

# Department of Defense



## **Study Relating to the Presence of Unexploded Ordnance in a Portion of the Former Naval Bombardment Area of Culebra Island, Commonwealth of Puerto Rico**

**Conducted Pursuant to Section 2815 of the Ike Skelton  
National Defense Authorization Act for Fiscal Year 2011,  
Public Law 111-383**

**April 20, 2012**

## Forward

This report was prepared by the U.S. Army for the Department of Defense (DoD) in response to the Governor of Puerto Rico's April 25, 2011 request to the Secretary of Defense in accordance with section 2815 of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011, Public Law 111-383. By direction of the Deputy Assistant Secretary of the Army for Environment, Safety and Occupational Health, the U.S. Army Corps of Engineers (USACE) conducted a study to develop the data needed to prepare a report responsive to the matters that section 2815 addresses. The U.S. Army developed this report based on both existing site information and data that USACE derived from its field investigations, which were limited to collecting only the data required to address section 2815.

At the Army's request, the Commonwealth of Puerto Rico provided draft information outlining its potential plans for the future use of the Southern Portion of the Northwest Peninsula (NWP), but it has not yet finalized its plans for development of this property. Consequently, this report is based on the estimated cost for removing unexploded ordnance from the study area's entire 408 acres.

It is important to understand that factors, such as the Commonwealth's decision on how the NWP will be used, compliance with the Endangered Species Act (ESA), and the desire to limit the impact of any response actions on the various valuable ecological resources present may cause the estimated costs to increase significantly.

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## **Study Relating to the Presence of Unexploded Ordnance in a Portion of the Former Naval Bombardment Area of Culebra Island, Puerto Rico**

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On behalf of the Department of Defense (DoD), the U.S. Army Corps of Engineers (USACE) conducted a study between June 2011 and December 2011 to evaluate site-specific conditions relating to the presence of unexploded ordnance (UXO)<sup>1</sup> at the Southern Portion of the Northwest Peninsula (NWP) (the Study Area), Culebra Island, Commonwealth of Puerto Rico. The United States owned and the U.S. Navy used this property as a bombardment area for several decades. In 1982, the property was transferred by deed to the Commonwealth of Puerto Rico at the Commonwealth's request. Pursuant to authority granted in section 204 of Public Law 93-166, the deeds imposed certain conditions limiting the property's use. The island of Culebra is located approximately 17 miles east of the main island of Puerto Rico.

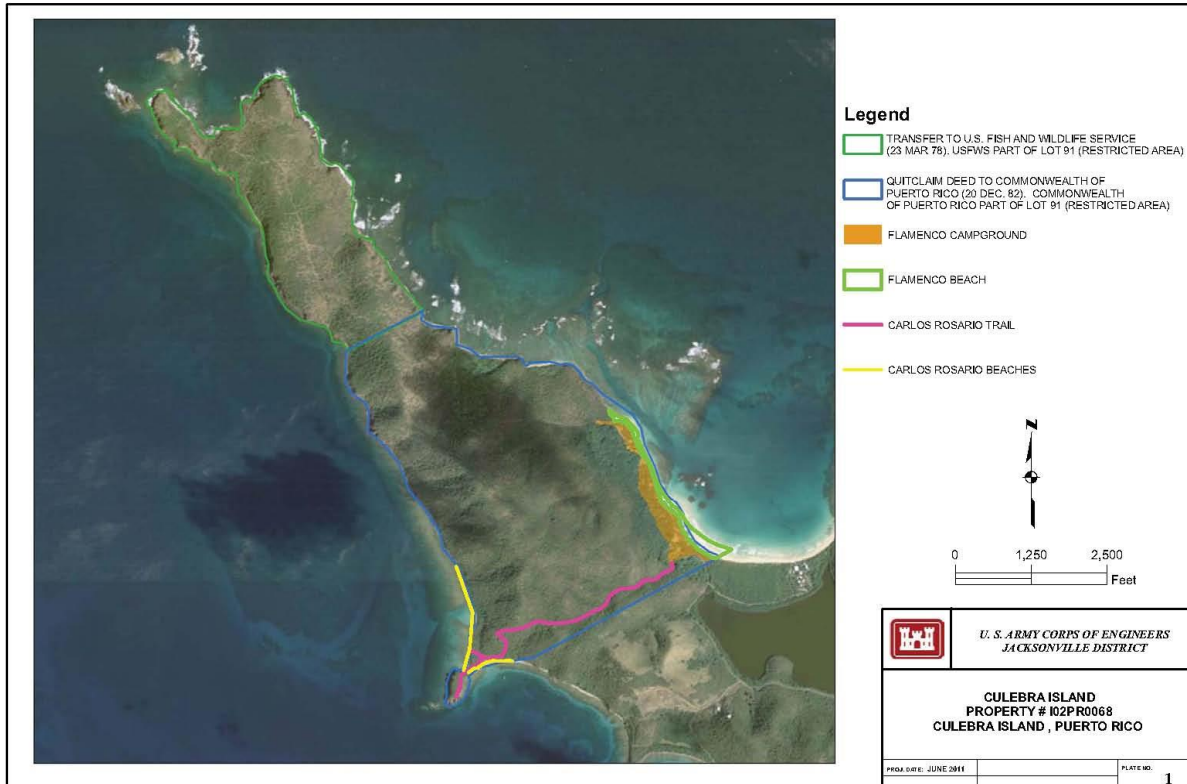
Section 2815 of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011, Public Law 111-383 (Enclosure 1) provides that the Secretary of Defense shall conduct a study upon receiving a request from the governor of Puerto Rico. The governor made such a request by letter dated April 25, 2011.

Section 2815 requires that the Secretary of Defense:

- Conduct a study of the former bombardment area with regard to the following five elements, with a specific assessment of Flamenco Beach:
  - (1) *An estimate of the type and amount of unexploded ordnance.*
  - (2) *An estimate of the cost of removing unexploded ordnance.*
  - (3) *An examination of the impact of such removal on any endangered or threatened species and their habitat.*
  - (4) *An examination of current public access to the former bombardment area.*
  - (5) *An examination of any threats to public health or safety and the environment from unexploded ordnance.*
- Consult with the Commonwealth of Puerto Rico regarding its plans for the future uses of the former bombardment area.
- Consider the Commonwealth's plans in developing any conclusions or recommendations the Secretary may include in the study.

## OVERVIEW

The Study Area (outlined in blue on Figure 1), which consists of approximately 408 acres, is the southern portion of the NWP. The Study Area includes the Carlos Rosario Beach and portions of Flamenco Beach.



**Figure 1. Map of Study Area (Quitclaim Deed Boundary)**

Input to this report consisted of data collected through:

- A review of historical military records and previous investigation reports.
- A geophysical survey during which advanced metal detectors were used to detect subsurface metallic objects (referred to as anomalies) and record their location.
- The excavation of selected anomalies for which the geophysical survey data indicated the anomaly may be a UXO.
- An evaluation of the recovered item to determine whether it was a UXO.
- Sampling of soil, surface water, and sediment for munitions constituents (MC)<sup>2</sup>.

## **STUDY APPROACH**

The Army developed this study to obtain the data needed to comply with the requirements of section 2815. Throughout the study, USACE coordinated with the Puerto Rico Environmental Quality Board (EQB) to ensure consideration of the EQB's concerns and input.

USACE's field work began with selection of geophysical survey paths that were located in areas representative of the different types of terrain found within the Study Area. The areas that USACE selected were along the beach, in the campgrounds, and included both flat and steeply sloping terrain. To accommodate the survey, workers manually cleared tropical vegetation from the selected survey paths. During clearing, plant biologists helped ensure endangered plant species were avoided, and UXO-qualified personnel ensured UXO were avoided.

Once the survey paths were cleared of vegetation, UXO-qualified personnel used advanced metal detectors along the survey paths to detect subsurface anomalies that were subsequently excavated to determine whether they were UXO. In some areas, USACE widened the survey path to allow more extensive data to be obtained. During the geophysical survey, USACE:

- Used a portable global positioning system (GPS) instrument to record the location of the survey paths and any detected anomalies;
- Investigated all detected anomalies to determine whether it was UXO, munitions debris, or other debris (e.g., cultural debris, like fence wire);
- Determined the explosives safety status of any munitions debris encountered; and
- Destroyed all recovered UXO and any munitions debris determined to pose an explosive hazard either in place or at a selected location.

After the survey, USACE used specialized software to map the distribution and type of military munitions<sup>3</sup> (e.g., UXO) found along the survey paths. Because the survey paths only covered a portion of the Study Area, experts used the survey data to develop a model to predict the potential distribution of UXO across the entire Study Area. The resulting map (see Figure 3) divides the Study Area into distinct areas based on density of munitions (High, Medium, and Low) and steepness of the terrain. USACE then estimated the potential costs for investigation and removal of UXO for each of these areas. Significant portions of the estimated costs are for clearance of vegetation, investigation of detected anomalies, and removal of UXO. The greater the UXO density, the higher the potential costs.

As part of the investigation, USACE collected soil, surface water, and sediment samples. USACE analyzed these samples to determine whether they contained MC (metals and explosives) that could be harmful to human health or the environment.

Additional detail concerning the study approach and results are provided in the following sections.

## ASSESSMENT OF THE STUDY AREA

The USACE's assessment of the Study Area, which addresses the entire 408 acres, responds to the five elements stated in section 2815(b).

### (1) An Estimate of the Type and Amount of Unexploded Ordnance (UXO)

The NWP was used for live gunnery practice between 1936 and January 1, 1972. During this period, 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. (U.S. Navy Memorandum dated June 1973 from Commander in Chief U.S. Atlantic Fleet to Chief of Naval Operations, Subject: Time-Phased Plan for Relocation of Training Activities from the Culebra Complex to the Islands of Desecheo and Monito.)

Since 1995, 70 UXO have been encountered within approximately 19 acres of the Study Area. This total, which includes 36 UXO discovered during this study, equates to approximately 3.7 UXO per acre. The locations of the 36 UXO discovered during USACE's 2011 assessment are shown on Figure 2.

The predominant military munition encountered within the Study Area as UXO was the 5-inch High Explosive (HE) naval projectile. Other UXO encountered included the following types of military munitions: 2.75-inch rockets, 3-inch 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.

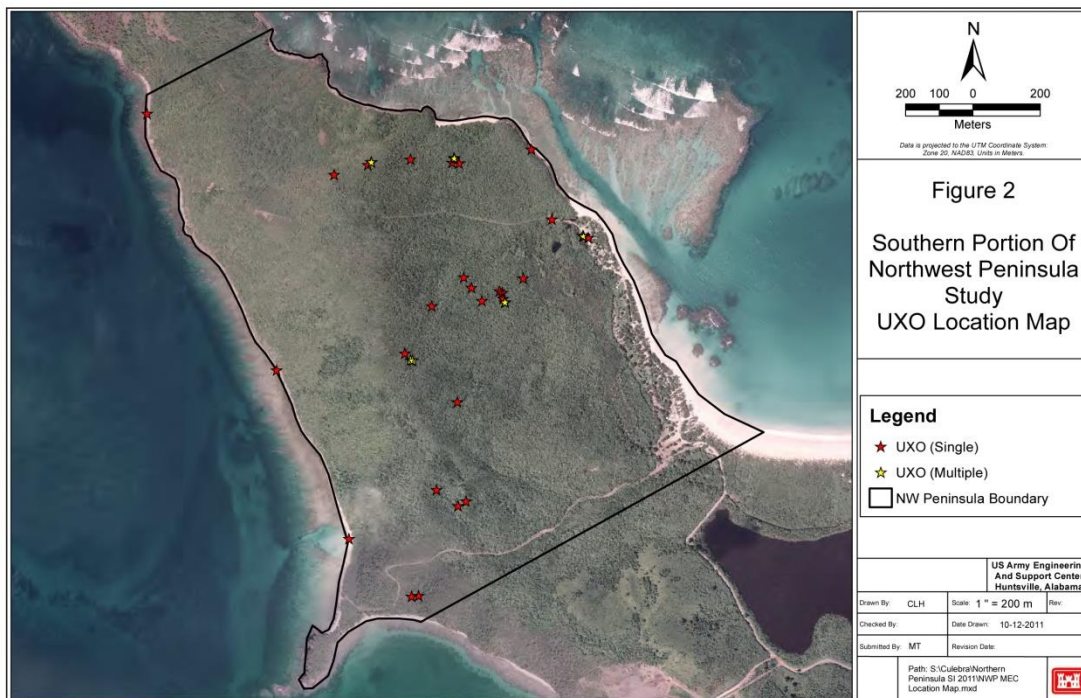
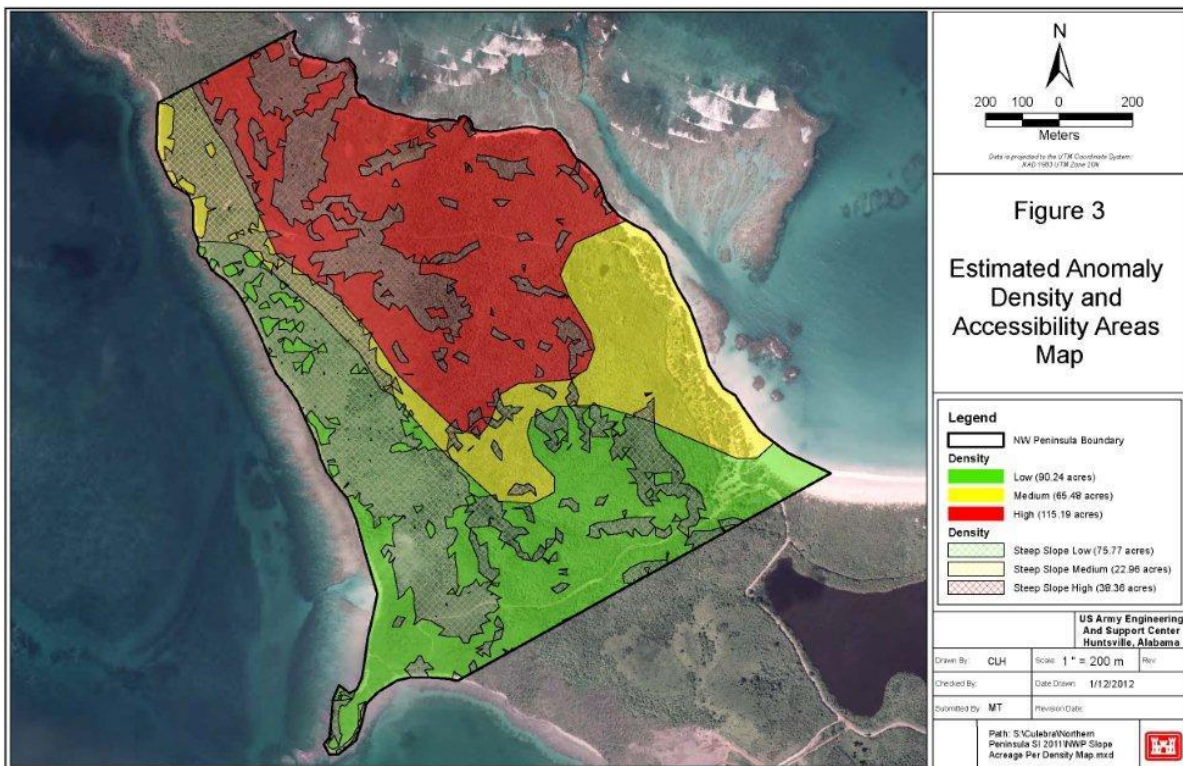


Figure 2. Locations of Individual or Multiple UXO

**(2) An Estimate of the Cost of Removing Unexploded Ordnance (UXO)**

The estimated cost-to-complete (CTC) for the removal of UXO from the entire 408 acre Study Area is approximately \$49 million. This estimate includes the cost to prepare all necessary environmental documentation. USACE based this estimate on the scope of munitions response activities (e.g., investigation, removal) that it developed, pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), for property intended to be used as a public park and recreation area. The response actions USACE used to develop this estimate included a surface removal of UXO and the removal of subsurface UXO to a depth of two feet below ground surface. Similar response actions have been considered protective for property to be used as public parks and recreation areas. In response to section 2815(b), this CTC includes approximately \$3 million for removal of UXO from the Flamenco Beach and Campground Area. Should the Commonwealth of Puerto Rico change the Study Area's future land use, the CTC may increase or decrease depending on the response actions needed to make the land safe from an explosives safety perspective for the intended use.



**Figure 3. Estimated Anomaly Density and Accessibility Areas Map**

In developing this CTC, USACE divided the Study Area into three areas based upon the number of metallic anomalies that USACE detected during the geophysical survey, USACE's estimate of the density of those metallic anomalies within each area, and the steepness of the terrain (see Figure 3). USACE based its estimate on the costs associated with digging each

anomaly and destroying any UXO encountered. The three areas reflect an estimated anomaly density of:

- Low (Green): 0 to 785 anomalies per acre
- Medium (Yellow): 786 to 1,040 anomalies per acre
- High (Red): 1,041 to 1,400 anomalies or more per acre

Additionally, the steepness of terrain can increase the cost for UXO removal. The conduct of munitions response<sup>4</sup> actions (e.g., investigation or removal) on terrain slopes of greater than 30 percent also poses safety concerns that must be considered. When necessary, the conduct of munitions responses on such terrain requires significantly more effort than areas with a lesser slope. To more accurately represent the UXO removal costs, USACE further subdivided the three density areas above into areas with and without steep terrain (see below). Of the 408 acres within the Study Area, USACE determined that approximately 34 percent has a slope of over 30 percent.

- High density acres (115.19 acres)
- High density acres with a steep slope (38.36 acres)
- Medium density acres (65.48 acres)
- Medium density acres with a steep slope (22.96 acres)
- Low density acres (90.24 acres)
- Low density acres with a steep slope (75.77 acres)

USACE based the CTC for the Study Area on the estimated cost of removing UXO from each of these areas. Table 1 provides the estimated costs for each of these areas and indicates the per acre cost. The per acre cost is based upon the estimated cost for:

- Removal of vegetation to gain access to the areas to conduct a geophysical survey;
- Excavation of the metallic anomalies that USACE believes have the potential to be UXO;
- Evaluation of any military munitions, munitions debris, or range-related debris encountered;
- On-site disposal of any UXO and any material determined to pose an explosive hazard;
- Collection and removal of munitions debris and range-related debris that has been evaluated and documented as safe; and
- Implementation of measures determined to be necessary to protect ESA-listed species and designated critical habitat.

The estimated cost of removing UXO from the Study Area was calculated by multiplying the cost per acre by the estimated number of acres for the corresponding density areas type.



**Table 1. Estimated Cost for UXO Removal from the Study Area**

Area	Estimated Cost per Acre	Estimated Acreage	Estimated Subtotal Cost by Density Area
High density	\$115,211	115.19	\$13,271,155
High density, with steep slope	\$161,296	38.36	\$6,187,315
Medium density	\$104,454	65.48	\$6,839,648
Medium density with steep slope	\$146,236	22.96	\$3,357,579
Low density	\$96,366	90.24	\$8,696,068
Low density, with steep slope	\$134,912	75.77	\$10,222,282
<b>Estimated Cost-to-Complete (CTC) for Removal Activities</b>		<b>408</b>	<b>\$48,574,047*</b>
*Additional cost of \$490K required to prepare environmental documentation to implement removal activities.			

**(3) An Examination of the Impact of Such Removal on Any Endangered or Threatened Species and Their Habitat**

The Study Area consists of diverse sensitive habitats including wetlands, a mangrove area, seabird rookeries, and sea turtle nesting sites. Various valuable ecological resources are present or are potentially present within the Study Area. Such resources include five federally listed threatened or endangered species. Because protected species and habitats are present or are potentially present within the Study Area, the Study Area is considered ecologically important. Based on the ecological resources present or potentially present, the primary ecological risk assessment management goal is to sustain the populations of any listed species that occur at the Study Area.

USACE’s study included an analysis of the various types of habitat prevalent within the Study Area. Such habitat types include: beaches and shores; lagoons; rocky cliffs; open grasslands; closed forest canopy; and legume canopy and grassland understory. The following threatened or endangered species are present or are potentially present within these habitat types: hawksbill turtle; Virgin Islands tree boa; Culebra giant anole; Grant’s leptocereus; and Wheeler’s peperomia.

Removal of UXO may have an impact on endangered or threatened species and their habitats because vegetation clearance would be required for areas to be investigated to help ensure the safety of munitions response workers. The ESA requires that any possible impact or

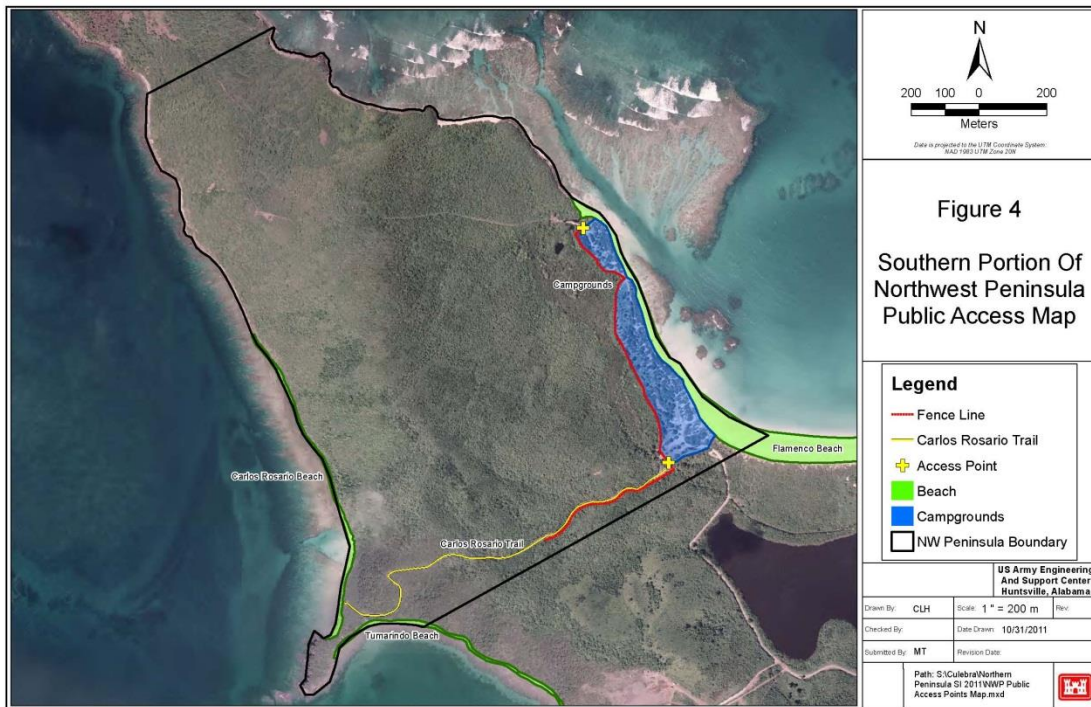
harm to endangered species or their critical habitat be minimized. Therefore, any munitions response actions that may be conducted that have the potential to impact or harm endangered species or their critical habitat should be coordinated with the U.S. Fish and Wildlife Service and others, as appropriate. This coordination will be the basis for developing mitigation measures to limit such impacts or harm before proceeding with the response action. The mitigation measures developed would be employed during response action activities to help ensure threatened or endangered species and their habitats are identified and when possible, avoided.

**(4) An Examination of Current Public Access to the Former Bombardment Area**

There are no full-time residents within the Study Area, and its use for residential purposes is restricted by deed provisions and section 204 of Public Law 93-166. Many people visit the area throughout the year. Local workers are regularly present within the Study Area to manage recreational areas. The Flamenco Beach Campground, which consists of 11 commercial vendor structures and an expansive tent-camping area, is located within the Study Area. Additionally, other areas such as Flamenco Beach, Carlos Rosario Trail and Beach, and Tamarindo Beach are regularly visited. Access to Flamenco Beach is unrestricted; however, natural barriers, such as dense vegetation and rocky cliffs, make access to many portions of the Study Area difficult.

As shown in Figure 4, a fence was installed along the western border of the Flamenco Beach Camping Area. Another fence, which was installed during the 1970s, runs partially along the Study Area's southern boundary. This fence, which begins at the Flamenco Beach parking area, extends west and terminates short of the top of the ridgeline. Vegetation growth or visitors have compromised multiple areas along the fence line.

There are two gates in the fence that provide access to the Study Area. One is at the parking area on the south end of the campground, with the other at the campground's northern most point (see Figure 4). The southern access point is controlled by a chained and locked gate. However, visitors have been able to bypass this gate, gaining access to the trail that leads to the Carlos Rosario Beach Area. The Study Area's vegetation is very restrictive, generally deterring travel off established trails and roads. Additionally, the Study Area is accessible by sea on both the eastern and western sides along the beach areas.



**Figure 4. Public Access Map**

**(5) An Examination of Any Threats to Public Health or Safety and the Environment from Unexploded Ordnance (UXO)**

**(a) Threats to Public Health or Safety from UXO**

USACE applied the Munitions Response Site Prioritization Protocol (MRSP) (32 Code of Federal Regulation, Part 179) to identify the relative risks posed by UXO, discarded military munitions (DMM)<sup>5</sup>, and MC to people (e.g., visitors, current and future workers) who might obtain access to the Study Area. The MRSP's modules are the:

- Explosive Hazard Evaluation (EHE) Module: provides the approach for assigning a relative priority to a munitions response site (MRS) where UXO, DMM, and MC are known or suspected to be present.
- Chemical Warfare Materiel Hazard Evaluation (CHE) Module: provides the approach for assigning a relative priority to an MRS where chemical warfare materiel (CWM) (i.e., chemical munitions and chemical agents in other than a munitions configuration) hazards are known or suspected to be present.
- Health Hazard Evaluation (HHE) Module: provides the approach for evaluating the relative risk to human health and the environment where MC and any incidental non-munitions-related contaminants are known or suspected to be present.

Application of the MRSP to the Study Areas resulted in a score of 2, on a scale of 1 to 8, with one being the highest relative priority. This ranking was based solely on the EHE module as there is no historical or physical evidence to indicate that CWM-related activities

occurred within the Study Area. In addition, data (beyond the scope of this study) would be required to fully complete the MRSPP's HHE.

A relative MRS priority of 2 is the highest relative risk ranking possible for an MRS that is known or suspected to only contain conventional military munitions.

**(b) Threats to Human Health and the Environment from Munitions  
Constituents (MC)**

USACE collected over 100 soil, surface water, and sediment samples from within the Study Area. These samples were analyzed for MC (both metals and explosives). Samples that contained MC concentrations that exceeded background (normal levels) were used in the risk assessment.

USACE used the results of the sampling and analysis and EPA's Risk Assessment Guidelines to determine that no unacceptable human health risks from MC would be expected through exposure to surface water or sediment. However, there may be an unacceptable human health risk from exposure to MC in soil. For ecological receptors, the sample analysis indicated that exposure to certain compounds in soil, surface water, and sediment may pose an unacceptable risk; however, further analysis is required to determine whether response actions may be needed to address potential human health and ecological risks.

Screening-level risk assessments were completed for both human health and ecological receptors. These risk assessments evaluated specific MC detected in the samples collected as part of this study. For soil, the MC considered in the risk assessment included metals (antimony, chromium, copper, lead and zinc) and explosives (2-amino-4,6-dinitrotoluene, 4-amino-2,6-dinitrotoluene, 2,4,6-trinitrotoluene, and methyl-2,4,6-trinitrophenyl-nitramine [tetryl]). The risk assessment also considered copper in sediment and copper, lead, and zinc in surface water.

The human health screening-level risk assessment results indicate that copper and one explosive (2,4,6-trinitrotoluene) were detected in soil above their human health preliminary screening values (USEPA Regional Screening Levels, residential soil, June 2011). As such, copper and 2,4,6-trinitrotoluene may pose an unacceptable human health risk in soil at the Study Area. USACE used the results of the sampling and analysis and EPA's Risk Assessment Guidelines to determine that an unacceptable human health risk from MC would not be expected through exposure to surface water or sediment within the Study Area.

The screening-level ecological risk assessment results indicate that five metals (antimony, chromium, copper, lead, zinc) and four explosives (2-amino-4,6-dinitrotoluene, 4-amino-2,6-dinitrotoluene, 2,4,6-trinitrotoluene, and methyl-2,4,6-trinitrophenyl-nitramine [tetryl]) were present in soil (Metals - USEPA Ecological Soil Screening Levels; Explosives - Los Alamos National Laboratory, Eco Risk Database (Release 3.0), October 2011). Additionally, one metal (copper) was detected in sediment and three metals (copper, lead, and zinc) were detected in surface water above their preliminary ecological screening values (USEPA Region 4 Ecological Screening Values, November 30, 2001). Based on these results, exposure to these compounds in soil, sediment, and surface water may pose an unacceptable risk to ecological receptors within the Study Area; however, further analysis is required before determining if response actions may be needed to address these potential risks.

## **CONSULTATION WITH THE COMMONWEALTH**

In addition to the previously mentioned EQB involvement, DoD consulted with the Commonwealth of Puerto Rico regarding the Commonwealth's planned future use of the former bombardment area. The EQB provided DoD with the 2011 Culebra Sustainable Master Plan from the Department of Economic Development and Commerce, Government of Puerto Rico (Enclosure 3), which outlines the Commonwealth's plans for development of parks and recreational area within the Study Area.

*Study Relating to the Presence of Unexploded Ordnance  
in a Portion of the Former Naval Bombardment Area  
of Culebra Island, Puerto Rico*

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Enclosure 1: Section 2815 of the Ike Skelton National Defense Authorization Act for Fiscal  
Year 2011 (Public Law 111-383)

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**Ike Skelton National Defense Authorization Act for Fiscal Year 2011**  
**Public Law 111-383**  
**111th Congress**

SEC. 2815. FORMER NAVAL BOMBARDMENT AREA, CULEBRA ISLAND, PUERTO RICO.

(a) Study Required.--At the request of the Commonwealth of Puerto Rico, the Secretary of Defense shall conduct a study relating to the presence of unexploded ordnance in a portion of the former bombardment area at Culebra Island, Puerto Rico, transferred to the Commonwealth of Puerto Rico by quitclaim deed. The Secretary shall complete the study within 270 days after receiving the request from the Commonwealth.

(b) Contents of Study.--The study shall include a specific assessment of Flamenco Beach located within the former bombardment area and shall include the following elements for each area:

- (1) An estimate of the type and amount of unexploded ordnance.
- (2) An estimate of the cost of removing unexploded ordnance.
- (3) An examination of the impact of such removal on any endangered or threatened species and their habitat.
- (4) An examination of current public access to the former bombardment area.
- (5) An examination of any threats to public health or safety and the environment from unexploded ordnance.

(c) Consultation With Commonwealth.--In conducting the study, the Secretary of Defense shall consult with the Commonwealth of Puerto Rico regarding the Commonwealth's planned future uses of the former bombardment area. The Secretary shall consider the Commonwealth's planned future uses in developing any conclusions or recommendations the Secretary may include in the study.

(d) Definitions.--In this section:

- (1) The term "quitclaim deed" refers to the quitclaim deed from the United States to the Commonwealth of Puerto Rico, signed by the

Secretary of the Interior on August 11, 1982, for that portion of Tract (1b) consisting of the former bombardment area on the island of Culebra, Puerto Rico.

- (2) The term "unexploded ordnance" has the meaning given that term by section 101(e)(5) of title 10, United States Code.



*Study Relating to the Presence of Unexploded Ordnance  
in a Portion of the Former Naval Bombardment Area  
of Culebra Island, Puerto Rico*

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Enclosure 2: Letter from the Governor of Puerto Rico dated April 25, 2011

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**GOVERNMENT OF PUERTO RICO**

**LUIS G. FORTUÑO**  
GOVERNOR

April 25, 2011

Hon. Robert Gates  
Secretary of Defense  
U.S. Department of Defense  
1000 Defense Pentagon, Room 3E880  
Washington, DC 20301-1000

Dear Secretary Gates:

Pursuant to Section 2815(a) of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 (PL 111-383), I hereby request that the Department of Defense conduct a study relating to the presence of unexploded ordnance in a portion of the former Naval bombardment area at Culebra Island, Puerto Rico.

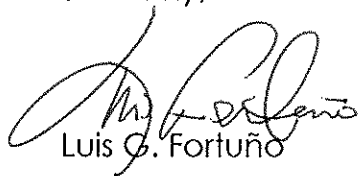
In conducting this study, it is important for the DOD to take into consideration that certain portions of land in the former bombardment area, including (1) the area that serves as the camping grounds at Flamenco Beach, (2) the path across the neck of the Northwest Peninsula from Flamenco Beach to Carlos Rosario Beach, and (3) the area at Flamenco Beach that is immediately off the shore and where bathers stand when wading in the water, may require special attention (Special Attention Areas). Flamenco Beach is a world renowned recreational area and these areas experience a high volume of tourist and local traffic, attracting many thousands of visitors each year, including families and children.

Accordingly, I request that in conducting the study, DOD estimate the cleanup costs for the Special Attention Areas and endeavor to provide the estimate for the Special Attention Area within 120 days of commencing the study. The goal is to ensure that safety is provided as soon as possible to the general public who are intensively using the Special Attention Areas while recognizing that the study will also address the other portions of the former bombardment area.

Hon. Robert Gates  
Page 2  
April 25, 2011

For any assistance or coordination that the DOD may need in conducting this study, please contact Mr. Pedro J. Nieves Miranda, Chairman of the Puerto Rico Environmental Quality Board, which is the lead agency overseeing the cleanup of the former defense sites in Puerto Rico. Thank you for your consideration of this request.

Sincerely,



Luis G. Fortuño

c: Dr. Dorothy Robyn, Deputy Under Secretary of Defense, Installations & Environment

*Report of PL 111-383, Sec. 2815  
Study Relating to the Presence of Unexploded  
Ordnance in a Portion of the Former Bombardment  
Area of Culebra, Puerto Rico*

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Enclosure 3: Letter from the Department of Economic Development and Commerce,  
Government of Puerto Rico dated October 7, 2011 regarding 2011 Culebra Sustainable Master  
Plan

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October 7, 2011

Lcdo. Pedro J. Nieves Miranda  
President  
Puerto Rico Environmental Quality Board  
PO box 366147  
San Juan, PR 00936

**RE: 2011 Culebra Sustainable Master Plan**

Dear Mr. Nieves,

The Puerto Rico Department of Economic Development and Commerce ("DDEC") has commissioned the revision of the Culebra Sustainable Master Plan. For the past months DDEC and its team have completed the first draft of the above mentioned plan. A world renowned eco-Architect, eco-Landscape Architect and Environmental Planner has been hired to assist in such plan. From our several visits and studies in Culebra, Flamenco Peninsula is the area that we have designated ideal for an eco-tent concept. Exhibit 1 includes an excerpt from our planners report depicting the concept we envision for Flamenco Peninsula.

As DDEC intends to explore Culebra's touristic attributes, the Flamenco Peninsula is an important part of such development. The proposed eco-tents would be located on the western tip of Flamenco, beyond the current campsite. An access road to the tents would be created inland in an attempt to increase the eco arrival experience. Exhibit 2 delineates the areas we plan to develop. It is to my understanding that your team is working with these parcels and we would like to make sure our plans are aligned.

We look forward to working with you in the sustainable development of Culebra. Please contact Joao Proenca or Riccardo Lopez Cepero at 787-765-2900 or [joao.proenca@ddec.pr.gov](mailto:joao.proenca@ddec.pr.gov) if you need assistance or have questions with respect to our plans for both islands.

Sincerely,

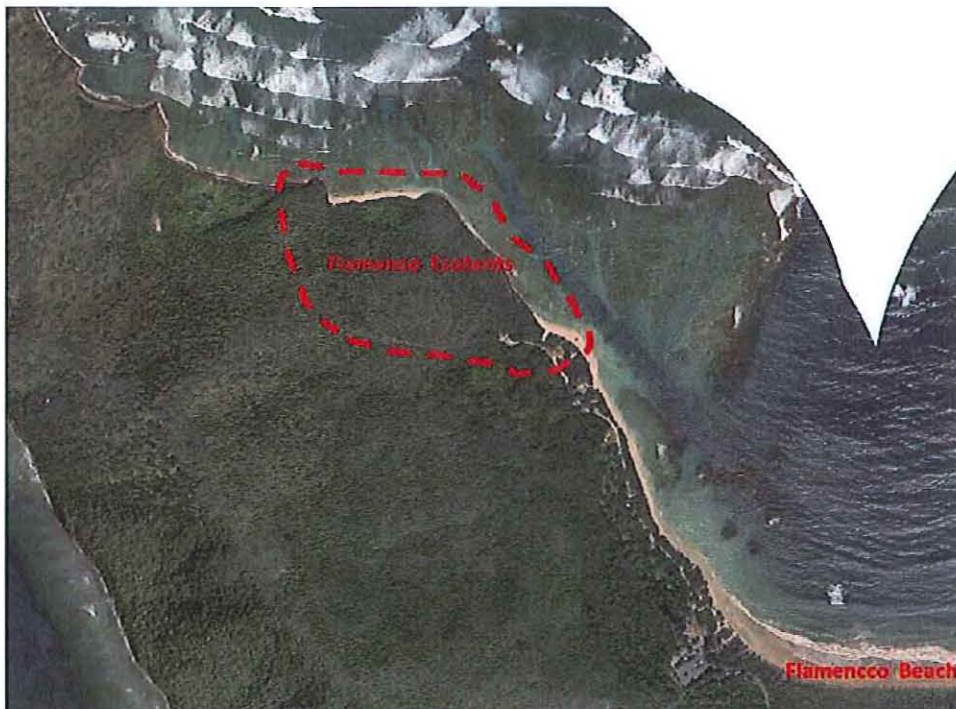
Jaime A. López Díaz  
Chief Development Officer  
Department of Economic Development and Commerce  
Government of Puerto Rico

**Proposed Project 1– Flamenco Beach Eco-tents** by DNR and Private developer

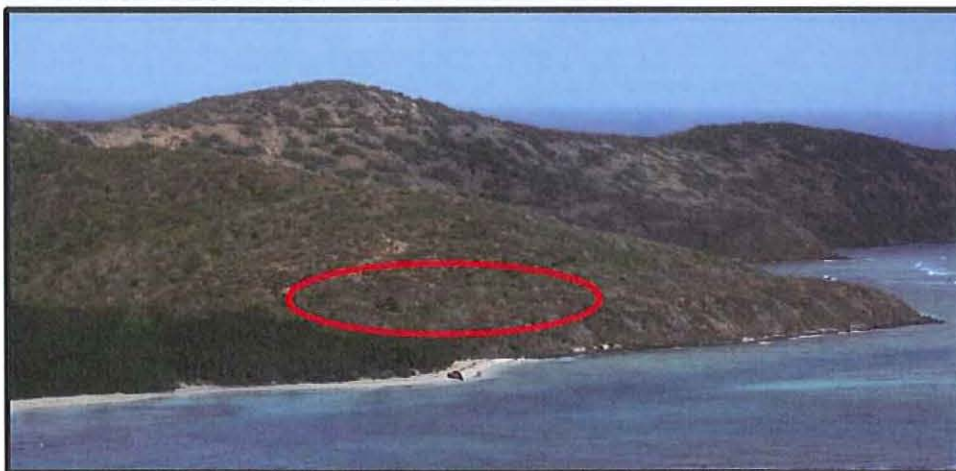
The Flamenco Beach/Lagoon is one of the most beautiful sites in the whole of Puerto Rico and it will be here that the **Flamenco Beach Eco-tents** will be located. The Eco-tents will be sited in the western edge of the Flamenco beach and in an area which has a secluded beach. This area would be the ideal location for eco-tents as it has views of the Beach and Ocean. For a truly unique ecotourism experience and in order to create an accommodation facility that is an exemplary case study the eco-tents need to be located beyond the existing camping site and in total seclusion.

Visitors here would have easy access to the beautiful coral reef system, beaches and dry forest. Activities related to these experiences would include kayaking, trail walking/jogging, canoeing, birdwatching, swimming, snorkeling, diving and mountain biking.

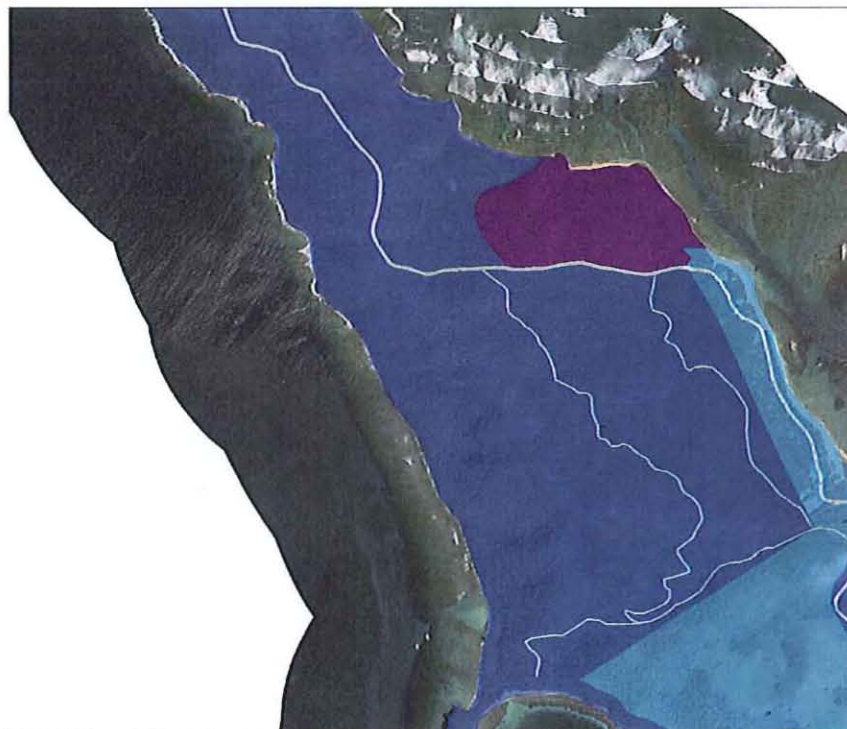
The existing Camping Sites and Retail Kiosks are a mass tourism destination especially during weekends and public holidays when many tourists take the ferry from Fajardo and this area needs to be converted into a sustainable higher-scale destination.



The ecotents will have access to a beach to the west of Flamenco Beach



The eco-tents will be located right behind the Flamenco Beach and on a hill with commanding views



ENDNOTES:

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<sup>1</sup> Unexploded ordnance (UXO). Military munitions that (A) have been primed, fuzed, armed, or otherwise prepared for action; (B) have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and (C) remain unexploded either by malfunction, design, or any other cause.

<sup>2</sup> Munitions Constituents (MC). Any materials originating from unexploded ordnance (UXO), discarded military munitions (DMM), or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.

<sup>3</sup> Military munitions. All ammunition products and components produced or used by or for the U.S. Department of Defense or the U.S. Armed Services for national defense and security, including military munitions under the control of the Department of Defense, the U.S. Coast Guard, the U.S. Department of Energy, and National Guard personnel. The term:

Includes: confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries used by DoD Components, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunitions, small arms ammunitions, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof.

Does not include: wholly inert items, IEDs (improvised explosive devices), and nuclear weapons, devices, and components thereof. (However, it does include non-nuclear components of nuclear devices, managed under the Department of Energy's nuclear weapons program after all required sanitization operations under the Atomic Energy Act of 1954, as amended, have been completed.)

<sup>4</sup> Munitions response. Response actions, including investigation, removal actions, and remedial actions, to address the explosives safety, human health, or environmental risks presented by unexploded ordnance (UXO), discarded military munitions (DMM), or munitions constituents (MC), or to support a determination that no removal or remedial action is required.

<sup>5</sup> Discarded military munitions (DMM). Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include unexploded ordnance, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of consistent with applicable environmental laws and regulations.

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