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MCAS CHERRY POINT
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TECHNICAL MEMORANDUM 2015 SITE RECONNAISSANCE FORMER CAT ISLAND BOMB
TARGET BT-2 MCAS CHERRY POINT NC

5/26/2016
CH2M HILL

2015 Site Reconnaissance, Former Cat Island Bomb Target BT-2, Marine Corps Air Station Cherry Point, North Carolina

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DATE: May 26, 2016

This technical memorandum presents a summary of the pertinent observations from the 2015 site reconnaissance of the Former Cat Island Bomb Target BT-2 (hereafter referred to as BT-2) on November 5, 2015. Recommended actions based on the findings from the site reconnaissance are also presented. BT-2 is associated with Marine Corps Air Station (MCAS) Cherry Point, which is located near Havelock, North Carolina. The site location is shown on Figures 1 and 2. The site reconnaissance was performed in accordance with the requirements established in the Decision Document for the Former Cat Island Bomb Target BT-2 (CH2M HILL, 2015). This work was performed under Navy CLEAN contract N62470-08-D-1000, Contract Task Order (CTO) 26.

The purpose of the site reconnaissance was to inspect the surface of Wood Island for potential surface accumulation of munitions and explosives of concern (MEC)/material potentially presenting an explosive hazard (MPPEH) due to erosion and tidal movement and also to inspect the condition of hazard warning signs (on and off the island) to determine if sign maintenance or replacement is needed.

Site Description

Although historical site documents refer to the bomb target as the Cat Island Bomb Target BT-2, the actual target locations were in the vicinity of Wood Island. Cat Island is located approximately 1.5 miles west of Wood Island and was not used as a bomb target.

The primary feature of BT-2 is a low-lying, marshy island (Wood Island), approximately 10 acres in area. The island is less than 300 feet wide at its widest point and is approximately 1,500 feet long. Wood Island is located in Bogue Sound, approximately 0.5-mile north of the barrier island Bogue Banks and approximately 1.5 miles offshore (south) of the North Carolina mainland. Wood Island is located in Carteret County, North Carolina, approximately 14 miles southwest of MCAS Cherry Point. The BT-2 surface danger zone (SDZ) extends 3 miles in all directions from the former target location in the vicinity of Wood Island.

BT-2 consisted of three historical target locations (i.e., map coordinates) on and in the vicinity of Wood Island that were used by the Navy at different points in time. The north-central portion of Wood Island is a vegetated dune covered with trees and bushes with a maximum elevation of 9 feet above mean sea level (msl); the elevation of the remainder of the island is less than 3 feet above msl. Except for the higher elevation dune habitat, the island is subject to periodic tidal flooding.

Site History and Munitions Response Actions

Historical Site Use and Management (1943 – 2007)

From 1943 to 1952, BT-2 was used for bombing practice using inert, target-practice munitions. The Marine Corps periodically removed MEC/MPPEH from the surface of the island while the bomb targets were in use in the 1940s and 1950s. In 1952, the use of live ammunition was initiated at the site (Navy, 1957a). Air-delivered ordnance, including up to 2,000-pound bombs, were reportedly used on the island. The *Range Identification and Preliminary Range Assessment* report (USACE, 2001) indicates that general purpose bombs, armor-piercing bombs, semi-armor-piercing bombs, depth bombs, rockets and machine guns (.30-caliber to 20-millimeter) were used for training activities at BT-2. The estimated subsurface depths of munitions penetration vary according to the types of munitions that were used (USACE, 2001). A

memorandum dated April 5, 1956 indicated that the Navy and/or Marine Corps had discontinued the use of Wood Island for bombing purposes in approximately 1955 (Navy, 1956).

The Navy leased the Wood Island property from 1943 to 1955 (USA/Maulick, 1943). In 1955, the Navy proposed to acquire the land because it was economically impractical to restore the property to its original condition (Navy, 1957a). On April 24, 1956, the Navy acquired the land by condemnation proceedings and a Declaration of Taking (Navy, 1957b). The Navy performed some unexploded ordnance (UXO) clearance of Wood Island in 1957, referred to as "surface decontamination." The details and extent of the level of UXO clearance are unknown. At that time, the Navy concluded that there was a high probability that UXO was present below the surface of the island that could not be detected by probing and that UXO may continue to be exposed through tidal action and storms. The Navy stated that Wood Island remained a potentially dangerous area (Navy, 1957c).

Preliminary Assessment/Site Inspection Activities (2008 – 2014)

Under the Navy's Munitions Response Program, a Preliminary Assessment/Site Investigation (PA/SI) began in 2008 with a review of historical records. During site visits to Wood Island in that timeframe, remnants of old munitions and munitions fragments were observed on the surface of Wood Island, primarily along the shoreline.

In the spring of 2009, an aerial digital geophysical mapping (DGM) survey was conducted over approximately 10 square miles of Bogue Sound surrounding Wood Island. The purpose of the DGM survey was to detect and accurately map the locations of magnetic anomalies on Wood Island and within the SDZ around BT-2.

The DGM survey identified approximately 10,400 magnetic anomalies. The highest concentrations of magnetic anomalies were clustered within approximately 650 feet of Wood Island. This mass of closely-spaced magnetic anomalies corresponds to the expected pattern of ordnance distribution for an aerial bombing target.

In October and November 2010, MCAS Cherry Point and the Navy conducted an Expanded SI and surface removal effort to identify and remove munitions-related items and other metallic items from the surface of Wood Island. Approximately 3,900 pounds of MPPEH were removed from the island, along with 120 pounds of other metallic debris related to recreation and fishing activities in Bogue Sound. The MPPEH and other metallic debris were removed from the island for off-site disposal.

In March 2014, MCAS Cherry Point and the Navy conducted additional Expanded SI and surface removal activities to identify and safely remove MEC/MPPEH and other metallic items that had accumulated on the surface of Wood Island since the 2010 surface removal. Approximately 4,600 pounds of MPPEH were removed from the island for off-site disposal. One MEC item, a high-explosive General Purpose Bomb, 100-pound, AN-M30, was identified during the surface removal and subsequently detonated in-place on Wood Island.

Warning Sign Installation Activities (2008 – 2012)

In 2008, 16 warning signs were installed on the shoreline of Wood Island to notify the public of the potential munitions hazard and warn against trespassing on the island. The signs are approximately 3 feet by 3 feet in size and manufactured of .080-gauge aluminum. The signs read: "DANGER, UNEXPLODED ORDNANCE, DO NOT ENTER" in 3-inch-high letters.

In March 2012, MCAS Cherry Point and the Navy installed 20 additional warning signs in the shallow water around Wood Island, approximately 1,200 feet from the island's shoreline in Bogue Sound. The purpose of the signs is to warn boaters of the danger posed by bottom-disturbing activities (such as anchoring, dredging, or clamming), thereby further reducing the chance of public exposure to MEC/MPPEH. These 2-foot-square signs are mounted on 20-foot long poles that extend approximately 9 feet above the surface of the water, and read: "DANGER, UNEXPLODED ORDNANCE, NO ANCHORING OR BOTTOM DISTURBING ACTIVITIES."

BT-2 Decision Document (2015)

In 2015, a Decision Document outlining the selected remedy for BT-2 was approved by the Navy, Marine Corps, and the North Carolina Department of Environmental Quality (NCDEQ, former known as the North Carolina Department of Environment and Natural Resources). The selected remedy includes periodic site reconnaissance, periodic surface munitions removal, and institutional controls.

2015 Site Reconnaissance

Site reconnaissance activities were performed on November 5, 2015 to inspect the surface of Wood Island for MEC/MPPEH surface accumulation due to erosion and tidal movement and also to inspect the condition of hazard warning signs (on and off the island) to determine if sign maintenance or replacement is needed. The site reconnaissance was conducted by personnel from the Navy, MCAS Cherry Point, NCDEQ, and the United States Environmental Protection Agency (EPA).

MPPEH Observations on Wood Island

During the site visit, accumulation of MPPEH was observed on the surface of Wood Island along the northeastern shoreline. The MPPEH accumulation on the northeastern shore was consistent with the distribution of MPPEH items observed during the previous surface removal events in 2010 and 2014. Additional erosion of the upland portion of the island was also observed compared to the previous site visit in March 2014. It appears that MPPEH is being exposed on the surface of Wood Island primarily through erosion.

Most of the observed MPPEH items were encrusted due to being in contact with the salt water environment for many years. Practice bombs and sub-caliber aerial rocket motors were observed on the ground surface in addition to many items that could not be identified due to encrustation. Photographs of items observed during the site visit are provided in Attachment A.

Warning Sign Observations

During the site visit, the 16 hazard warning signs on Wood Island were inspected to determine whether maintenance or replacement of those signs is needed. The text on the signs was observed to be faded, rendering the signs relatively illegible from a short distance away. Additionally, the signs posts have deteriorated over time, and erosion around the signs has caused them to become unstable.

The 20 hazard warning signs in the waters of Bogue Sound were also inspected to determine whether maintenance or replacement of those signs is needed. The Bogue Sound signs and the poles on which they are installed appear to be in good condition.

Recommendations

Based on the observed MPPEH items that have accumulated on the surface of Wood Island due to erosion, an additional surface clearance is recommended to remove the accumulated items. In accordance with the requirements established in the Decision Document, periodic site reconnaissance activities and maintenance of institutional controls should continue.

Due to the deteriorated condition of the 16 hazard warning signs on Wood Island, it is recommended that the warning signs be replaced to ensure that highly visible notifications of the hazards on Wood Island are present. No maintenance or repair of the hazard warning signs in Bogue Sound are necessary at this time.

References

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Department of the Navy (Navy). 1956. *Memorandum to File, Conference with Representatives of the First Citizens Bank and Trust Company of Smithfield, North Carolina, Trustees in the Cat Island Property to be Acquired by the Navy*. April 5.

Navy. 1957a. *Excerpts from Correspondence and Memoranda Pertaining to Acquisition of Cat Island, Bogue Sound, Carteret County, North Carolina*. February 8.

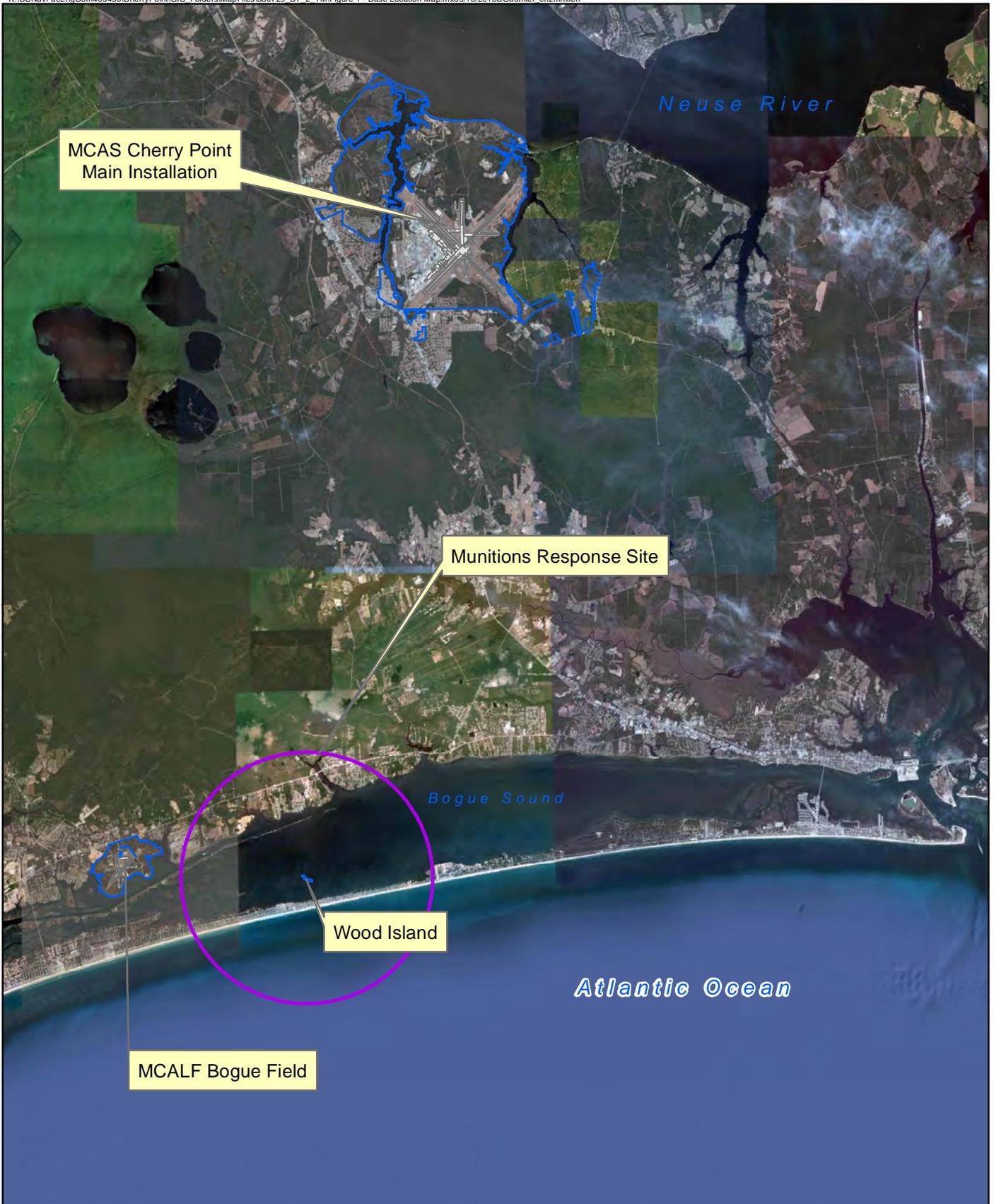
Navy. 1957b. *Letter from the District Public Works Officer to the Chief of Civil Engineers*. February 9.

Navy. 1957c. *Conference Proceedings with Property Owners Concerning Acquisition Bombing Target Cat Island Held April 29, 1957*. From W. P. Tiencken. April 30.

United States of America and Maulick, Mrs. Anita F. *Lease Agreement*. 1943. March 19.

United States Army Corps of Engineers (USACE). 2001. *Final Range Identification and Preliminary Range Assessment, Marine Corps Air Station Cherry Point, New Bern, North Carolina*. December.

Figures



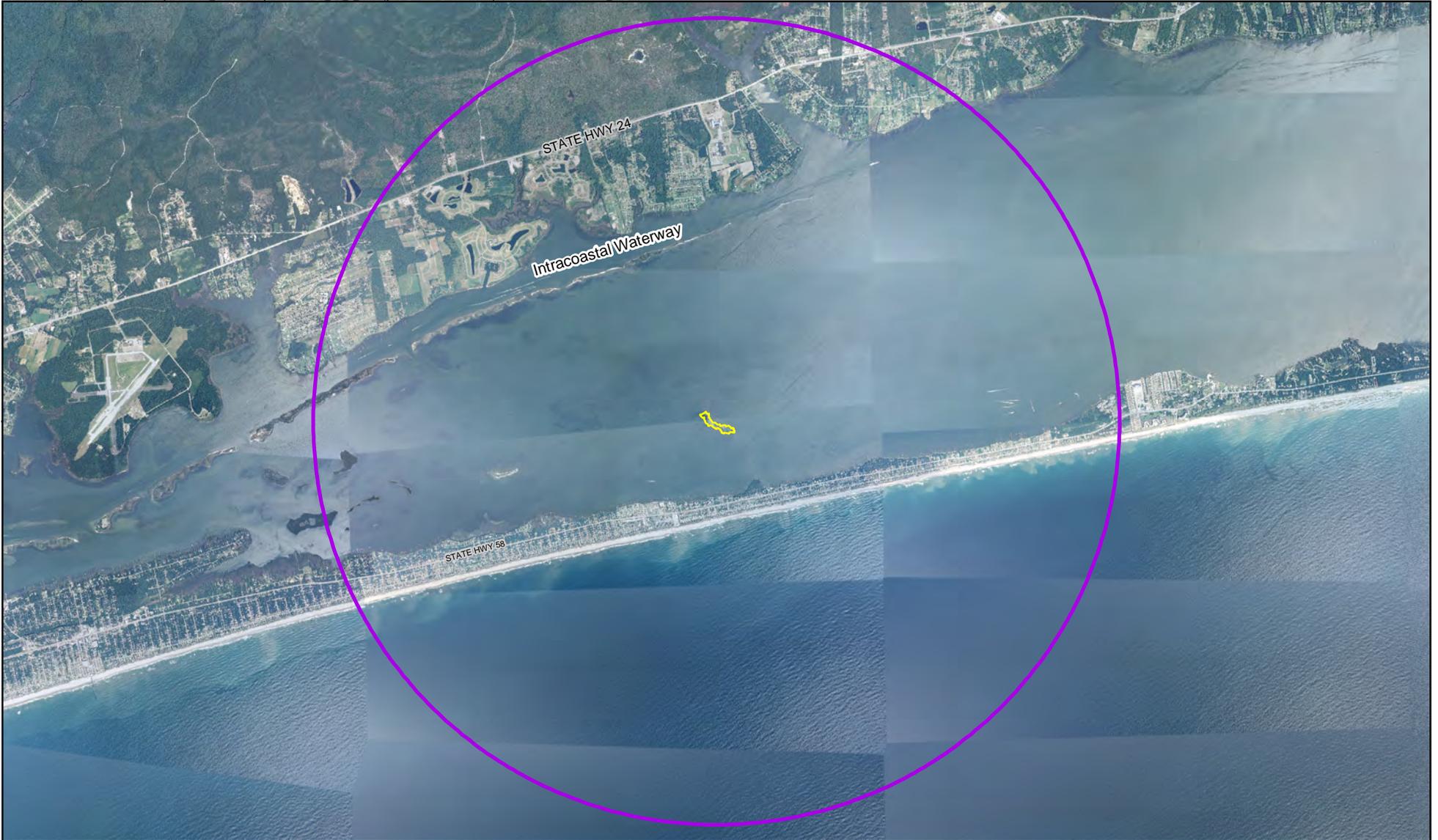
Legend

-  MRS Boundary and 3-Mile Surface Danger Zone
-  Installation Boundary



Figure 1
Base Location Map
Former Cat Island Bomb Target BT-2
MCAS Cherry Point
North Carolina





Legend

-  Wood Island
-  MRS Boundary and 3-Mile Surface Danger Zone

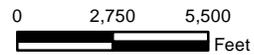


Figure 2
Site Location Map
Former Cat Island Bomb Target BT-2
MCAS Cherry Point
North Carolina



Attachment A
Photolog

Photograph Log



Photograph 001: Encrusted MPPEH observed on the on north side of Wood Island



Photograph 002: Encrusted MPPEH observed on the on north side of Wood Island



Photograph 003: Practice bomb observed on the north side of Wood Island



Photograph 004: Encrusted MPPEH observed on the on north side of Wood Island



Photograph 005: Encrusted MPPEH observed on the north side of Wood Island



Photograph 006: Sub-caliber aerial rocket components observed on the north side of Wood island



Photograph 007: MPPEH on north side of Wood Island



Photograph 008: MPPEH on north side of Wood Island



Photograph 009: MPPEH on north side of Wood Island



Photograph 010: Danger sign on Wood Island with faded red lettering



Photograph 011: Danger sign on Wood Island with faded red lettering



Photograph 012: Corrosion observed on the posts of a Danger sign on Wood Island



Photograph 013: Leaning posts on a faded Danger sign on Wood Island (likely caused due to erosion)



Photograph 014: Danger sign on Wood Island with faded red lettering



Photograph 015: Danger sign in Bogue Sound, observed to be in good condition