rico have been designated as Critical Habitat by the National Marine Fisheries Service. Except in areas that were notified, the seaward boundary is the 98 feet (30 meter) depth contour and the shoreward boundary is the line of mean low water (MLW; 33 CFR 2.20). Within these boundaries, discrete areas of water deeper than 98 feet (30 meters) are not included. Puerto Rico: All areas surrounding the islands of the Commonwealth of Puerto Rico, 98 feet in depth and shallower (see 33 CFR 80.738).

- **Staghorn Coral** *(Acropora cervicornis)*: Approximately 1,383 square miles of marine habitat in waters surrounding the island of Puerto Rico have been designated as Critical Habitat by the National Marine Fisheries Service. The boundaries of each specific critical habitat area are described below. Except as specified below, the seaward boundary is the 98 feet (30 meter) depth contour and the shoreward boundary is the line of mean low water (MLW; 33 CFR 2.20). Within these boundaries, discrete areas of water deeper than 98 feet (30 meters) are not included. Puerto Rico: All areas surrounding the islands of the Commonwealth of Puerto Rico, 98 feet in depth and shallower (see 33 CFR 80.738).

- **Pillar coral** *(Dendrogyra cylindrus)*: No critical habitat has been designated for this species *D. cylindrus.*

- **Rough Cactus Coral** *(Mycetophyllia ferox):* No critical habitat has been designated for this species *M. ferox.*

- **Lobed star coral** *(Orbicella annularis*): No critical habitat has been designated for this species *O. annularis.*

- **Mountainous Star Coral** *(Orbicella faveolata):* No critical habitat has been designated for *O. faveolata.*

- **Boulder Star Coral** *(Orbicella franksi):* No critical habitat has been designated for *Orbicella franksi.*

5.5.5. Fully Describe Effects of Proposed Actions on each Species and/or Critical Habitat

No colonies of *Acropora palmata*, *Acropora cervicornis*, *Dendrogyra cylindrus*, *Mycetophyllia ferox*, *Orbicella annularis*, *Orbicella faveolata*, and/or *Orbicella franksi* corals were found within the Sardinas Bay and the San Ildefonso in Ensenada Honda project sites. In addition, no suitable conditions for their establishment are currently present or are anticipated. Therefore, no adverse effects are anticipated under any scenario. The proposed action does not represent a threat to the species.

a. **Direct Effects**

- **Elkhorn Coral (***Acropora palmata)*: As their presence within the Sardinas Bay and the San Ildefonso in Ensenada Honda project areas has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no direct effects to *A. palmata* colonies (Atkins, 2014).

- **Staghorn Coral** *(Acropora cervicornis)*: As their presence in the project area has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no direct effects to *A. cervicornis* colonies (Atkins, 2012).

- **Pillar coral** *(Dendrogyra cylindrus)*: As their presence in the project area has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no direct effects to *D. cylindrus* colonies (Atkins, 2012).

- **Rough Cactus Coral** *(Mycetophyllia ferox):* As their presence in the project area has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no direct effects to *M. ferox* colonies (Atkins, 2012).

- **Lobed star coral** *(Orbicella annularis*): As their presence in the project area has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no direct effects to *O. annularis* colonies (Atkins, 2012).

- **Mountainous Star Coral** *(Orbicella faveolata):* As their presence in the project area has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no direct effects to *O. faveolata* colonies (Atkins, 2012).

- **Boulder Star Coral** *(Orbicella franksi):* As their presence in the project area has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no direct effects to *O. franksi* colonies (Atkins, 2012).

b. **Indirect Effects**

- **Staghorn Coral** *(Acropora cervicornis)*: It is highly unlikely that the construction of the proposed project will have any indirect effects due to the fact that the preferred habitat for the species is not present within the proposed project area.

- **Elkhorn Coral** *(Acropora palmata)*: As their presence in the project area has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no direct effects to *A. palmata* colonies (Atkins, 2012).

- **Pillar coral** *(Dendrogyra cylindrus)*: As their presence in the project area has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no direct effects to *D. cylindrus* colonies (Atkins, 2012).

- **Rough Cactus Coral** *(Mycetophyllia ferox):* As their presence in the project area has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no direct effects to *M. ferox* colonies (Atkins, 2012).

- **Lobed star coral** *(Orbicella annularis*): As their presence in the project area has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no direct effects to *O. annularis* colonies (Atkins, 2012).

- **Mountainous Star Coral** *(Orbicella faveolata):* As their presence in the project area has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no direct effects to *O. faveolata* colonies (Atkins, 2012).

- **Boulder Star Coral** *(Orbicella franksi):* As their presence in the project area has not been confirmed, and it is not expected due to the lack of suitable habitat, there are no direct effects to *O. franksi* colonies (Atkins, 2012).

5.5.6. Conservation Measures

Presently, colonies of *Acropora palmata*, *Acropora cervicornis*, *Dendrogyra cylindrus*, *Mycetophyllia ferox*, *Orbicella annularis*, *Orbicella faveolata*, and/or *Orbicella franksi* do not inhabit the project area. The project is not likely to affect habitat for the species, therefore, no conservation measures are applicable to the proposed project (Atkins 2012).

5.5.7. Conclusions

Due the absence of these species in this type of habitat, it is very unlikely that the proposed project will affect any *Acropora palmata*, *Acropora cervicornis*, *Dendrogyra cylindrus*, *Mycetophyllia ferox*, *Orbicella annularis*, *Orbicella faveolata*, and/or *Orbicella franksi* colonies.

6. Control Measures

6.1.1. Protocol drafted by the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service:

The following is a draft of the protocol that has been provided by the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service and will be implemented by the contractor for the protection of any endangered species that may be present in the proposed project area:

The permittee shall comply with the following protected species construction conditions:

a. The permittee shall instruct all personnel associated with the project of the potential presence of individuals of *T. manatus*, *D. coriacea*, *E. imbricata*, and/or *C. mydas* and the need to avoid collisions. All construction personnel are responsible for observing water-related activities for the presence of individuals of *T. manatus*, *D. coriacea*, *E. imbricata*, and/or *C. mydas*.

b. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing any *T. manatus*, *D. coriacea*, *E. imbricata*, and/or *C. mydas*, which are protected under the Endangered Species Act of 1973.

c. Siltation barriers shall be made of material in which individuals of T. manatus, D. coriacea, *E. imbricata*, and/or *C. mydas* cannot become entangled. They must be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block the entry to or exit of any *T. manatus*, *D. coriacea*, *E. imbricata*, and/or *C. mydas* from any designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.

d. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.

e. If an individual of *T. manatus*, *D. coriacea*, *E. imbricata*, and/or *C. mydas* is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions include the cessation of operation of any moving equipment. Activities may not resume until the protected species has departed the project area of its own volition.

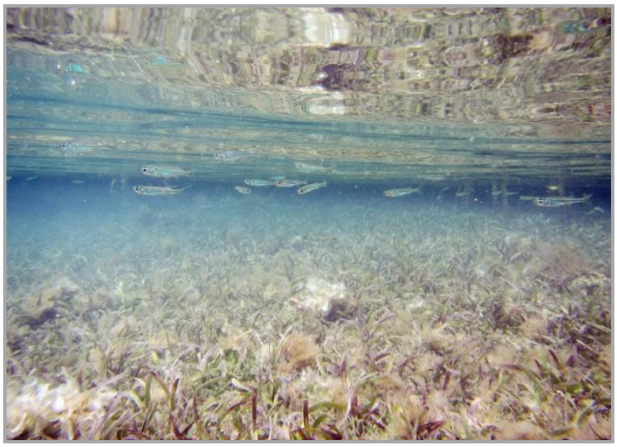
f. Any collision with and/or injury to a *T. manatus*, *D. coriacea*, *E. imbricata*, and/or *C. mydas* shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized stranding/rescue organization.

g. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

6.1.2. Turbidity Barriers

The objective of the turbidity barrier, which will extend from water surface to within five feet of the mudline, is to minimize the mixing of waters that have been disturbed by the construction process with the surrounding ambient water column, prevent any debris or accidental spills from floating away or spreading, promote the settling of fine grain material that may be lifted, and prevent any wildlife from entering the area and endangering itself. The enclosed area will be sized to insure that the Water Quality Certificate requirements are met.

7. Photographic Documentation

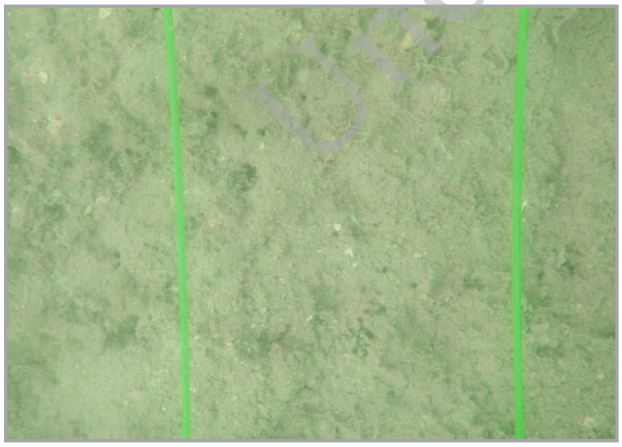
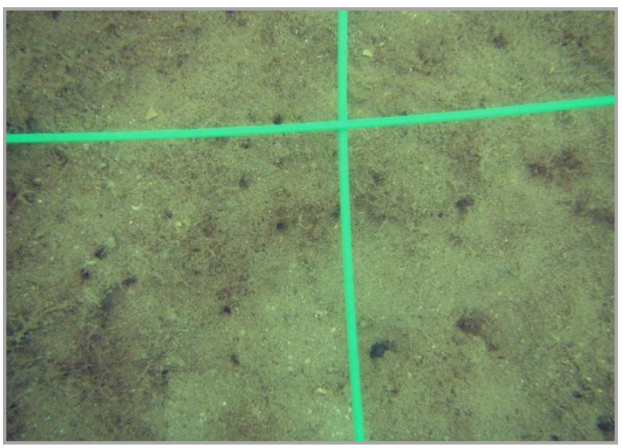



***Above, left**: Juvenile fish in seagrass habitats of Bahía del Cementerio, west of the proposed Culebra Auxiliary Cargo Terminal at San Ildefonso.* ***Above, right:** View of the proposed Culebra Auxiliary Cargo Terminal at San Ildefonso.*


***Above, left**: Mangrove roots and segrass bed habitat located west of the proposed Culebra Auxiliary Cargo Terminal at San Ildefonso, near Bahía del Cementerio.* ***Above, right:** Mangrove habitats typical of undisturbed sections of shoreline of Ensenada Honda.*

Photographic Documentation


Above, left**: Unidentified sponges documented on the mostly barren substrate.* ***Above, right: *A mangrove snapper (Lutjanus griseus) among debris found within the existing dock at San Ildefonso.*

Above: *Typical uncolonized substrate at the existing facilities in San Ildefonso*

Photographic Documentation


***Above, left**: Dictyota spp, typical macroalgae species found within the proposed Culebra Auxiliary Cargo Terminal at San Ildefonso. **Above, right:** Strands of Halophila decipiens located near the western boundary of the proposed Culebra Auxiliary Cargo Terminal at San Ildefonso*


***Above, left**: An upside-down jellyfish (Cassiopea xamachana). **Above, right:** Common encrusting organisms found adhered to the existing seawall*

Photographic Documentation


***Above, left**: Northern landward boundary of the proposed Culebra Auxiliary Cargo Terminal at San Ildefonso. The left road leads into the existing structure at San Ildefonso. **Above, right:** Existing historical structures near the road that leads to the proposed Culebra Auxiliary Cargo Terminal.*


***Above, left**: A line of Tabebuia aureum planted as ornamentals along the existing road near the proposed Culebra Auxiliary Cargo Terminal at San Ildefonso. **Above, right:** Trees near the proposed Culebra Auxiliary Cargo Terminal at San Ildefonso.*

8. Regulatory Consultations

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.

8.1. List of Meetings

May 30, 2014. Meeting at FEMA

Discuss the status of environmental documents regarding FEMA-4017-DR-PR-0030, rehabilitation of Culebra terminal cargo ramp.

Attendance: Sonny Beauchamp, Alwin Alvarado, José Ayala and Marisol Meléndez from DHS/FEMA; Nelson Rivera Calderón from GAR; Francisco Pérez from Atkins Caribe; Lisamarie Carruba from NMFS; Félix López from USFWS; Romel Pedraza, Lorraine De la Cruz, José Sierra and Flavio Silva Madera from PRPA.

July 2, 2014. Meeting at USACE

Interagency Meeting

Attendance: 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 Cofusi and Jorge Andrade from the Municipality of Culebra; Arturo Santiago and Gabriel Hernández from Atkins Caribe; Efraín López, Kailie Benson and Ismael Torres from USCG; and Félix López from USFWS.

October 15, 2014. Meeting at PREMA

Attendance: Sonny Beauchamp, Marisol Meléndez and Alwin Alvarado from FEMA; Lic. Javier Rivera from the Fortaleza Office; José A. Ruíz, José A. Bonano, Lydia E. Rodríguez and Mabel Sanabria from MTA; 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 FTA.

8.2. Input Received from Agencies

Following is a list of documents with comments received from regulatory agencies.

January 15, 2013 E-mail from Lisamarie Carruba, NMFS

January 22, 2013 E-mail from Lisamarie Carruba, NMFS

January 29, 2013 E-mail from Lisamarie Carruba, NMFS

June 7, 2014 E-mail from Lisamarie Carruba, NMFS

June 8, 2014 Letter from Alejandro R. De La Campa, Disaster Recovery Manager, FEMA to Miguel A. Ríos Torres of GAR.

July 10, 2014 Letter from Miguel A. Ríos Torres of GAR to Alberto M. Lázaro of PRASA

October 27, 2014 Letter from R.W. Warren, Captain U.S. Coast Guard, Captain of the Port to Therese W. McMillan, Acting Administrator of the Federal Transportation Administration

8.3. Agency Comments and Proponent Response

Following is a table that lists the specific recommendations received, and the manner in which each comment is addressed.

Agency -Comments	Response
1. **NMFS**-ESA resources that must be considered as part of the consultation include the Hawksbill, Green, Leatherback and Loggerhead Sea Turtles, Elkhorn and Staghorn Corals and the 7 additional coral species currently proposed for ESA listing, coral critical habitat, and Green Sea Turtle critical habitat.	In the ESA Section 7 Consultation for the project, these species, including the 7 species of corals, have described and incorporated.
2. **NMFS**-A complete benthic survey needs to be performed for all areas that will be impacted by the proposed project, including the new transit route to be used by the cargo ferry to access the temporary cargo landing, the turning basin required at the new cargo facility, and the footprint to be occupied by the new cargo platform and ferry. The benthic survey should include details of the number and size of coral colonies identified on the existing ferry facilities.	A benthic survey has been performed on the berthing area, under the proposed floating pier and bridge, and the turning basin area in Sardinas Bay and in San Ildefonso. The new transit route to San Ildefonso was not included in the survey since the route is part of an existing navigational channel that is maintained with federal aids by the US Coast Guard (see USCG letter from October 27, 2014).
3. **NMFS**-A complete alternative analysis, including alternatives related to completing all work at the existing facilities only, construction of the proposed temporary cargo facility at the proposed site versus at alternate sites, including the former naval facilities, and the construction of the temporary cargo facility and the conversion of this facility to other uses (that must be clearly defined).	Refer to **Section 4.0** for the complete alternative analysis that has developed for the project.

Agency -Comments	Response
4. NMFS-Details of the construction methodology to be used for all aspects of the proposed project, including the number of pilings and the method of installation and an analysis of the potential acoustic impacts of piling installation on sea turtles.	The project details (number of pilings, etc) are elsewhere within this document. The project is still in planning and the methodology of construction has not been defined. The following measures are anticipated to mitigate for potential acoustic impacts: a. The pile driving barge vessel crew will be given briefings covering procedures to be undertaken to minimize disturbance to marine fauna. b. Noise-generating equipment, including vessel engines, drills, and piling equipment, will be routinely maintained and inspected to reduce unnecessary increases in noise levels from equipment. c. A trained vessel crew will monitor and report observations of marine turtles within a 100 meter radius of the pile driving barge around pile driving operations. Observations will be recorded on the daily inspection report and the DNER will be notified regarding sightings. d. In the event that a sea turtle is sighted within a 100 meter radius of the pile driving barge, pile driving activities will cease until the turtle moves out of the exclusion zone and has not been sighted for 20 minutes. e. A "soft start" for pile driving will be carried out by beginning a pile driving session with the lowest possible power and hammering at a low rate, then increasing hammer energy and rate to that desired. For impact hammers, an initial set of three strikes at 40% energy is needed followed, by a one minute waiting period, then two subsequent three strike sets. f. Use of cushion blocks/caps on top piles during impact pile driving to reduce noise source levels. These materials could be wood, micarta or nylon with wood resulting in the greatest sound pressure reductions. g. In-water personnel will be assigned to be at all times during the construction works to assure that turbidity barriers are properly secured and effectively working to prevent the transport of sediments outside the project site. In addition, turbidity barriers will be monitored prior to starting and during construction works.
5. NMFS-A bathymetric survey of the transit routes and areas of the proposed (Auxiliary) cargo pier facilities must be provided.	The transit route was not surveyed due to the existence of a navigation channel maintained by the USCG. (see USCG letter from October 27, 2014).

Agency -Comments	Response
6. NMFS-Details of the measures to be taken to avoid and minimize potential impacts to ESA resources to the maximum extent practicable from all project aspects following a thorough analysis of all potential impacts to ESA resources as a result of the preferred alternative selected for the project**.**	The selection of the preferred alternative poses the least impacts to the ESA resources. The following avoidance, minimization and mitigation measures are proposed: 1. Compliance with the National Marine Fisheries Service (NMFS) Sea Turtle and Smalltooth Sawfish Construction Conditions (dated March 23, 2006). 2. Compliance with NMFSs Vessel Strike Avoidance Measures and Reporting for Mariners (revised February 2008). 3. Floating turbidity barriers will be installed prior to commencement of construction activities to prevent suspended sediment transport beyond the work area. These turbidity barriers will also act as an exclusionary barrier for sea turtles and manatees. The turbidity barriers will remain in place and maintained until the authorized works have concluded. 4. A turbidity monitoring plan will be implemented. If turbidity exceeds background levels due to project activities by more than 50 nephelometric turbidity units (NTUs), field staff will temporarily cease activities until turbidity levels return to the baseline level. 5. Project vessel operators will be required to avoid dragging of anchors along the marine bottom to avoid significant sediment re-suspension and transport outside the turbidity barriers. 6. A marine observer must be present during active pile driving and dredging operations to look for sea turtles or manatees that might approach the project area. In the event that the listed species are sighted within a 100 meter radius of the construction activities, these will cease until the listed species moves out of the exclusion zone and has not been sighted for 20 minutes. Observations will be recorded on the daily inspection report and Department of Natural and Environmental Resources will be notified regarding sightings.
7. NMFS-There are three species 3 species of *Montastraea* coral and your report, although it did not specify which of the 3 species is on the piling, did identify that corals from the *M.annularis* complex are colonizing the pilings, means that we recommend FEMA include these corals in the ESA Section 7 through a conference. As part of the conference, measures to avoid and minimize impacts to these corals should be included in the project design and implementation.	*Montastrea* corals were not found in our survey; there were *Agaricia sp*., which have a single species, *Agaricia lamarcki* listed as Endangered. Therefore, the 3 out of 12 potentially impacted corals living on the existing pilings at Sardina Bay will be removed and transplanted to an agreeable location.

Agency -Comments	Response
8. NMFS-Need to know the temporary and permanent construction footprint over benthic habitat. If the maps you prepared as part of your survey are adequate to determine this (and it appears they are because you have a rough estimate of where seagrass beds dominated by 3 different species are located in relation to the project), then you can use this information to estimate permanent and temporary impacts, as well as design the project, including the use of vessels versus terrestrial operations during construction, in order to avoid and minimize impacts to seagrass beds.	The footprint of impacted areas is clearly delimited in **Figures 3, 5** and **6**. Neither the temporary nor permanent footprints will impact seagrass beds.
9. USFWS-Based on the bathymetry, cargo ferry operations may result in excessive sedimentation of the intake, loosen already consolidated sediments, or block (PRASA desalinization plant) the intake structure.	The pontoon platform in the Auxiliary Cargo Ferry Terminal has been extended farther from the seawall allowing the cargo ferry to be over deeper waters, further from the PRASA intake, and will help avoiding lifting sediments into the water column. Turbidity barriers will be placed to provide an extra protection against lifted sediments. The intake structure of the PRASA desalination plant is presently against the silty bottom; thus it has been fitted with several pre-filter stages; the intake structure which should filter out any lifted sediments from the water column before reaching the reverse osmosis membranes.
10. USFWS-To minimize possible adverse impacts, it is recommended that the pier be extended out to the 19-20 foot contour to minimize propeller scour and sediment suspension.	The USFWS comment was adopted, and the pier was extended out to the 19'-20' contour.
11. USFWS-Impacts to the seagrass beds and other marine habitats need to be adequately compensated. A detailed mitigation plan for all components of the project should accompany any NEPA document.	There are no impacts to seagrass beds. Only the piling footprint and the shade impacts (approximately 3,440 ft²) will be over the macroalgal covered bottom. These impacts are balanced by the addition of submerged hard substrate of the circular pilings (approximately 220 ft²), the H-piles (approximately 336 ft²), pilecaps and fender (approximately 124 ft²) and pontoon platform (approximately 190 ft²).
12. USFWS-The road that connects the proposed San Ildefonso facility to the town of Dewey runs adjacent to the mangrove wetlands and Ensenada Honda Bay. Any widening or improvements to the road to facilitate the increased use by cargo traffic, could impact these adjacent mangroves and marine ecosystem.	There are no proposed modifications to PR-250. The only paving improvements will be to the access road, which will be widened, and will not impact mangroves and marine ecosystems.

Agency -Comments	Response
13. **USFWS-**The project may require a navigation channel to be appropriately marked with the buoys leading the pier facility. Impacts caused by additional buoys placement and anchorage would also have to be evaluated. NOAA Fisheries mentioned that PRPA would have to obtain a separate permit from the U.S. Coast Guard to place and maintain those buoys.	The cargo ferry will use the existing navigation channel and the existing aids. The USCG has commented on the proposed action, and did not require additional aids to navigation.
14. **USFWS-**We recommended that PRPA considers the alternative of using the existing Navy ramp (Fulladosa) in the southern end of Ensenada Honda for their temporary cargo dock.	This alternative was considered, discussed, and dismissed; the area would require dredging and filling of Ensenada Honda, road widening and substantial upland impacts, in addition to a PRASA easement, adding costs and impacts.
15. **USFWS-**The Antillean Manatee has been reported inside Ensenada Honda Bay. Consultation with the USFWS would have to be initiated y by the FEMA regarding possible effects during construction and operation of the facilities and the proposed minimization measures.	The ESA Section 7 Consultation includes an evaluation of impacts to the Antillean Manatee.
16. **PRPB-**Recommends that the project submit the environmental document via OGPe prior to submittal of the Joint Permit Application.	The DNER (Ana Barea) requested that FEMA submits the Joint Permit Application as soon as possible. Additionally, the EA will be a NEPA document before it becomes adopted by the commonwealth.
17. **FHA**-The use of the State Road for this new use would likely require a permit from the PRHTA. Control Access. That permit is also processed through OGPe.	Understood. Will address in a timely manner.
18. **FHA**-If the bridge between the proposed floating dock and dry land is greater than or equal to twenty feet in length, it's considered a "complex bridge", which requires authorization from FHA and an inspection every two years, among others.	Understood. Will address in a timely manner.
19. **USCG**-Safety concerns at Sardinas Bay are a major concern. The Captain of the Port may shut down that operation any time due to existing unsafe condition of the platform.	Understood. Addressing issues as expeditiously as possible.
20. **USCG**-The proposed use of San Ildefonso as an alternative/auxiliary dock is "brilliant".	The PRPA aims to find solutions to the challenges we face.
21. **USCG-**Has timeline concerns; the existing cargo structure may fail.	The PRPA/FEMA has been diligently exploring emergency options in case of ramp failure; and the required regulatory approvals for this complex undertaking. The cooperation of all parties involved is required in order to complete all approvals in the timely manner.

9. References

Aronson, R., Bruckner, A., Moore, J., Precht, B. & E. Weil 2008. *Montastraea franksi*. The IUCN Red List of Threatened Species. Version 2014.2. <www.iucnredlist.org>. Downloaded on **17 October 2014**.

Aronson, R., Bruckner, A., Moore, J., Precht, B. & E. Weil 2008. *Montastraea faveolata*. The IUCN Red List of Threatened Species. Version 2014.2. <www.iucnredlist.org>. Downloaded on **17 October 2014**.

Aronson, R., Bruckner, A., Moore, J., Precht, B. & E. Weil 2008. *Montastraea annularis*. The IUCN Red List of Threatened Species. Version 2014.2. <www.iucnredlist.org>. Downloaded on **17 October 2014**.

Aronson, R., Bruckner, A., Moore, J., Precht, B. & E. Weil 2008. *Mycetophyllia ferox*. The IUCN Red List of Threatened Species. Version 2014.2. <www.iucnredlist.org>. Downloaded on **17 October 2014**.

Atkins (2009) Development of the Benthic Index for the San Juan Bay Estuary System - Final Report to the San Juan Bay Estuary Program. 30 pp + appendices.

Atkins (2013) Culebra Cargo Ramp Environmental Baseline Survey, Sardina Bay, Culebra, Puerto Rico. Prepared by Atkins for the Puerto Rico Ports Authority. December, 2013.

Atkins (2014) Benthic Habitat Survey for the Culebra Auxiliary Cargo Ferry Terminal at San Ildefonso, Culebra, Puerto Rico. Prepared by Atkins for the Puerto Rico Ports Authority. October, 2014.

Bjorndal, K. and A. Bolten (2010) Hawksbill Sea Turtles in Seagrass Pastures: Success in a Peripheral Habitat. Marine Biology 157: 135-145.

Bjorndal, K.A. (1997) Foraging Ecology and Nnutrition of Sea Turtles. pp.199-231. In: Lutz P.L and J.A. Musick, eds. The Biology of Sea Turtles. CRC Press. Boca Raton, Florida.

Blumenthal, J.M. T.J. Austin, A.C. Broderick, G. Ebanks-Petrie, J.R. Olynik, M.F. Orr, J.L. Solomon, M.J. Witt and B.J. Godley (2008) Diving Behavior and Movements of Juvenile Hawksbill Turtles *Eretmochelys imbricata* on a Caribbean Coral Reef. Coral Reefs. 28: 55-65.

Blumenthal, J.M., T.J. Austin, C.D.L. Bell, J.B. Bothwell, A.C. Broderick, G. Ebanks-Petrie, J.A. Gibb, K.E. Luke, J.R. Olynik, M.F. Orr, J.L. Solomon and B.J. Godley (2009) Ecology of Hawksbill Turtles, Eretmochelys imbricata, on a Western Caribbean Foraging Ground. Chelonian Conservation and Biology. 8: 1-10.

Bolten, A.B. (2003) Variation in Sea Turtle Life History Patterns: Neritic vs. Oceanic Developmental Stages. pp.243-257. In: Lutz PL;Musick JA;Wyneken J, eds. The biology of sea turtles, Volume 2. CRC Marine Biology Series.

Boulon, R.H., P.H. Dutton and D.L McDonald (1996) Leatherback Turtles (*Dermochelys coriacea*) on St. Coix, U.S. Virgin Islands: Fifteen Years of Conservation. Chelonian Conservation and Biology. 2: 141-147.

Carr, T. and N. Carr (1986) *Dermochelys coriacea* (Leatherback turtle) Copulation. Herpetological Review. 17: 24-25.

Casey, J. J. Garner, S. Garner and A.S. Williard (2010) Diel Foraging Behavior of Gravid Leatherback Sea Turtles in Deep Waters of the Caribbean Sea. Journal of Experimental Biology. 213: 3961-3971.

Deutsch, C.J., C. Self-Sullivan and A. Mignucci-Giannoni (2008) *Trichechus manatus:* IUCN Red List of Threatened Species. Version 2009.2. International Union for Conservation of Nature.

Diez, C.E. and J.A. Ottenwalder (1999) Habitat Surveys. pp.41-44. In: Eckert K.L., K. Bjorndal, A. Abreu-Grobois and M. Donelly eds. Research and Management Techniques for the Conservation of Sea Turtles. IUCN/SSC Marine Turtle Specialist Group Publication. Washington.

Diez, C.E. and R.P. van Dam (2002) Habitat Effect on Hawksbill Turtle Growth Rates on Feeding Grounds at Mona and Monito Islands, Puerto Rico. Marine Ecology Progress Series. 234: 301-309.

Diez, C.E. and R.P. van Dam (2005) Anidación de la Tortuga Carey (Eretmochelys imbricata) en Isla de Mona, Puerto Rico. Departamento de Recursos Naturales 20pp.

Diez, C.E. and R.P. van Dam (2011) Mona and Monito Island, Puerto Rico: Marine Turtle Research Project. Reaserch Report for 2010. Departamento de Recursos Naturales y Ambientales de Puerto Rico. 23 pp.

Diez, C.E., X. Vélez-Zuazo and R.P. van Dam (2003) Hawksbill Turtles in Seagrass Beds. Marine Turtle Newsletter. 102: 8-10

Dow, W., K. Eckert, M. Palmer and P. Kramer (2007) An Atlas of Sea Turtle Nesting Habitat for the Wider Caribbean Region. The Wider Caribbean Sea Turtle Conservation Network and The Nature Conservancy. WIDECAST Technical Report No.6. 273pp.

Dutton, D.L.; Dutton, P.H.; Chaloupka, M.; Boulon, R.H. (2005) Increase of a Caribbean leatherback turtle *Dermochelys coriacea* nesting population linked to long-term nest protection. Biological Conservation. 126: 186-194.

Eckert, K.L. (1987) Environmental Unpredictability and Leatherback Sea Turtle (*Dermochelys coriacea*) nest loss. Herpetologica. 43: 315-323.

Eckert, K.L. (2001) Status and Distribution of the Leatherback Turtle, *Dermochelys coriacea*, in the Wider Caribbean Region. pp 24-31. In: Eckert K.L. and F.A. Abreu Grobois, eds. Marine Turtle Conservation in the Wider Caribbean Region: A Dialogue for Effective Regional Management. 16–18 November 1999, Santo Domingo. WIDECAST, IUCN-MTSG, WWF, and UNEP-CEP. pp.

Eckert, S. (2006) High-Use Oceanic Areas for Atlantic Leatherback Sea Turtles (*Dermochelys coriacea*) as Identified Using Satellite Telemetered Location and Dive Information. Marine Biology. 149: 1257-1267.

Eckert, S.A. (2002) Distribution of Juvenile Leatherback Sea Turtle *Dermochelys coriacea* Sightings. Marine Ecology Progress Series. 230: 289-293.

Eckert, S.A. (2002) Swim Speed and Movement Patterns of Gravid Leatherback Sea Turtles (*Dermochelys coriacea*) at St Croix, US Virgin Islands. Journal of Experimental Biology. 205: 3689-3697.

National Oceanic and Atmospheric Administration (NOAA) (2010) Essential Fish Habitat: A Marine Fish Habitat Conservation Mandate for Federal Agencies. U.S. Caribbean. NOAA 1999, revised 2010.

NOS (2001) Benthic Habitats of Puerto Rico and the U.S. Virgin Islands. National Oceanic and Atmospheric Administration. National Ocean Service, National Centers for Coastal Ocean Science Biogeography Program, Silver Spring, MD.

Rincon-Diaz, M.P., C.E. Diez, R.P. van Dam, and A.M. Sabat (2011) Effect of Food Availability on the Abundance of Juvenile Hawksbill Sea Turtles (*Eretmochelys imbricata*) in Inshore Aggregation Areas of the Culebra Archipelago, Puerto Rico. Chelonian Conservation and Biology: December 2011, Vol. 10, No. 2, pp. 213-221.

Shoshani, J. (2005) Order Sirenia. In Wilson, D.E. and D.M. Reeder: Mammal Species of the World (3rd ed.). Johns Hopkins University Press. p. 93.

STMC (2013) Tracking Manatee Movement. Save the Manatee Club. Retrieved from http://www.savethemanatee.org/tracking_manatees.htm on December 11, 2013.

U.S. Fish and Wildlife Service (USFWS) (2014) Environmental Conservation Online system, Listing and Occurrences for Puerto Rico.

U.S. Fish and Wildlife Service (USFWS) (2011) Caribbean Endangered Species Map. USFWS, Caribbean Ecological Services Field Office. Updated on June 15, 2011.