



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

**TIME CRITICAL REMOVAL ACTION
ACTION MEMORANDUM**

for

**Cayo Botella,
Culebra, Puerto Rico,
Munitions Response Site 07
Formerly Used Defense Site
Project Number I02PR006807**

June 2016

EXECUTIVE SUMMARY

ES.1 It has been determined that a Time Critical Removal Action (TCRA) is required for Cayo Botella, located within Munitions Response Site (MRS) 07 of the Culebra, Puerto Rico Formerly Used Defense Site (FUDS), Project Number I02PR006807.

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. The former usage for Cayo Botella was for artillery, aerial bombing and rocket firing. The U.S. Navy and U.S. Marines conducted fleet maneuvers and Fleet Landing Exercises (FLEX) between 1923 and 1975. Practice bombs (including MK 76, MK 106, and MK 80 Series) and HE bomb fragments with suspension lugs have been found or observed on Cayo Botella. Used or suspected munitions on the cayo also include general purpose HE bombs (MK 82), flares (MK 24 and MK 45), projectiles (20mm HE, 37mm, 75mm) and rockets (5-inch Zuni). 20 unexploded ordnance (UXO) were identified and detonated on Cayo Botella during the 1997 EE/CA, including (1) 6-inch naval gun projectile, 18 MK76 practice bombs with cartridges and one (1) MK4. In addition to identifying and destroying fifteen MK 76 practice bombs, the Navy identified over 100 munition items on the cayo during the 6 October 2015 Navy EOD response operations. The cayo is part of the Culebra National Wildlife Refuge (NWR), which protects important habitats for migratory shorebirds and nesting seabirds. U.S. Fish and Wildlife Service (FWS) personnel and volunteers access the cayo on a recurring basis in order to conduct wildlife censuses. Recreational users and boaters may also conduct activities at the cayo that could trigger an unintentional detonation of a munition item. Additionally, local shellfish harvesters park their boats at Cayo Botella and typically walk through the shallow water to gather conch and other shellfish. The potential presence of large, high explosive, ordnance items at Cayo Botella present a significant imminent risk to public health and safety because local shellfish harvesters access and walk through the cay and same shallow waters that contain munitions items. 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. Not implementing a removal action may lead to potential injury to persons and property should a UXO be accidentally detonated. However, USACE proposes to conduct a TCRA in order to significantly reduce the imminent threat to public health and safety at the site.

ES.3 The selected response actions to be performed under this TCRA include surface and subsurface removal of UXO at Cayo Botella. The TCRA will include conducting identification (visual and geophysics), confirmation, surface and subsurface removal, and disposal of recovered munitions. The primary objective of the TCRA at Cayo Botella is to mitigate and minimize the threat posed by the potential proximity of munitions to recreational users/boaters, FWS employees and volunteers, and shellfish harvesters, whose activities may present exposure to and potentially trigger an unintentional detonation of an item.

ES.4 Based on the presence of UXO at this location and the risk to the public, a TCRA is necessary to reduce the risk at Cayo Botella. There is a significant probability that military munitions will continue to be exposed at this FUDS property that pose a safety hazard to individuals if not addressed through a response action. The Jacksonville District (SAJ), the U.S. Army Engineering and Support Center, Huntsville (USAESCH), and the Environmental and Munitions Center of Expertise (EMCX) concurred that this situation meets the criteria for a TCRA. The cost of this TCRA, to include contractor, SAJ, and USAESCH costs, is estimated at \$700,000 US Dollars.

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1 LOCATION AND DESCRIPTION OF SITE

1.1 CAYO BOTELLA, MUNITIONS RESPONSE SITE (MRS) 07, CULEBRA, PUERTO RICO, FUDS PROJECT NUMBER I02PR006807

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 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), which has special restrictions.

1.1.4 Cayo Botella, also named Ladrones Key or Ladrones Cay, is a small cayo measuring approximately 600 by 300 feet and rises to a height of 30 feet (Figure 2). Cayo Botella is part of Culebra Munitions Response Site (MRS) 07 (Figure 3), and it consists mostly of rocky shores with light vegetation. The cayo is part of the Culebra National Wildlife Refuge (NWR), which protects important habitats for migratory shorebirds and nesting seabirds. The NWR is currently owned and managed by the Fish and Wildlife Service (FWS).

1.1.5 The former usage for Cayo Botella was for artillery, aerial bombing and rocket firing. The U.S. Navy and U.S. Marines conducted fleet maneuvers and Fleet Landing Exercises (FLEX) between 1923 and 1975. During these exercises the surrounding keys were heavily bombarded with high explosive (HE) bombs, projectiles, and rockets, as well as illumination and practice rounds. The U.S. Marines used this impact area in combination with the northern portion of Culebrita between 1936 and the late 1940s. Training continued through the 1950s and 1960s, and in the early 1960s aerial bombardment was expanded to most of the cays on the east and west side of Culebra. In 1969, Cayo Botella was used as an aircraft bombing and rocket target in the Culebra Complex used for the Vietnam training. In 1970, the U.S. Navy discontinued use of all the targets on the eastern side. Ordnance operations on the entire Culebra Complex were terminated 1 October 1975.

1.1.6 The Archive Search Report (ASR) and Supplemental ASR document historical use of Cayo Botella as an aerial target. On Cayo Botella, the ASR team observed several MK 76 practice bombs and HE bomb fragments with suspension lugs as well as practice bombs and MK 80 series bombs in the shallow water off the beach. During the 1997 Engineering Evaluation/ Cost Analysis (EE/CA), two grids were investigated on Cayo Botella and 20 unexploded ordnance (UXO) items were identified and disposed by detonation. The UXO items included one (1) 6-inch naval gun projectile, 18 MK76 practice bombs with cartridges and one (1) MK4. On 6

October 2015, the Jacksonville District, USACE was informed that potential munitions items were observed at Cayo Botella by a tourist aboard a boat. Local authorities requested Mayport (Navy) Explosive Ordnance Disposal (EOD) team support for this finding. USACE was informed by the Puerto Rico Environmental Quality Board that the operations on Cayo Botella were completed by EOD on 14 October 2015. A separate report received from the Navy EOD indicates that the UXOs were determined to be MK 76 practice bombs. Navy EOD treated 15 items and stated that the cayo is still littered both on land and in the surrounding water and in need of a major UXO cleanup operation. Navy EOD informed that more than 100 munitions items were observed still present at this cayo.

2 DESCRIPTION OF HAZARDS

2.1 Practice bombs (including MK 76, MK 106, and MK 80 Series) and HE bomb fragments with suspension lugs have been found or observed on Cayo Botella. Used or suspected munitions on the cayo also include general purpose HE bombs (MK 82), flares (MK 24 and MK 45), projectiles (20mm HE, 37mm, 75mm) and rockets (5-inch Zuni). 20 UXO were identified and detonated on Cayo Botella during the 1997 EE/CA, including (1) 6-inch naval gun projectile, 18 MK76 practice bombs with cartridges and one (1) MK4. In addition to identifying and destroying fifteen MK 76 practice bombs, the Navy identified over 100 munition items on the cayo during the 6 October 2015 Navy EOD response operations.

2.2 The potential presence of large, high explosive, ordnance items in or in close proximity to heavily used public beaches (e.g. Culebrita beaches), poses a significant imminent risk to public health, safety, and the environment. Cayo Botella is accessed by FWS personnel as well as local shellfish harvesters, providing a direct pathway. Not implementing a TCRA may lead to potential injury to persons and property should a UXO be accidentally detonated.

3 CURRENT LAND USE ACTIVITIES AND RISK OF EXPOSURE

3.1 Cayo Botella is part of the NWR, which protects important habitats for migratory shorebirds and nesting seabirds. FWS personnel and volunteers access the cayo on a recurring basis in order to conduct wildlife censuses. Recreational users and boaters may also conduct activities at the cayo that could trigger an unintentional detonation of a munition item. Additionally, local shellfish harvesters park their boats at Cayo Botella and typically walk through the shallow water to gather conch and other shellfish.

3.2 A tourist aboard a boat identified potential munitions at Cayo Botella. Navy EOD responded to the findings on 06 October 2015 and determined that there were over 100 practice bombs present at the cayo. Therefore, there is a significant imminent risk to public health and safety because local shellfish harvesters access and walk through the cay and same shallow waters that contain munitions items. Although an EE/CA was completed in 1997, it was not until 6 October 2015 that the Navy EOD team received reports of munitions items in areas where people were located in Cayo Botella. 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. Not implementing a removal action may lead to potential injury to persons and property should a UXO be accidentally detonated. However, USACE proposes to conduct a TCRA in order to significantly reduce the imminent threat to public health and safety at the site.

4 PREVIOUS ACTIONS TO ADDRESS HAZARD

4.1 In April 1997, Environmental Science and Engineering, Inc. (ESE) submitted the final EE/CA for the Former Culebra Island Naval Facility, Culebra Island, Puerto Rico. During the EE/CA, two grids were investigated on Cayo Botella and 20 UXO items were identified and disposed by detonation. The UXO items included one (1) 6-inch naval gun projectile, 18 MK76 practice bombs with cartridges and one (1) MK4.

4.2 In 2009, Ellis Environmental Group, LC (EEG), under contract to the USAESCH, provided non-time-critical removal action (NTCRA) operations on Culebra Island and adjacent cayos in Puerto Rico. The areas included in this surface clearance included Cerro Balcon, Culebrita, and the adjacent cayos, which included Cayo Botella. Cayo Botella, among other cayos, was inaccessible due to weather conditions during the execution of the NTCRA.

4.3 On 06 October 2015, SAJ was informed that a tourist aboard a boat identified potential munitions at Cayo Botella. Local authorities requested Navy EOD team support for this finding. USACE was informed by the Puerto Rico Environmental Quality Board that the operations on Cayo Botella were completed by EOD on 14 October 2015. A separate report received from the Navy EOD indicates that the UXOs were determined to be MK 76 practice bombs. Navy EOD treated 15 items and stated that the cayo is still littered both on land and in the surrounding water and in need of a major UXO cleanup operation. Navy EOD stated that more than 100 munitions items were observed still present at this cayo.

5 ENDANGERMENT DETERMINATION

5.1 The USACE Project Delivery Team conducted an endangerment determination for Cayo Botella. The cayo 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 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 whose presence is documented by credible EOD sources; 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 primary objective of the TCRA at the land portion (low tide line towards shore) at Cayo Botella is to mitigate and minimize the threat posed by the proximity of ordnance items to shellfish harvesters, FWS personnel, and recreational users/boaters whose activities may potentially trigger an unintentional detonation of a munition item. Based on the Navy EOD report, it is anticipated that over 100 munitions items will be encountered.

6.2 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 of if water is encountered.

6.3 SAJ, USAESCH, and the EMCX 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 addressed through the Response Action described in this Action Memorandum. The cost of this TCRA, to include contractor, SAJ and USAESCH costs, is estimated at \$700,000 US Dollars.

7 AUTHORIZING SIGNATURE

This Action Memorandum presents the selected response action at Cayo Botella, 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 \$700,000, is approved by the undersigned, pursuant to Memorandum, DAIM-ZA, September 9, 2003, subject: Policies for Staffing and Approving Decision Documents, and to Engineer Regulation 200-3-1, FUDS Program Policy.

APPROVED:



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

7 JUNE 2016

Date

FIGURES

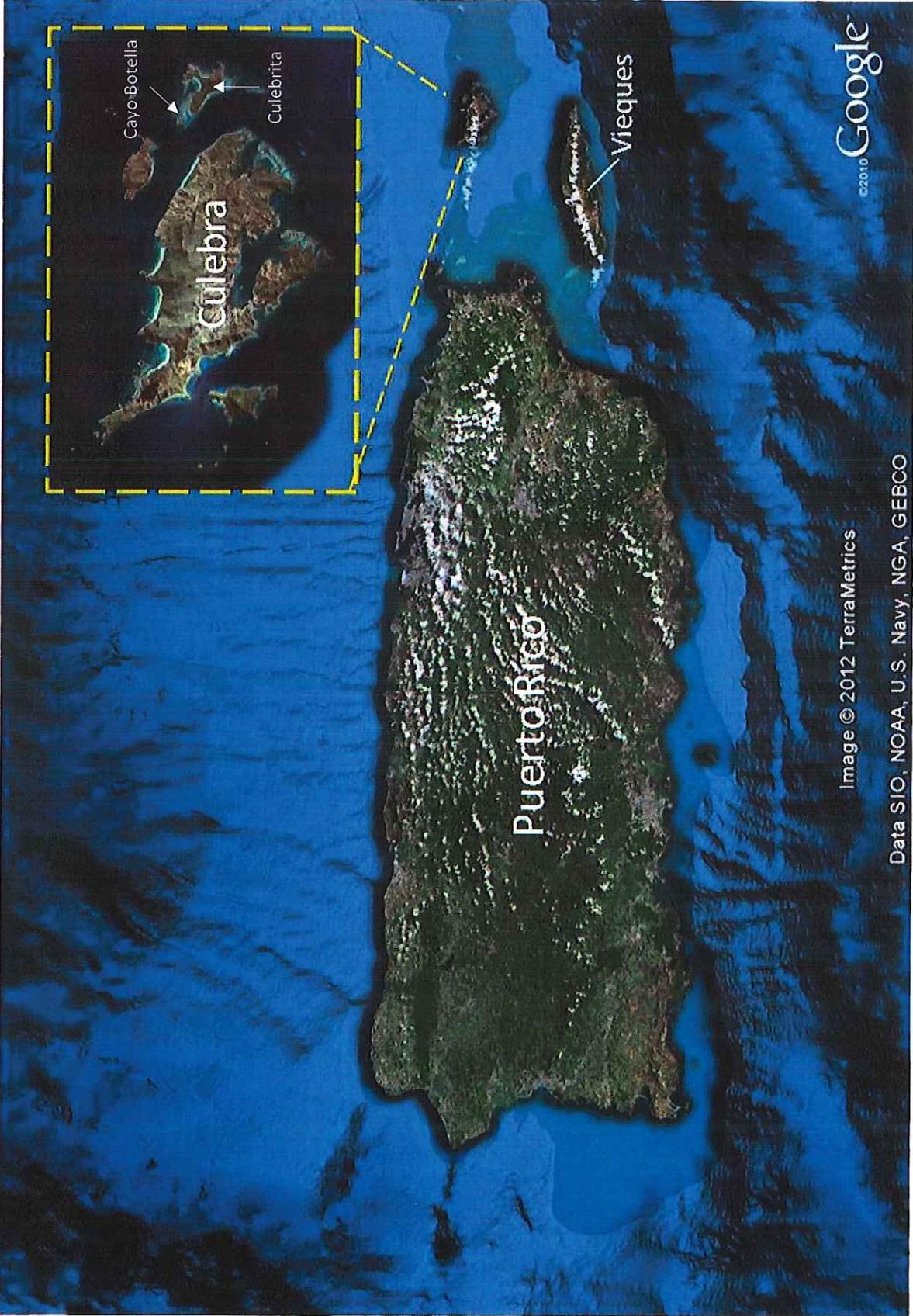


Figure 1. Location Map of Culebra.

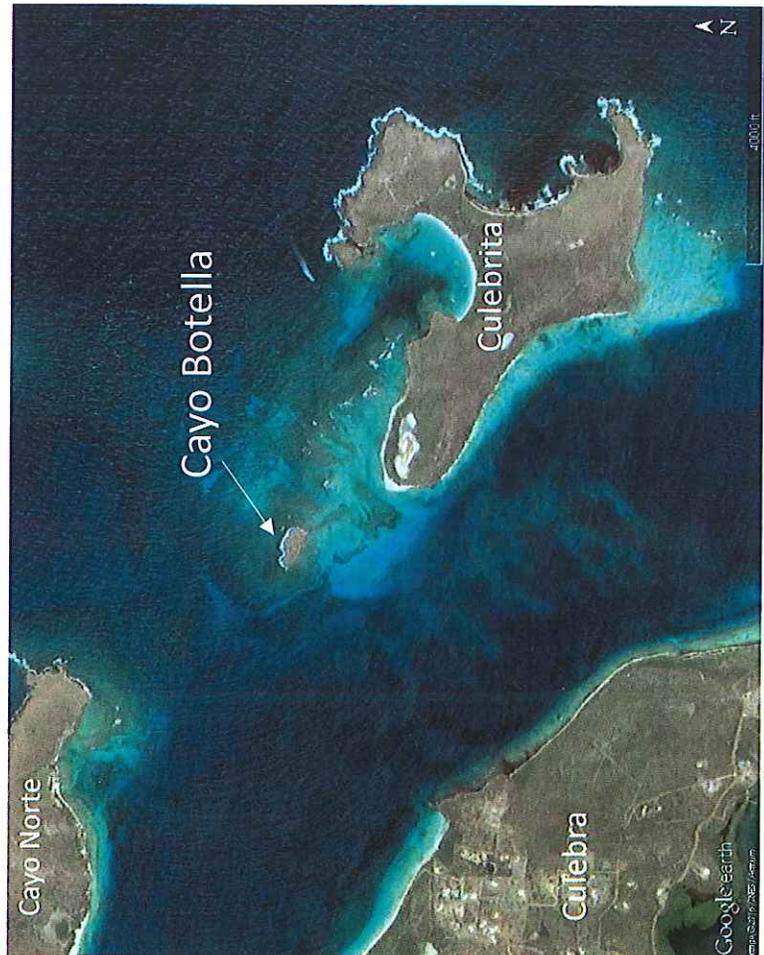
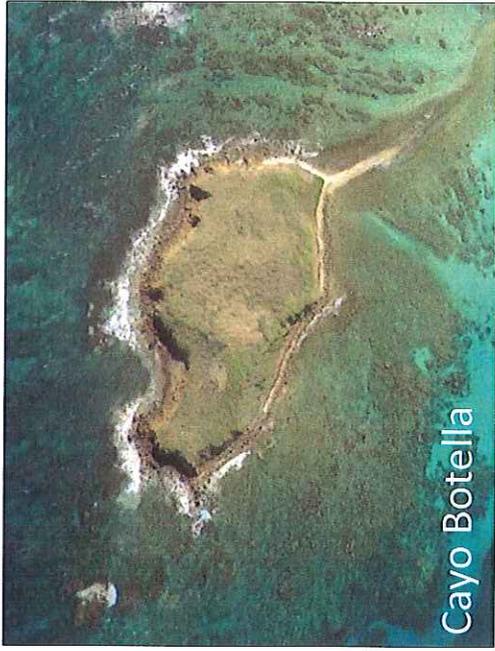


Figure 2. Cayo Botella location.

LEGEND

X CENTROID

UTM ZONE 19

UTM COORDINATES (NAD83)

X = 898579.3m E

Y = 2029703.0m N

18°19' 11.6" N

65°13' 49.0" W

APPROXIMATE MRS
BOUNDARY

ACREAGE = 375 AC

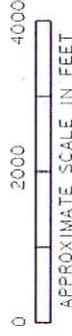
LAND ACREAGE = 351 AC

TIDAL WATER ACREAGE = 24 AC

SHORELINE

NOTE: PROPERTY AND RANGE BOUNDARIES ARE THE SAME

MAP DATA UPDATED SUBSEQUENT TO SITE
INSPECTION REPORT, SEPTEMBER 2007



U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

CULEBRA PUERTO RICO
FUDS PROJECT NO. 102PR006807
MUNITIONS RESPONSE MAP

CULEBRITA ARTILLERY IMPACT AREA

PROJ. DATE: 2006

11-AUG-2008 (S-4)

PLATE NO. **M01**

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Figure 3. MRS 07 (102PR006807) Boundary Map