



**US Army Corps  
of Engineers®  
Jacksonville District**

**TIME CRITICAL REMOVAL ACTION  
ACTION MEMORANDUM**

**for**

**Specific Congressionally Authorized Areas within the Northwest Peninsula,  
Culebra, Puerto Rico,  
Formerly Used Defense Site  
Property Number I02PR0068**

**May 2016**

## EXECUTIVE SUMMARY

ES.1 It has been determined that a Time Critical Removal Action is required for the Specific Congressionally Authorized Areas within the Northwest Peninsula of the Culebra, Puerto Rico Formerly Used Defense Site. Per Public Law 93-166, the NWP cannot be remediated using federal funding; however, that was modified by Fiscal Year 15 National Defense Authorization Act language (Public Law 113-291). Section 317 of Public Law 113-291 states the Secretary of the Army may expend funds to decontaminate certain public use areas within the Northwest Peninsula of unexploded ordnance. The specific areas authorized within the Northwest Peninsula are portions of Carlos Rosario Beach, Flamenco Beach, Tamarindo Beach, the Flamenco Campground, and Carlos Rosario Trail.

ES.2 Based on available historic information, it was determined that Culebra was utilized as a coaling and communications station, for aerial bombing, maneuvers, naval gun and artillery firing, and amphibious training by the U.S. Marine Corps and the U.S. Navy during various periods between 1903 and 1975. Naval rounds were fired onto the Northwest Peninsula, including 5 inch (")/38 caliber (cal) and 5"/54 cal projectiles and 3"/50 cal, 6"/47 cal, and 8"/55 cal gun ammunition. Additionally, 5" High Explosive (HE) naval projectile, 2.75" rockets, 3" naval projectiles, 40mm projectiles, 75mm projectiles, 81mm mortars, 100-pound General Purpose (GP) bombs, a 500-pound GP bomb, and Bomb and Dummy Unit (BDU)-33 practice bombs have all been found on Northwest Peninsula. Current land use is recreational within the Flamenco, Tamarindo and Carlos Rosario Beach areas and Flamenco Campground area. It is anticipated that the land use will remain as recreational and that development for similar purposes will likely continue on site. The presence of large, high explosive munitions in, or in close proximity to, heavily used public beaches and nearby businesses pose a significant imminent risk to public health, safety, and the environment.

ES.3 The selected response actions to be performed under this Time Critical Removal Action include surface and subsurface removal of unexploded ordnance along Flamenco Beach, the Flamenco Campground, Carlos Rosario Trail, Carlos Rosario Beach, and Tamarindo Beach. The Time Critical Removal Action will include conducting identification (visual and geophysics), confirmation, surface and subsurface removal, and disposal of recovered munitions. The primary objective of the Time Critical Removal Action at the areas within the Northwest Peninsula specified for decontamination of unexploded ordnance by Congress via Public Law 113-291 is to mitigate and minimize the threat posed by the potential proximity of munitions to recreational users of the beach and campground, whose activities may present exposure to and potentially trigger an unintentional detonation of an item. This authorization does not allow cleanup of other environmental contaminants, including munitions constituents.

ES.4 Based on the presence of unexploded ordnance at these sites and the risk to the public, a Time Critical Removal Action is necessary to reduce risk at the Specific Congressionally Authorized Areas within the Northwest Peninsula of Culebra. There is a significant probability that military munitions will continue to be exposed at this Formerly Used Defense Site property that pose a safety hazard to individuals if not addressed through a response action. The Jacksonville District, the U.S. Army Engineering and Support Center, Huntsville, and the Environmental and Munitions Center of Expertise concurred that this situation meets the criteria for a Time Critical Removal Action. The cost of this Time Critical Removal Action, to include contractor, Jacksonville District, and U.S. Army Engineering and Support Center, Huntsville costs, is estimated at \$1,700,000 US Dollars.

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## **1 LOCATION AND DESCRIPTION OF SITE**

### **1.1 SPECIFIC CONGRESSIONALLY AUTHORIZED AREAS WITHIN THE NORTHWEST PENINSULA, CULEBRA, PUERTO RICO, FUDS PROPERTY NUMBER I02PR0068**

1.1.1 Culebra is located about 17 miles east of the main island of Puerto Rico (Figure 1). The Culebra property, consisting of Culebra Island and surrounding cayos, was acquired via land transfers, purchases, donations, and leases, and was utilized as a coaling and communications station, for aerial bombing, maneuvers, naval gun and artillery firing, and amphibious training by the U.S. Marine Corps and the U.S. Navy during various periods between 1903 and 1975.

1.1.2 An Inventory Project Report (INPR) was signed on 24 December 1991, establishing the Culebra Island site as a Formerly Used Defense Site (FUDS), with designated Property No. I02PR0068. The Findings and Determination of Eligibility (FDE) concluded that “the site, except for 87.5 acres still under control of the Navy, has been determined to be formerly used by the Department of Defense. It is therefore eligible for the Defense Environmental Restoration Program (DERP).” A Revised INPR was completed in June 2005. The Revised INPR further clarified the military use of the Island of Culebra and delineated the original Munitions Response Site (MRS) into 13 MRSs (Site 02 through Site 14) and an Installation Restoration Program (IRP) site (Site 00).

1.1.3 Based on historical research and U.S. Army Corps of Engineers (USACE) Site Inspections, the Culebra property has been prioritized for remedial investigation for munitions and explosives of concern (MEC) and munitions debris (MD), with the exception of the area on Culebra Island designated as the Northwest Peninsula (NWP). Per Public Law (PL) 93-166, the NWP cannot be remediated using federal funding; however, that was modified by Fiscal Year (FY) 15 National Defense Authorization Act (NDAA) language (PL 113-291). Section 317 of PL 113-291 states the Secretary of the Army may expend funds to decontaminate certain public use areas within the NWP of unexploded ordnance (UXO). The specific areas authorized within the NWP are portions of Carlos Rosario Beach, Flamenco Beach, Tamarindo Beach, the campground, and Carlos Rosario Trail (Figures 2, 3 and 4). The intent is to ensure UXO are removed from these areas. This authorization does not allow cleanup of other environmental contaminants, including munitions constituents.

1.1.4 A Congressionally-mandated study specified by PL 111-383, Section 2815, was completed in 2012 relating to that portion of the former bombardment area on the Culebra NWP that was transferred to the Commonwealth of Puerto Rico by quitclaim deed. The study findings indicated that approximately 750,000 naval rounds were fired into the NWP. Of these, an estimated 80 percent (600,000) were 5 inch (")/38 caliber (cal) and 5"/54 cal projectiles and an estimated 10 percent (75,000) were 3"/50 cal, 6"/47 cal, and 8"/55 cal gun ammunition. The balance included other types of military munitions including 16"/50 cal, and munitions for both mortars and howitzers. Additionally, during 1942 to 1968, approximately 320,000 naval aviation munitions (e.g., bombs and rockets) were used (dropped or fired) within the NWP. The predominant military munitions encountered within the Study Area identified as UXO was the 5" High Explosive (HE) naval projectile. Other UXO encountered included the following types of military munitions: 2.75" rockets, 3" naval projectiles, 40mm projectiles, 75mm projectiles, 81mm mortars, 100-pound General Purpose (GP) bombs, a 500-pound GP bomb, and Bomb Dummy Unit (BDU)-33 practice bombs. Prior to the study, other types of munitions items, such as a Tiny Tim rocket, were found in the rocky beach area of the NWP.

Since the completion of the Congressionally-mandated study, USACE has been notified of seven (7) reports of public encounters with munitions, adjacent to or within the NWP, requiring multiple emergency responses from local authorities or the Mayport (Navy) Explosive Ordnance Disposal (EOD) team. Some of the munitions items recently addressed by emergency responses teams are: two (2) 100-pound GP bombs, one (1) 3" artillery round, five (5) items identified as possibly white phosphorous rounds, one (1) rocket motor, one (1) High Velocity Aircraft Rocket warhead, two (2) concrete filled (not known until detonation) 16" projectiles and one (1) 3" projectile. Additional unknown munitions items have been found and addressed; however, the emergency response teams have not been able to identify them due to their deteriorated conditions.

## **2 DESCRIPTION OF HAZARDS**

2.1 Naval rounds were fired onto NWP, including 5"/38 cal and 5"/54 cal projectiles and 3"/50 cal, 6"/47 cal, and 8"/55 cal gun ammunition. Additionally, 5" HE naval projectile, 2.75" rockets, 3" naval projectiles, 40mm projectiles, 75mm projectiles, 81mm mortars, 100-pound GP bombs, a 500-pound GP bomb, 16" projectiles, and BDU-33 practice bombs have all been found on NWP. Some of these findings were encountered and reported by residents of Culebra or visitors (e.g. tourist), resulting in multiple emergency responses from local authorities or EOD.

2.2 The presence of large, high explosive munitions in, or in close proximity to, heavily used public beaches (e.g. Flamenco, Carlos Rosario and Tamarindo beaches) and nearby businesses pose a significant imminent risk to public health, safety, and the environment. Not implementing a removal action may lead to injury to persons and property should a UXO be accidentally detonated.

## **3 CURRENT LAND USE ACTIVITIES AND RISK OF EXPOSURE**

3.1 The Southern Portion of NWP and Flamenco Beach are managed by the Conservation and Development Authority of Culebra (ACDEC) for recreational use. Current land use is recreational within the Flamenco, Tamarindo and Carlos Rosario Trail and Beach areas and the Flamenco Campground area. Figure 2 shows the location of these recreational areas. It is anticipated that the land use will remain as recreational and that development for similar purposes will likely continue on site. As per PL 93-166 (1974), the lands associated with the NWP may be used only for public park and recreational purposes.

3.2 Many people visit the areas throughout the year. Local workers are regularly present within these locations to manage recreational areas. The Flamenco Beach Campground consists of 11 commercial vendor structures and an expansive tent-camping area. Additionally, areas such as Flamenco Beach, Carlos Rosario Trail and Beach, and Tamarindo Beach receive thousands of visitors yearly. Access to these areas is unrestricted to the public, and sites can be accessed by boat or other access areas. Attachment 1 shows the current conditions of the specific sites.

3.3 The risk to public safety associated with the presence of MEC was evaluated for the NWP. There have been numerous public encounters with hazardous UXO, and munitions items have been recovered and addressed during multiple and recent emergency responses by local authorities or EOD. Given confirmation of hazardous UXO presence and public accessibility to the site, the MEC exposure pathway is complete at the NWP.

3.4 Based on this information, there is a MEC hazard for human receptors at the site due to the presence of large, high explosive munitions in, or in close proximity to, heavily used public beaches, trails, and campgrounds. If no action is taken, future risk to receptors is considered to be the same as the current risk, provided site usage does not change. However, conducting a TCRA will significantly reduce the risk at the site.

#### **4 PREVIOUS ACTIONS TO ADDRESS HAZARD**

4.1 In 1995, MTA, Inc. (MTA) completed an interim remedial action on 3.66 acres of the Flamenco Beach Campground near Flamenco Beach to dispose of UXO within two feet of the ground surface at the campground. MTA found 11 UXO items including 5" HE naval projectiles, 40mm tracer rounds, BDU-33s, and various flares.

4.2 In 2008 and 2009, USAE completed a Non-Time Critical Removal Action (NTCRA) on the portion of Flamenco Beach within MRS 04. They performed digital geophysical mapping of 12.3 acres and reacquired target anomalies. Findings included six MD items and one UXO item (5" projectile) on Flamenco Beach.

4.3 In 2011, USACE conducted a Congressionally-mandated study on behalf of the Department of Defense (DOD) relating to the presence of UXO at the southwestern portion of the NWP pursuant to Section 2815 of the Ike Skelton NDAA for FY 2011, PL 111-383. The study area consisted of the 408 acre area that makes up the southern portion of NWP, which includes Flamenco Beach, the Flamenco Campground, Tamarindo Beach and the Carlos Rosario Trail and Beach. USACE performed historical record reviews as well as geophysical surveys to detect subsurface anomalies and subsequently excavated them to determine if the anomalies were UXO, munitions debris, or other debris. An anomaly density map was created, and a review of the current public access to the site was conducted. Additionally, DOD consulted with the Commonwealth of Puerto Rico regarding the planned future use of the area. The study determined that approximately 750,000 naval rounds were fired into the NWP, including 5"/38 cal and 5"/54 cal projectiles, 3"/50 cal, 6"/47 cal, and 8"/55 cal gun ammunition, 16"/50 cal munitions, and naval aviation munitions. The predominant military munition encountered within the Study Area as UXO was the 5" HE naval projectile. Other UXO encountered included 2.75" rockets, 3" naval projectiles, 40mm projectiles, 75mm projectiles, 81mm mortars, 100-pound GP bombs, a 500-pound GP bomb, and BDU-33 practice bombs. The study determined that there were approximately 3.7 UXO per acre within the study area (based on a total finding of 70 UXO within 19 acres of the study area).

4.4 As mentioned in 1.1.4 above, since the completion of the Congressionally-mandated study, USACE has been notified of seven (7) reports of public encounters with munitions, adjacent to or within the NWP, requiring multiple emergency responses from local authorities or the EOD team.

#### **5 ENDANGERMENT DETERMINATION**

5.1 The USACE Project Delivery Team conducted an endangerment determination for the Specific Congressionally Authorized Areas within the NWP of Culebra. Each specific area was analyzed for accessibility, type of ordnance, potential energy input by receptors and effectiveness of existing controls. It has been demonstrated that military munitions exist at the specified areas

of this FUDS property that pose a potential safety hazard to individuals if not addressed through the response action described in this Action Memorandum.

5.2 A removal action is justified in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) removal factors and site specific conditions as cited in 40 CFR 300.415 (b) as follows: there exists an actual or potential exposure to nearby human populations from hazardous substances in the form of explosive ordnance; weather conditions, especially severe weather conditions such as tropical storms or hurricanes may cause migration (e.g. uncover) or release of hazardous substances; there exists the threat of explosion; and there are no other appropriate Federal or State response mechanisms to respond to the potential release.

## 6 PROPOSED ACTION

6.1 The recommended action for the Specific Congressionally Authorized Areas within the NWP on Culebra will cover the following areas (as shown in Figures 2, 3, and 4):

- Flamenco Beach (4.30 acres): From the mean low water line to the vegetation line.
- Flamenco Campground (17.06 acres): From the vegetation line to the campground fence line.
- Carlos Rosario Trail (3.67 acres): 20 feet (ft) from either side of the trail centerline, excluding areas that cannot be reached due to physical constraints such as steep slopes or existing fences.
- Carlos Rosario Beach (5.00 acres): From the mean low water line to the vegetation line and extended 50 ft into the vegetation line (tree line).
- Tamarindo Beach (1.8 acres): From the mean low water line to the vegetation line and extended 50 ft into the vegetation line (tree line).

6.2 The primary objective of the TCRA at the areas within the NWP specified for decontamination of UXO by Congress via PL 113-291 is to mitigate and minimize the threat posed by the potential proximity of munitions to recreational users of the beaches and campground, whose activities may present exposure to and potentially trigger an unintentional detonation of an item. The intent is to ensure UXO are removed from these areas, thereby allowing their safe use for their current recreational purposes. This authorization does not allow cleanup of other environmental contaminants, including munitions constituents.

6.3 The TCRA will include conducting identification (visual and geophysics), confirmation, surface and subsurface removal, and disposal of recovered munitions. The successful performance standards of the removal will consist of the Government finding no MEC or Material Potentially Presenting an Explosive Hazard (MPPEH) (excluding small arms ammunition, i.e., .50 cal and smaller), and no MD or Range Related Debris (RRD) equivalent to, or greater than 37mm in diameter or width on the surface of the munitions response site. Additionally, there shall be no subsurface finding of MEC or MPPEH shallower than 8x the item's diameter and no signal equivalent to, or greater than anomaly selection criteria without an acceptable explanation. All anomalies in the subsurface shall be resolved, regardless if water is encountered.

6.4 Jacksonville District, U.S. Army Engineering and Support Center, Huntsville, and the Environmental and Munitions Center of Expertise have determined that this situation meets the criteria for a TCRA since there is a significant possibility that military munitions exist at the specified areas of this FUDS property that pose an imminent hazard to individuals if not

TIME CRITICAL REMOVAL ACTION (TCRA) ACTION MEMORANDUM  
Specific Congressionally Authorized Areas within the Northwest Peninsula  
Culebra, Puerto Rico, I02PR0068

addressed through the Response Action described in this Action Memorandum. The cost of this TCRA, to include contractor, Jacksonville District and U.S. Army Engineering and Support Center costs, is estimated at \$1,700,000 US Dollars.

**7 AUTHORIZING SIGNATURE**

This Action Memorandum presents the selected response action at the Specific Congressionally Authorized Areas within the NWP of Culebra, Puerto Rico. The DOD is the lead agency at FUDS, and the Army is the Executive Agency on behalf of the DOD. The Army has delegated project management and execution responsibility for FUDS to the U.S. Army Corps of Engineers under DERP at Culebra, and USACE has developed this Action Memorandum consistent with the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, and the NCP. This action memorandum will be incorporated into the larger Administrative Record file for Culebra, which will be available for public view.

This document, presenting a selected remedy with a present worth cost estimate of \$1,700,000, is approved by the undersigned, pursuant to Memorandum, DAIM-ZA, September 9, 2003, subject: Policies for Staffing and Approving Decision Documents (DDs), and to Engineer Regulation 200-3-1, FUDS Program Policy.”

APPROVED:



JASON A. KIRK, P.E.  
Colonel, EN  
Commanding

13 May 2016

Date

## FIGURES

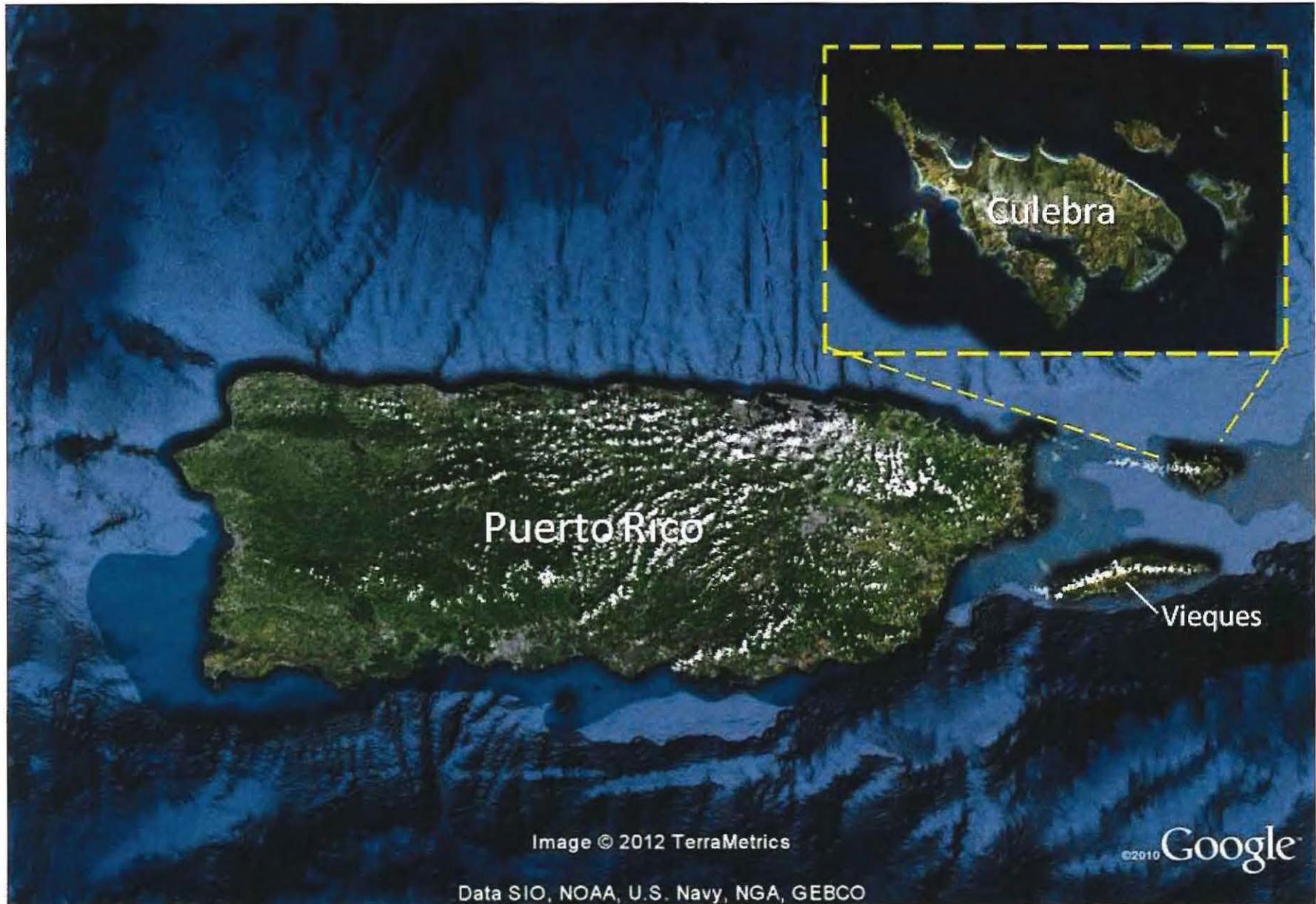


Figure 1. Location Map of Culebra.

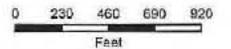
Boundaries of the Areas within the Northwest Peninsula  
 Specified in Section 317 of Public Law 113-291  
 DERP-FUDS Property No. I02PR0068, Culebra Island, Puerto Rico



US Army Corps of Engineers  
 Jacksonville District

- Fence Line  
X - X
- Property Line  
—
- Mean Low Waterline  
—
- Carlos Rosario Trail  
—
- Campgrounds  
■
- Mean Low Water to Vegetation  
■
- 50ft inside Vegetation Line  
■

Coordinate System:  
 GCS North American 1983  
 Datum: North American 1983  
 Units: Degree



Mapper: B. Price  
 Reviewer: R. Swilley  
 Map Date: 12/15/2015

Boundaries of the Areas within the Northwest Peninsula  
Specified in Section 317 of Public Law 113-291  
DERP-FUDS Property No. I02PR0068, Culebra Island, Puerto Rico  
(Flamenco Beach)



US Army Corps of Engineers  
Jacksonville District

- Fence Line
- Property Line
- Carlos Rosario Trail
- Mean Low Waterline
- Campgrounds
- Mean Low Water to Vegetation
- 50ft inside Vegetation Line

Coordinate System:  
GCS North American 1983  
Datum: North American 1983  
Units: Degree



0 120 240 360 480  
Feet

Mapper: B. Price  
Reviewer: R. Swilley  
Map Date: 4/29/2016



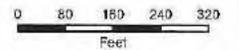
Boundaries of the Areas within the Northwest Peninsula  
Specified in Section 317 of Public Law 113-291  
DIERP-FUDS Property No. I02PR0068, Culebra Island, Puerto Rico  
(Carlos Rosario & Tumarindo Beach)



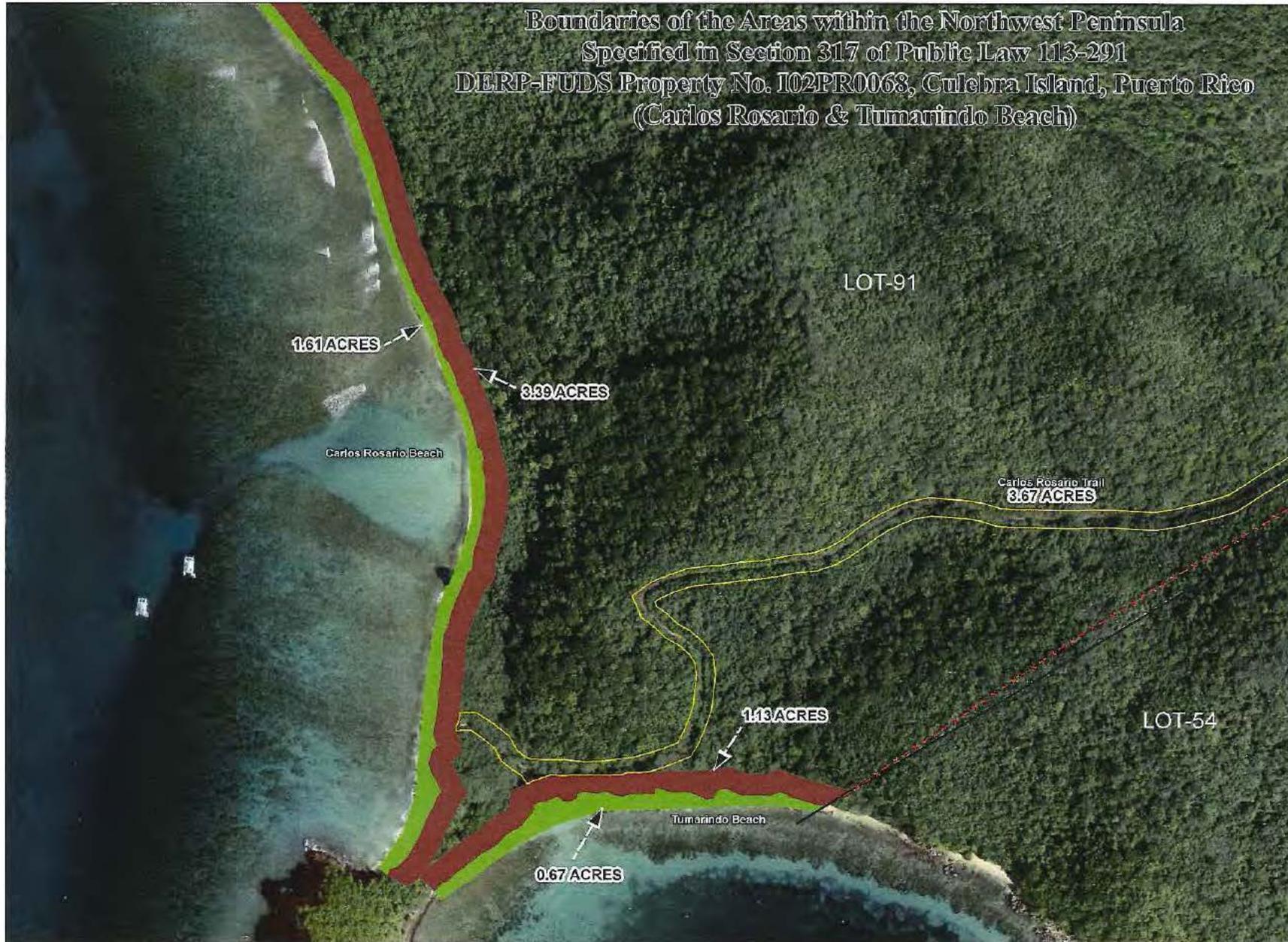
US Army Corps of Engineers  
Jacksonville District

- Fence Line
- Property Line
- Carlos Rosario Trail
- Mean Low Waterline
- Campgrounds
- Mean Low Water to Vegetation
- 50ft inside Vegetation Line

Coordinate System:  
GCS North American 1983  
Datum: North American 1983  
Units: Degree



Mapper: B. Price  
Reviewer: R. Swilley  
Map Date: 4/29/2016



## ATTACHMENTS

**Attachment 1**  
**Photographic Documentation**  
**Culebra, Puerto Rico**



Flamenco Beach



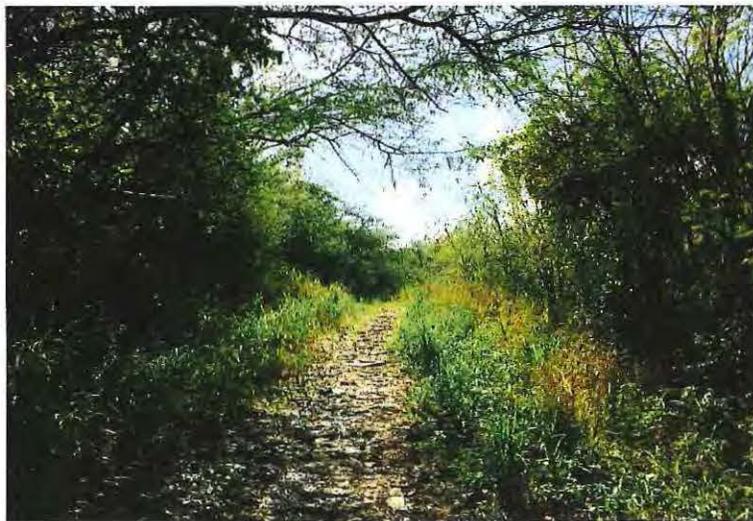


Flamenco Campground





Carlos Rosario Trail/Entrance





Carlos Rosario Beach and Treeline





Tamarindo Beach and Treeline