



**US Army Corps
of Engineers®**

Final Military Munitions Response Program Remedial Investigation Report

Assateague Island Formerly Used Defense Site Worcester County, Maryland

DERP FUDS Project No.'s C03MD0930 - 01/03

Contract No. W912DR-13-D-0018 Task Order No. 0006

Prepared for

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April 2019

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LIST OF ACRONYMS AND ABBREVIATIONS

°F	Degrees Fahrenheit
μs	Microseconds
Alion	Alion Science and Technology Corporation
ARAR	Applicable or relevant and appropriate requirements
ASIS	Assateague Island National Seashore
ASR	Archive search report
bgs	Below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CHE	Chemical warfare materiel hazard evaluation
cm	Centimeter
CMUA	Concentrated munitions use area
CSM	Conceptual site model
CWM	Chemical warfare materiel
DERP	Defense Environmental Restoration Program
DGM	Digital geophysical mapping
DoD	Department of Defense
DQO	Data quality objective
EA	EA Engineering, Science, and Technology, Inc., PBC
EHE	Explosive hazard evaluation
EOD	Explosive Ordnance Disposal
ER	Engineer Regulation
FS	Feasibility study
ft	Foot (feet)
FTP	File transfer protocol
FUDS	Formerly Used Defense Site
GIS	Geographic information system
GPS	Global positioning system
GSV	Geophysical system verification
HFA	Human Factors Applications, Inc.
HHE	Health hazard evaluation
in.	Inch(es)
INPR	Inventory project report
ISO	Industry standard object
IVS	Instrument verification strips
lb	Pound(s)

MC	Munitions constituents
MD	Munitions debris
MDAS	Material documented as safe
MEC	Munitions and explosives of concern
Mk	Mark
mm	Millimeter
MMRP	Military Munitions Response Program
MPPEH	Material potentially presenting an explosive hazard
MQO	Measurement quality objective
MRS	Munitions response site
MRSPP	Munitions Response Site Prioritization Protocol
Navy	U.S. Navy
NCMUA	Non-concentrated munitions use area
NMRD	Non-munitions related debris
No.	Number
NPS	National Park Service
nT	Nanotesla
OESS	Ordnance and Explosives Safety Specialist
Parsons	Parsons Engineering Science, Inc.
PDT	Project delivery team
QAPP	Quality assurance project plan
QA	Quality assurance
QC	Quality control
RAO	Remedial action objectives
RI	Remedial investigation
RIA	Remedial investigation area
RRD	Range related debris
RTK	Real-time kinematic
SI	Site inspection
SLERA	Screening level ecological risk assessment
SUXOS	Senior Unexploded Ordnance Supervisor
TCRA	Time critical removal action
TOI	Target of interest
TP	Training practice
TVG	Transverse gradiometer
UFP	Uniform Federal Policy
USACE	U.S. Army Corps of Engineers
UXO	Unexploded ordnance

UXOQCS	Unexploded Ordnance Quality Control Specialist
UXOSO	Unexploded Ordnance Safety Officer
VRS	Virtual reference station
VSP	Visual Sample Plan
WWII	World War II
Zapata	Zapata, Inc.

EXECUTIVE SUMMARY

This Military Munitions Response Program Remedial Investigation (RI) Report presents the results of the activities completed at the two investigation locations, Munitions Response Site (MRS) 01 (Rocket Range North) and MRS 03 (Rocket Range South) at Assateague Island Formerly Used Defense Site (FUDS), Worcester County, Maryland (FUDS Project Numbers C03MD093001 and C03MD093003). From 1944 to 1947, the U.S. Navy (Navy) and the U.S. Army Air Corps established two separate rocket ranges at the Assateague Island FUDS, which were used by the Navy during World War II for target practice by land-based aircraft. These ranges are referred to as Rocket Range North (MRS 01) and Rocket Range South (MRS 03). MRS 01 (3,412.2 acres) is located on State of Maryland and National Park Service properties, which are both open to the public for recreational purposes as a State Park and National Seashore. MRS 03 (3,245.5 acres) is located entirely on National Park Service property and is open to the public for recreational purposes as a National Seashore.

MRS 01 and MRS 03 were air-to-ground practice rocket, bombing, and strafing ranges. During previous investigations at MRS 01, munitions debris (MD) from the following munitions were recovered: 2.25-inch (in.) practice rockets, 3.25-in. practice rockets, 3.5-in. practice rockets, 5-in. practice rockets, 3-pound (lb) Mark (Mk) 23 practice bombs, 4.5-lb Mk 43 practice bombs, and 20-millimeter (mm) Training Practice (TP) projectiles (casing only). During previous investigations at MRS 03, only two pieces of MD from 5-in. practice rockets were reported.

The primary objective of this RI was to characterize the nature and extent of potential munitions and explosives of concern (MEC) at the Rocket Range North (MRS 01) and Rocket Range South (MRS 03). During the RI, digital geophysical mapping data were collected on land and in the water at MRS 01 and MRS 03 to identify potential concentrated munitions use areas (CMUAs) and to identify anomalies for intrusive investigation. Based on the digital geophysical mapping, one CMUA was identified on the land portion of MRS 01 associated with the former target area; however, no CMUAs were identified at MRS 03.

At MRS 01, a total of 336 subsurface anomalies were investigated on land, and 109 in the water. Of the 336 anomalies on land, 51 anomaly locations contained MD. Of the 109 anomalies in the water, 13 contained MD. All MD identified during the RI was located in and around the CMUA identified as the target area and was consistent with MD historically identified at MRS 01. To date, only MD from 2.25-in. practice rockets, 3.25-in. practice rockets, 3.5-in. practice rockets, 5-in. practice rockets, 3-lb Mk 23 practice bombs, 4.5-lb Mk 43 practice bombs, and 20-mm TP projectile (one TP projectile and one casing) have been identified at MRS 01. No live munitions (containing explosives) have been found at MRS 01.

However, the 2.25-in. practice rockets, 3.25-in. practice rockets, 3.5-in. practice rockets, 5-in. practice rockets and the 20-mm TP projectile can contain propellant if they did not fire properly. But in order to reach the target areas on Assateague Island, the propellant within the rockets and 20-mm TP rounds would need to have been expended when fired. Once fired, the practice rockets no longer present an explosive hazard because the only explosive component (propellant) is expended. Practice bombs including, the 3-lb Mk 23 and the 4.5-lb Mk 43, are usually used with spotting charges (10-gauge blank shotgun shells that contain a primer and black powder) which may still be present after being dropped, if they did not function as intended. Therefore,

there is a very small possibility of an encounter with an intact spotting charge contained within the practice bombs. However, the spotting charge shell during this time period was made of cardboard which likely would have been exposed to the elements for 70 plus years; and due to harsh conditions on site the majority of the items found have had severe rust and corrosion. In addition, very few practice bombs and 20-mm projectiles were uncovered, less than one percent of the material documented as safe (MDAS). Over ninety-nine percent of the MDAS was associated with the spent practice rockets. Neither spotting charges nor propellant was found in any of the items. Given these conditions, it is unlikely that an encounter with a practice bomb containing an intact spotting charge would occur. Therefore, based on the results of the RI and the previous findings at the target ranges, it is anticipated that future encounters with similar material potentially presenting an explosive hazard (MPPEH) identified at MRS 01 would also be MDAS.

At MRS 03, a total of 219 subsurface anomalies were investigated on land and 41 anomalies in the water, none of which were attributed to MD. Historically, only two pieces of MD from 5-in. practice rockets were reportedly found at MRS 03 (no evidence of practice bombs or 20-mm TP rounds were found). Based on these observations, it is unlikely MRS 03 was used by the Navy as a practice bombing and strafing range. No MEC has been identified at MRS 03.

Based on the findings of the RI and from the previous findings at the target ranges, no live munitions nor explosives of concern were identified at either MRS; and are not anticipated to be encountered, therefore, no further action is recommended at MRS 01 and MRS 03.

1. INTRODUCTION

This Remedial Investigation (RI) Report presents the results of the RI completed for Rocket Range North (Munitions Response Site [MRS] 01) and Rocket Range South (MRS 03)¹ at Assateague Island Formerly Used Defense Site (FUDS), Worcester County, Maryland (FUDS Project Numbers [Nos.] C03MD093001 and C03MD093003).

Assateague Island is a 37-mile-long barrier island located along the eastern shore of Maryland and Virginia on the Delmarva Peninsula. From 1944 to 1947, the U.S. Navy (Navy) and the U.S. Army Air Corps established two separate rocket ranges at the Assateague Island FUDS, which were used by the Navy during World War II (WWII) for target practice by land-based aircraft. These ranges are referred to as Rocket Range North (MRS 01), also referred to as Stinger-One Rocket Range; and Rocket Range South (MRS 03), located approximately 10 miles south of MRS 01 and referred to as Stinger-Two Rocket Range. MRS 01 (3,412.2 acres) is located on State of Maryland and National Park Service (NPS) properties, which are both open to the public for recreational purposes as a State Park and National Seashore. MRS 03 (3,245.5 acres) is located entirely on NPS property and is open to the public for recreational purposes as a National Seashore.

The RI was completed by EA Engineering, Science, and Technology, Inc., PBC (EA) as the prime contractor for the U.S. Army Corps of Engineers (USACE) Baltimore District under Contract No. W912DR-13-D-0018, Task Order Number 0006. Work was completed in accordance with the Performance Work Statement dated 9 June 2016 issued with the task order. The RI was conducted in support of the Military Munitions Response Program (MMRP) at Assateague Island FUDS. The MMRP addresses issues related to munitions and explosives of concern (MEC) and munitions constituents (MC) associated with the MRSs, as well as related hazardous substances, pollutants, and potential contaminants of concern not located on operational ranges.

The USACE conducted this MMRP RI on the Assateague Island FUDS under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and in accordance with Engineer Regulation (ER) 200-3-1, Defense Environmental Restoration Program (DERP) FUDS Program Policy. USACE conducts munitions response actions at FUDS under the provisions of CERCLA, as amended by the Superfund Amendments and Reauthorization Act, Executive Orders 12580 and 13016, and the safety requirements of the Department of Defense (DoD) Explosives Safety Board. USACE ER 200-3-1 (USACE 2004), DERP FUDS Program Policy, specifies that the CERCLA remedial process be followed for projects in the MMRP.

By legal definition, the following is encompassed in the MMRP: unexploded ordnance (UXO) and discarded military munitions, together referred to as MEC. MC are considered MEC when found at concentrations high enough to present an explosive hazard (USACE 2005). Based on prior site observations (i.e., no MEC has been identified to date) and the MC sampling performed

¹ The official name of MRS 01 is Rocket Range North and Burial North, and the official name of MRS 03 is Rocket Range South and Burial Areas. Throughout this RI Report, the ranges are referred to as Rocket Range North (MRS 01) and Rocket Range South (MRS 03).

during the 2007 Site Inspection (SI) (Alion Science and Technology Corporation [Alion] 2007), MC was not anticipated. Therefore, MC sampling was not performed during the RI. If during the RI evidence of a potential MC source was identified (i.e., breached MEC), MC soil sampling may have been performed following discussions with the Project Delivery Team (PDT) and preparation of an amendment to the Uniform Federal Policy (UFP) Quality Assurance Project Plan (QAPP).

Rocket Range South, referred to as MRS 03, was referred to as MRS 02 in historical documentation up through the SI Report. Following the issuance of the updated Inventory Project Report (INPR), MRS 02 was automatically renumbered by the FUDS Management Information System database as MRS 03 when the realigned project was assigned to Baltimore District. The summaries of previous investigations of former MRS 02 provided in this RI Report use the current MRS 03 designation. Refer to the Memorandum for the Record dated 13 January 2014 provided in [Appendix A](#).

1.1 PURPOSE, SCOPE, AND OBJECTIVES

The purpose of this RI is to determine whether further response action, pursuant to CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan, is warranted at MRS 01 and/or MRS 03. The primary objective of this RI is to determine the nature and extent of MEC with respect to each MRS and assess the potential hazards posed to human health and the environment by MEC (if present). If the RI concludes acceptable risk is present, then the MRSs will proceed to No Further Action; however, if unacceptable risk is identified, the MRSs will proceed to a Feasibility Study (FS).

1.2 MUNITIONS RESPONSE SITE DESCRIPTION AND PROBLEM IDENTIFICATION

The size and locations of the former rocket ranges, MRS 01 and MRS 03, were identified in the Archive Search Report (ASR) and the Supplemental ASR (USACE 1994; USACE 2004). The locations of the MRSs presented in these documents were based on an interview with and drawings provided by a Navy veteran who was the “spotter” stationed at Assateague during WWII. The veteran drew the ranges from memory, and specifically described operations. These general locations were later corroborated by subsequent investigations and historical munitions-related findings (refer to Section 1.5 of the RI Report).

MRS 01 and MRS 03 were air-to-ground practice rocket, bombing, and strafing ranges. After use of the ranges, surface debris in the target areas was reportedly cleaned up and buried onsite. Investigations have been ongoing at Assateague Island since 1988 (USACE 1994), including a time critical removal action (TCRA) in 1998 (Human Factors Applications, Inc. [HFA] 1998) and a SI in 2006–2007 (USACE 2007). Munitions that were reportedly used at MRS 01 and MRS 03 by the Navy during target practice were primarily practice rockets. During previous investigations at MRS 01, munitions debris (MD) from the following munitions were recovered: 2.25-inch (in.) practice rockets, 3.25-in. practice rockets, 3.5-in. practice rockets, 5-in. practice rockets, 3-pound (lb) Mark (Mk) 23 practice bombs, 4.5-lb Mk 43 practice bombs, and 20-millimeter (mm) TP projectiles (casing only). During previous investigations at MRS 03, only two pieces of MD from 5-in. practice rockets were reported.

A detailed review of historical documents was conducted, and discussions were held with USACE and the NPS to confirm historical findings and evaluate the MRS boundaries presented in the ASR and the SI. Based on these discussions, the PDT determined the most likely impacted areas were slightly different from the existing MRS boundaries. RI activities were focused in the areas referred to as Remedial Investigation Areas (RIAs) as presented in the UFP QAPP. RIA 01 (1,150 acres [351 on land and 785 in water]) corresponds to MRS 01 and RIA 03 (1,831 acres [507 on land and 1,324 in water]) corresponds to MRS 03 ([Figure 1-1](#)). RIA 01 and RIA 03 were developed to focus the RI in areas where munitions-related items would most likely be located, including the suspect target area and potential disposal area locations, as well as buffer areas where under- and over-shoots could have occurred based on historical documents and interviews. The acreages of the MRSs and corresponding RIAs are shown in Table 1-1. RIA is used to describe the areas where fieldwork was performed during the RI. Throughout the RI Report, the findings and recommendations are associated with the larger MRS (i.e., findings are reported by MRS).

Table 1-1 Munitions Response Sites and Corresponding Remedial Investigation Areas

MRS	RIA ^(a)	MRS Acreage ^(b)
Rocket Range North ^(c) (MRS 01)	Rocket Range North (RIA 01)	3,412.2 (716.7 on land, 2,696.4 in water)
Rocket Range South ^(d) (MRS 03)	Rocket Range South (RIA 03)	3,245.5 (671 on land, 2,575.5 in water)
<p>a. RIA lands associated with MRS 01 and MRS 03 are located on NPS property. b. As reported in the Performance Work Statement dated 9 June 2016. c. Also referred to as Stinger-One Rocket Range. d. Also referred to as Stinger-Two Rocket Range.</p> <p>NOTES:</p> <p>MRS = Munitions Response Site. RIA = Remedial Investigation Area.</p>		

1.3 PHYSICAL SETTING

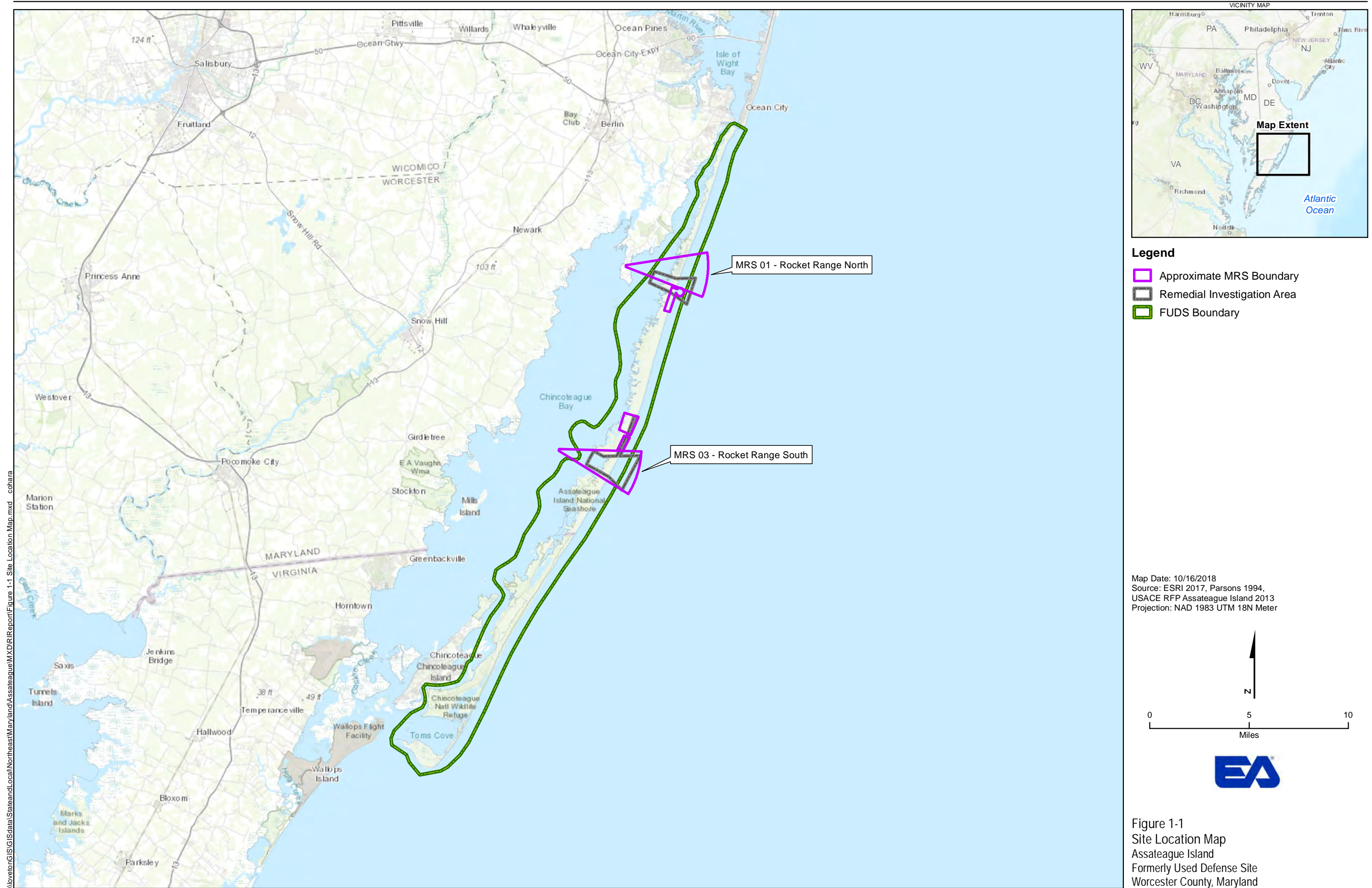
1.3.1 Location

Assateague Island is a 37-mile-long barrier island dividing Chincoteague Bay from the Atlantic Ocean in Worcester County, Maryland, and Accomack County, Virginia. The entire island contains approximately 17,522 acres (refer to [Figure 1-1](#)).

1.3.2 Land Use

The current and future land use for MRS 01, MRS 03, and the surrounding area provides information used to identify and evaluate applicable exposure scenarios, receptors, and receptor locations.

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1.3.2.1 Surrounding Area

Within a 2-mile radius of MRS 01, there is a residential area comprised of more than 26 homes across Chincoteague Bay. MRS 01 has a significant influx of visitors during the summer months. According to the NPS, the northern part of Assateague Island has up to 7,500 visitors per day (MRS 01). Additionally, there are 150 campsites on the National Seashore and approximately 200 camp sites on state property. This transient population significantly impacts the population density at MRS 01 during the summer months (EA 2017).

There are no known inhabited structures in or within a 2-mile radius of MRS 03. The 2-mile area surrounding MRS 03 consists of land comprised of the National Seashore and tidal waters. MRS 03 is much more remote than MRS 01 and consequently does not have the same influx of visitors. A backcountry campground is located within the MRS 03 boundary. The campground has three sites, with a maximum use of 15 people at any given time. The site receives minimal use during the summer and winter months, and moderate use during the spring and fall. Annual use of this area is probably no more than 1,500 visitors per year (Alion 2007). The three designated campsites at MRS 03 are projected to support a maximum of three temporary structures (i.e., tents) at any given time.

The northern tip of Assateague Island lies within a mile of Ocean City, Maryland and the southern tip of Assateague Island lies within a mile of Chincoteague, Virginia. The MRSs are in the middle of Assateague Island, which is over 10 miles from these populated areas. No schools were identified within 4 miles of MRS 01 or MRS 03.

1.3.2.2 Current Land Use

Currently both MRS 01 and MRS 03 are designated recreational areas as part of the Assateague Island National Seashore (ASIS). MRS 01 is located on State of Maryland and NPS properties; however, the entire area is managed by the NPS and is open to the public for recreational purposes as a State Park and National Seashore. MRS 03 is located entirely on NPS property and is open to the public for recreational purposes as a National Seashore.

1.3.2.3 Future Land Use

Land use for MRS 01 and MRS 03 is not projected to change in the future.

1.3.3 Topography

The topography of Assateague Island consists mainly of flat to gently rolling sand dunes. The FUDS lies just above sea level and is relatively flat with low relief; island elevations range from sea level to approximately 15 feet (ft) (Alion 2007).

NPS personnel stated that the width of the beaches varies annually from 30 to 40 meters (summer to winter high-tide line) at MRS 01 and 50-60 meters at MRS 03 due to shifting sands. NPS personnel stated that sands are deposited on the beach throughout the summer and create deposits of sand on the beach in the fall. During the fall, 1.5-2 meters of sand is present in the tidal zone and on the beach. NPS personnel noted that winter storms and nor'easters take this

sand from the beach and tidal zone and deposit the sand offshore in the form of sandbars over the winter. Because of the dynamic conditions at both MRSs along the shoreline (i.e., barrier island subject to extreme wind and wave energy), items buried in the subsurface could potentially migrate to the surface or be covered with additional sands/sediment. Over the past 60 years, the coastline of the Island has migrated towards the west as the Atlantic Ocean has reclaimed parts of the eastern shore, especially in the northern part of the island near MRS 01.

1.3.4 Regional Climate

The region has a humid mesothermal climate that is influenced by maritime tropical air masses in the summer and by continental polar air masses in the winter. Most high and low-pressure systems track from west to east, as the region lies in a zone of prevailing westerlies. The region is vulnerable to hurricanes primarily between June and November. Normal daily maximum temperatures range from 45 degrees Fahrenheit (°F) in January to 85°F in July. Normal daily minimum temperatures range from 30°F in January to 65°F in July. Average annual precipitation is approximately 49 inches (in.). Rainfall, derived from cyclonic weather systems in the fall, winter, and spring, and from local convective storms in the summer, is distributed fairly evenly throughout the year. The lowest average monthly precipitation of 3.41 in. occurs in December, while the highest average monthly precipitation of 5.67 in. occurs in August. Thunderstorms occur on average 20-40 days a year, primarily in the summer months. Mean average annual snowfall is 6–12 in. (Alion 2007).

1.3.5 Geology

The subsurface sediments of the Delmarva Peninsula rest on a seaward sloping basement of Paleozoic crystalline rocks. The basement is folded and faulted into a series of northwest-southeast trending ridges and depressions. The axis of one major depression, the Salisbury Embayment, crosses the Delmarva Peninsula near the Virginia-Maryland border.

Cretaceous, Cenozoic, and Mesozoic sands, silts, and clays account for more than half of the thickness of subsurface sediments. Lower Cretaceous formations representing non-marine deposition in river channels, flood plains, and swamps are overlain by Upper Cretaceous lagoonal, estuarine, and deep-water marine rocks. This feature represents the gradual encroachment of the Upper Cretaceous Sea over the region (Alion 2007).

1.3.6 Soil

The sand barrier of Assateague Island, composed of beach and wash over sands and gravels topped by wind-blown, vegetated sand dunes, rests on soft lagoonal mud containing oyster, clam, and snail shells. The lagoonal mud overlies organic coastal salt-marsh mud, and peat, which, in turn, overlies organic debris-rich sandy mud. This entire sequence overlies pre-Holocene sediments undergoing transgression. Except for steep slopes on dunes, this “soil” is nearly level and is composed of light-gray to white marine sand and shell material (Alion 2007).

Tidal marsh soils are sandy to clayey, poorly drained, acidic, and saline and can contain peat or highly organic black muck. These soils are included in the Tidal Marsh–Coastal Beach Association. Additionally, a small amount of Plummer soils can be found in stabilized depressions on coastal beaches (Alion 2007).

1.3.7 Vegetation

The eastern shore is predominately sand dunes, while the western shore is covered with dense brush and salt-marsh wetlands.

1.3.8 Hydrogeology

Groundwater in the region surrounding Assateague Island is supplied primarily by the Manokin, Pokomoke, and Quaternary aquifers (USACE 1994). The Manokin aquifer is recharged by the overlying Pokomoke aquifer, which is recharged by the downward movement of water from the Quaternary sediments. Recharge of the Manokin and Pokomoke aquifers occurs along a drainage divide between the Atlantic Ocean and the Chesapeake Bay. The Quaternary aquifer is recharged by precipitation over a broad area (USACE 1994).

Regional movement of groundwater in the Manokin and Pokomoke aquifers is away from the drainage divide and towards the ocean, bays, rivers, and areas of pumping. Groundwater movement in the Quaternary aquifer is from areas of high water table to streams, bays, and the ocean (USACE 1994).

1.3.9 Surface Water Hydrology

Tide ranges and tidal currents in the inshore waters of Assateague Island are controlled by the position of ocean inlets. The two ocean inlets on Assateague Island are the Ocean City inlet on the north, which leads to Sinepuxent Bay, and the Chincoteague inlet 30 miles to the south, which leads to Chincoteague Bay (USACE 1994). Refer to [Figure 1-1](#).

Mean tide range at the Ocean City and Chincoteague inlets is 3.4-3.8 ft. Tidal currents in the bays range from 0.15 to 0.5 knots. Through the tides, approximately 7 percent of the water in the bays is renewed each day (USACE 1994).

1.3.10 Ecology

Numerous salt-marsh wetland areas and freshwater wetlands are present on and surrounding Assateague Island. There are approximately 70 acres of saltwater marshes in MRS 01. There are approximately 54 acres of saltwater marshes and 0.3 acres of freshwater wetlands in MRS 03.

Assateague Island is bordered on the east by the Atlantic Ocean and on the west by Chincoteague Bay. Both MRSs are within ASIS and are located within the Maryland and Virginia designated coastal zone areas. Under the Coastal Zone Management Act, coastal zones are afforded additional federal and state protection, and all projects conducted within a coastal zone must adhere to the Coastal Zone Management Program and balance the demands of coastal resource use and conservation (National Oceanic and Atmospheric Administration 2017).

MRS 03 is in a proposed Wilderness Area and as such is protected under the Wilderness Act, which mandates the “preservation of wilderness character.” Based on the legal description of the wilderness definition, five specific qualities were identified that are needed to support wilderness

character: untrammeled, natural, undeveloped, opportunities for solitude, or primitive and unconfined recreation (Sudol 2014).

The ecological habitat within the two MRSs include terrestrial plants, terrestrial invertebrates (e.g., insects and worms), benthic organisms, aquatic organisms, terrestrial-feeding/predatory animals, terrestrial-feeding/predatory birds, aquatic-feeding mammals, and aquatic-feeding birds.

The unique environmental conditions found on Assateague Island also provide habitat for a multitude of specialized plant and animal species, many of which are rare, threatened, or endangered. Several populations of migratory birds, including federally and state listed species use the seashore seasonally for breeding, overwintering, and as a stopover habitat while migrating along the Atlantic Flyway. Federally listed migratory sea life has also been observed within the seashore, including four species of sea turtles and three whale species. The seabeach amaranth (*Amaranthus pumilus*) is the only federally listed plant species known to occur at the seashore; however, there are numerous state-listed plant species that are also known to occur (EA 2017).

1.4 SITE HISTORY

Military activity in defense of the coastline occurred in the waters near Assateague Island during and immediately following WWII. From 1944 to 1947, the Navy and the U.S. Army Air Corps established two separate rocket ranges at the Assateague Island FUDS for land-based aircraft from Naval Air Station Chincoteague, Virginia, and Naval Air Station Manteo, North Carolina. These two rocket ranges at Assateague were reportedly used by the Navy during WWII for target practice by land-based aircraft. The ranges were identified as Rocket Range North or Stinger-One Range (MRS 01) and Rocket Range South or Stinger-Two Range (MRS 03). Although the FUDS boundary includes the entire island, the 1994 ASR designated two areas on the island as the only known training areas. They identified these areas as MRS 01 and MRS 03 (USACE 1994).

Training activities on Assateague Island consisted of air-to-ground target practice, using practice rockets, and practice bombs as well as inert 20-mm projectiles used for strafing (USACE 1994). Most of the planes that used these ranges originated from Chincoteague Naval Air Station and traveled up the eastern shore of Assateague Island. Once north of the target area, the planes circled around the Island and fired eastward during the approach to the western shore of Assateague. The practice munitions reportedly discharged smoke on impact (USACE 1994). At the end of WWII, it was reported that the DoD created two (possibly three) suspect ordnance burial sites during site cleanup. The locations of the rocket ranges are based on an interview with and drawings provided by a Navy veteran who was the “spotter” stationed at Assateague during WWII. The veteran drew the ranges from memory, and specifically described operations. These locations were noted on figures in the ASR.

Both ranges were primarily used as rocket ranges for inert 2.25-in. and 5-in. rockets; however, practice bombs which may contain spotting charges, and 20-mm rounds (for strafing) were also used at MRS 01, based on findings to date. Note: MRS 03 was referred to by USACE as MRS 02 in earlier historical documentation (up through the SI). Following completion of the SI, MRS

02 was renamed in the USACE database as MRS 03. The summaries of previous investigations of former MRS 02 use the current MRS 03 designation.

Prior to the RI, MD from the following munitions were identified at MRS 01: 2.25-in. practice rockets, 3.25-in. practice rockets, 3.5-in. practice rockets, 5-in. practice rockets, 3-lb Mk 23 practice bombs, 4.5-lb Mk 43 practice bombs², and 20-mm TP projectiles (one casing only). And at MRS 03, only two pieces of MD from 5-in. practice rockets were identified. No live munitions nor explosives of concern were found.

In 1943, the Chincoteague National Wildlife Refuge was established, and in 1965, Assateague Island was established as a national seashore. The site is currently owned by the NPS, the State of Maryland, the U.S. Fish and Wildlife Service, the State of Virginia, and the U.S. Coast Guard.

1.5 PREVIOUS INVESTIGATIONS

The summary of previous investigations presented below (1988 – 2013) provides details on what munitions items were found and where they were located at the MRSs. Figures [1-2](#) and [1-3](#) indicate the findings from the previous investigations listed below.

1988 Case Incident—Army and Navy Explosive Ordnance Disposal (EOD) Teams were deployed to Assateague Island when WWII era ordnance³ washed ashore at the North Ocean Beach located near the parking lot in the Stinger-One Rocket Range in July 1988. The 144th EOD from Ft. Meade, Maryland (Army), was the first EOD unit to deploy to the site on 14 July 1988. The 144th EOD recovered and disposed of three inert 5-in. rockets, with at least one containing a rocket motor. On 15 July 1988, the 144th EOD returned to the site to recover and dispose of another inert 5-in. rocket that had washed ashore in the same area. At the time of the deployment, it was noted that it appeared that the ordnance was coming from what was described as a “hole” approximately 15 meters offshore. On 16 July 1988, the Navy EOD Mobile Unit II arrived at the site and took over operations from the 144th EOD. From 17 to 20 July 1988, the Navy EOD conducted an underwater survey of the area around the “hole.” Results of the underwater survey led the leader of the Navy EOD team to believe that the “hole” was a trench historically dug to bury expended items found during range clearance operations in the 1940s. The ordnance items recovered by both EOD Teams totaled: 11 inert 2.25-in. rockets (rocket motors and heads), 6 inert 5-in. rockets (2 were only rocket heads), 2 inert 3.25-in. rocket heads, and numerous ballistic tips used to improve the aerodynamics of practice rockets (Parsons Engineering Science, Inc. [Parsons] 1995).⁴

² During the 1991 Inventory Project Report (INPR) site visit, the field team was shown an expended inert MK 43 practice bomb that had been found previously by a NPS ranger on the FUDS (USACE 1991). As documented in the 1995 Site Investigation Report, MD from an “old style practice bomb” was identified; however, additional information regarding the mark and size of the practice bomb was not provided (Parsons 1995). During the 1998-time critical removal action (TCRA), three MD items found were associated with practice bombs identified as the MK 23 practice bomb (Human Factors Applications, Inc. [HFA] 1998).

³ The term “ordnance” was the precursor to the term “MEC” and was used to describe any munitions-related items, including inert MD.

⁴ This information was identified in Appendix C of the 1995 Site Investigation Report, which provides a detailed account of the 1988 Incident Report as summarized by the NPS and the Navy EOD Team. The 1995 Site

1991 Inventory Project Report—USACE Baltimore District prepared an INPR for Assateague Island that established the property as a FUDS. The INPR noted that based on a comprehensive review of USACE, Wicomico County, and NPS records, no acquisition or disposal documentation regarding the use of Assateague Island was found; however, DoD use and control of portions of the island was substantiated through historical accounts (USACE 1991). A Navy enlisted man (Mr. Adrien Smith) stationed at Assateague June 1945 thru May 1946 described in detail the setup, use, and control of the ranges by the Navy beginning with range set up under his supervision in June 1945. This use by the DoD was substantiated in subsequent investigations including the 1988 incident report where the Navy discovered ordnance including practice rockets just offshore of the reported location of the Northern Rocket Range (MRS 01) in an area believed to be a burial trench created during range cleanup. At that time, the Findings and Determination of Eligibility, signed on 19 December 1991, concluded that the 17,552-acre property located on Assateague Island in Worcester County, Maryland and Accomack County, Virginia, had been formerly used by the War Department (USACE 1991).

Additional documentation has been identified (March 2019) to include original naval correspondence referencing a leasehold interest in the two ranges on Assateague Island known to the Navy as Rocket Range Target 32 and Rocket Range Target 33 ([Appendix J](#)). Rocket Range Target 32 corresponds to the location of MRS 3 (approximately 16 miles south of Rocket Range Target 33) and Rocket Range Target 33 corresponds to the location of MRS 1 (approximately 1 mile north of the former North Beach Coast Guard Station. These descriptions/locations also correspond to the information provided by the former Navy enlisted man (Mr. Adrien Smith), mentioned above, who was stationed at Assateague June 1945 thru May 1946. And they are also corroborated by the subsequent investigations, including the 1988 incident report where the Navy discovered ordnance including practice rockets just offshore (note below), and by the USACE during the 1994 ASR when USACE found MD in MRS 03 as discussed below.

Use of Assateague Island by DoD was substantiated by a Navy spotter's statements, and also by former residents of the island at that time stating that the Navy had used Assateague Island. Also, in 1988, the Navy discovered ordnance just offshore of the reported location of the Northern Rocket Range and identified a "hole" offshore that they believed represented a burial trench for ordnance during range clearance. These discoveries confirmed DoD usage. Per the Findings and Determination of Eligibility, the project was evaluated in accordance with [Appendix A](#) in memorandum CEMP-RT, dated 5 April 1990.

In 1991, a site visit was conducted in order to complete the INPR for Assateague Island. During the site visit the field team was shown an expended inert Mk 43 practice bomb and 20-mm TP projectile casing (inert) that had been found previously by an NPS ranger. During the site visit additional MD was identified. Part of an inert 5-in. rocket motor was uncovered on the southern part of the island (near MRS 03) during a visual sweep of the island. At the conclusion of the site visit, a large-scale clearance was recommended using “ground penetrating and electric pulse induction search equipment” in an effort to locate the ordnance burial trenches.

Investigation Report concluded that no MEC had been identified at the FUDS during the Site Investigation or during previous investigations.

The 1991 INPR concluded that there were eligible categories of hazards under the DERP FUDS program. Due to the fact that the site was found to have been used as a practice rocket target range for Navy pilots (and possibly Army Air Corps pilots), an Ordnance and Explosive Waste (precursor to MMRP) project was recommended: DERP FUDS Ordnance and Explosive Waste Project Number C03MD093001.

1992 Interim Sweep of North Ocean Beach—As was recommended by the 1991 INPR, a sweep of the North Ocean Beach area was conducted in 1992 where ordnance had previously washed ashore. Over a 3-week period, a 570,000-square ft area of the beach was swept. During this investigation, no ordnance or ordnance-related items were discovered, although some fencing, metal piping, and a shipwreck were discovered and reported (USACE 1994).

1994 Archive Search Report—The 1994 ASR noted that there was historical evidence of WWII-era ordnance uses, including MD from rockets and practice bombs. The ASR noted two target ranges, identified as MRS 01 and MRS 03, that were developed on Assateague Island in the 1940s and used for target practice by the Navy. No certificates of ordnance clearance or decontamination associated with the FUDS were located. The ASR noted no evidence of chemical warfare materiel (CWM) being used or present at the site.

During the 1993 visual reconnaissance conducted for the ASR, MD from a 3.25-in. rocket was observed in the sand dunes, inland of the beach area at MRS 01. MD from an expended 5-in. high velocity aircraft rocket was identified at MRS 03. No burial areas were observed at either MRS.

The ASR concluded that both the north and south rocket ranges had the potential for MEC and MC and recommended these areas for further inspection (USACE 1994). The site visit of remaining lands indicated no evidence of MEC or MD; therefore, these areas were determined to be non-impact areas (USACE 1994).

1995 Site Investigation Report—As documented in the 1995 Site Investigation Report, USACE's Huntsville Center conducted a site investigation on Assateague Island, which was contracted to Parsons to determine the nature and extent of MEC. With the guidance of the ASR, two areas, which included the beach and dune zones, were identified as having the highest probability for MEC encounters. Two grid systems, approximately 4,500 ft long and from 400 to 800 ft wide, were set up in both areas. Magnetometers were used to sweep at 50 ft spacing with a minimum 10 percent grid coverage.

Eighteen grids in MRS 01 and nine grids in MRS 03 were selected for intrusive investigations. Digging proceeded to 2 ft below ground surface (bgs) using 6-in. lifts. The magnetometer sweeps in the northern area revealed 20 MD items on the surface and 125 MD items in the subsurface. The MD was predominately from 2.25-in. and 3.5-in. rockets; however, one MD item was associated with a practice bomb⁵ and another was associated with a 5-in. rocket. The number and location of surface and subsurface MD confirmed the location of the former target

⁵ As reported in the 1995 Site Investigation Report, MD from an "old style practice bomb" was identified; however, additional information regarding the mark and size of the practice bomb was not provided (Parsons Engineering Science, Inc. [Parsons] 1995).

area as previously identified by the former range spotter. One suspect burial trench with four burial pits was found on the shoreline at MRS 01 and a second area identified as a “potential burial trench or washout area from burial trench” was found in the surf zone of MRS 01. These burial pit locations are presented in [Figure 1-2](#).⁶ Partial excavation of the burial trench on the shoreline uncovered an additional 36 items. All the discovered items were determined to be inert and were classified as material documented as safe (MDAS), and all but two items were transferred to a local scrap dealer. The “potential burial trench or washout area from burial trench” located in the surf zone was not intrusively investigated. In the southern area (MRS 03) the magnetometer sweeps did not reveal MEC or MD items on the surface or subsurface. Parsons concluded that MRS 03 may have been cleaned up (Parsons 1995).

1998 Time Critical Removal Action—In 1998, U.S. Army Engineering and Support Center, Huntsville conducted a TCRA in MRS 01. The TCRA addressed a former suspect disposal/burial area. During a February 1998 storm, 2 ft of sand had shifted, exposing a suspect burial area with about 150 munitions items. The area was marked by NPS and it measured approximately 400 ft long and 100 ft wide. The local EOD unit was called onsite; however, they could not document the items observed as safe. Therefore, the items were left in place and were covered by sand from another storm event. Subsequently, U.S. Army Engineering and Support Center, Huntsville conducted a TCRA on approximately 2.41 acres of MRS 01 (refer to [Figure 1-2](#)). This 2.41-acre area was the same area reported by Parsons as the former burial trench with four disposal pits in the 1995 Site Investigation Report, and the same area that had been uncovered by storms in February of 1998. Twelve grids were investigated (six 100 ft by 100 ft grids and six 100 ft by 75 ft grids) to a depth of 4 ft bgs; 212 pieces of MD were inspected and determined to be free of energetics (non-MEC) and removed from the disposal area in MRS 01. The MD was predominately from 2.25-in. rockets, 3.5-in. rocket motors, and 5-in. rocket heads. Three MD items found were associated with practice bombs identified as the Mk 23 practice bomb (HFA 1998).

2003 Baltimore District Site Visit—USACE Baltimore District completed a site visit in 2003 to further characterize the MEC risk on the Island as part of long-term monitoring of the 1998 TCRA. Due to heavy brush conditions, the visit was limited to the beach areas. Schonstedt magnetometers were used to assess the impact areas (MRS 01 and MRS 03) and potential burial sites. Suspect anomalies and two possible burial pits were located at MRS 01. The memorandum indicates that “the possible burial sites were just outside the projected impact area.” The memorandum also noted that four large anomalies, possibly burial pits, were located there. “Several dozen” additional anomalies were identified in the area of MRS 03. According to the memorandum, approximately 10 percent of the ranges were searched (USACE 2003). A removal action was not completed as a result of the survey.

2007 Site Investigation—The primary objective of the MMRP SI was to determine whether a MEC or MC hazard existed at the FUDS, such that the project warranted further response action under CERCLA. The field sampling approach included meandering reconnaissance in and around sampling locations to identify ranges, target areas, MEC, MD, or other areas of interest. The qualitative site reconnaissance was conducted on approximately 12 acres of the designated

⁶ The former target area and disposal area as documented in the 1995 Site Investigation Report are located in the central portion of RIA 01.

MRSs (refer to Figures [1-2](#) and [1-3](#)). An additional 20 acres were inspected adjacent to and outside of the two MRS boundaries in the vicinity of the suspect burial areas. Suspect MD and/or possible cultural debris were identified at MRS 01 during the SI, and numerous subsurface anomalies were identified at the FUDS. No MEC or MD was identified at MRS 03 during the SI. Fieldwork did not include intrusive investigation of subsurface anomalies (Alion 2007).

To evaluate whether a release of MC had occurred, a total of 17 soil (5 surface soil, 9 subsurface, and 3 background), 2 sediment, 2 surface water, and 2 groundwater samples were collected during the SI. A list of explosives and metals associated with the munitions used at the FUDS was developed and used to support analysis of results and the risk screening. The samples were analyzed for four explosives (tetryl, nitroglycerin, cyclotrimethylenetrinitramine, and dinitrotoluene) and eight metals (aluminum, antimony, iron, lead, magnesium, potassium, titanium, and zinc). In addition, groundwater samples were analyzed for perchlorate. No MC were reported as exceeding human health screening criteria for surface water, sediment, soil, or groundwater in MRS 01.

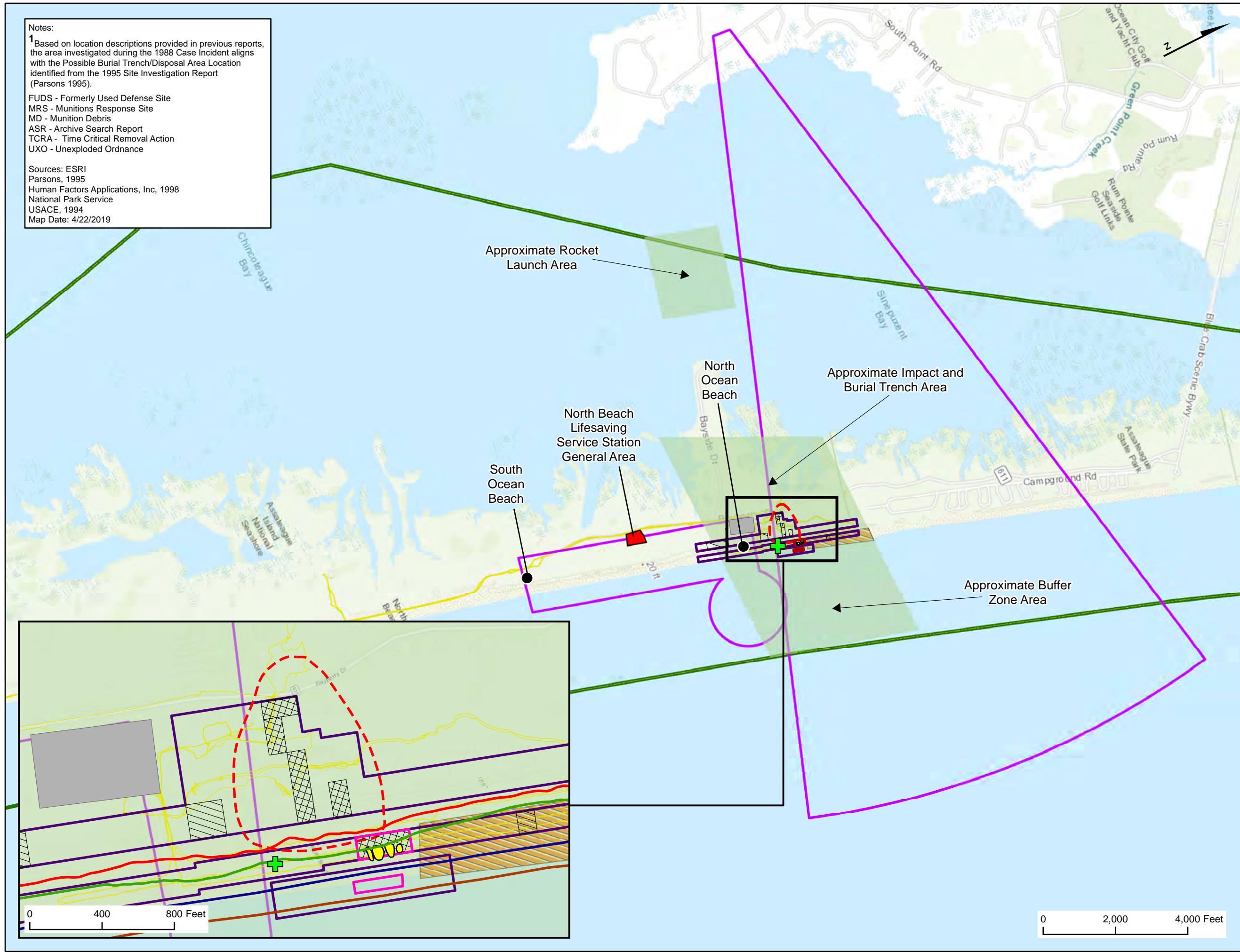
No MC were reported as exceeding human health screening criteria for surface water, sediment, or soil in MRS 03. One MC (aluminum) was reported as exceeding 1/10th the human health screening criteria for groundwater in MRS 03. However, this analyte was not retained as a chemical of potential concern because the sample was from a temporary well point that was not filtered and likely contained sediment particles as evidenced by elevated levels of essential nutrients (Alion 2007).

A screening level ecological risk assessment (SLERA) was required at the former FUDS since it is located in an area regulated by the Maryland and Virginia Coastal Zone Management Programs, contains numerous salt-marsh wetland areas, and provides valuable and recognized habitat for ecological receptors, including rare, threatened, and endangered species. The SLERA identified antimony as exceeding ecological soil screening criteria at MRS 1 and MRS 2. However, when compared to background soil concentrations, the maximum concentrations of antimony, although at levels above its respective screening value, were not above the range of background concentrations. These exceedances were not considered significant and antimony was not retained as a chemical of potential ecological concern in either MRS (Alion 2007).

The SI concluded that MEC risk is low to moderate and recommended an RI for MEC for both MRS 01 and MRS 03. No unacceptable human health or ecological risks for exposure to MC were identified, based on risk screening results, and no further action was recommended for MC (Alion 2007).

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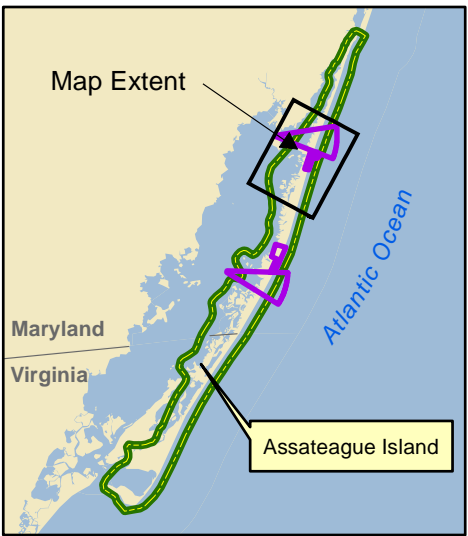
\\novetongis\GIS\data\Stateand\local\Northeast\Maryland\Assateague\MXD\Report\Figure 1-2 Previous Investigation Area and Munitions-Related Finds at Rocket Range North - MRS01.mxd



Notes:
1 Based on location descriptions provided in previous reports, the area investigated during the 1988 Case Incident aligns with the Possible Burial Trench/Disposal Area Location identified from the 1995 Site Investigation Report (Parsons 1995).

FUDS - Formerly Used Defense Site
MRS - Munitions Response Site
MD - Munition Debris
ASR - Archive Search Report
TCRA - Time Critical Removal Action
UXO - Unexploded Ordnance

Sources: ESRI
Parsons, 1995
Human Factors Applications, Inc, 1998
National Park Service
USACE, 1994
Map Date: 4/22/2019



- Legend**
- 1998 TCRA (HFA 1998)**
- Practice Ordnance Burial Pits
 - Disposal Areas
- 1994 ASR (USACE 1994)**
- ASR Identified-Areas
 - 1992 Surface Sweep
- 1995 Site Investigation Report (Parsons 1995)**
- Approximate Location of Target
 - Grid with Munitions Found
 - Grid with No Munitions
 - Magnetometer Assisted Survey Grid Area
 - Possible Burial Trench/Disposal Area Location (1988 Case Incident)¹
- 2007 SI Report**
- Geophysical Reconnaissance Route
- 2013 Site Visit (USACE 2013)**
- 253 pieces of MD found
 - Shoreline 1942/1943
 - Shoreline 1961/1962
 - Shoreline 4-2016
 - Shoreline 8-2016
 - Parking Lot
 - Remedial Investigation Area
 - MRS Boundary
 - FUDS Boundary
- EA**

Figure 1-2
Previous Investigation Areas
and Munition-Related Finds
at Rocket Range North (MRS 01)
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

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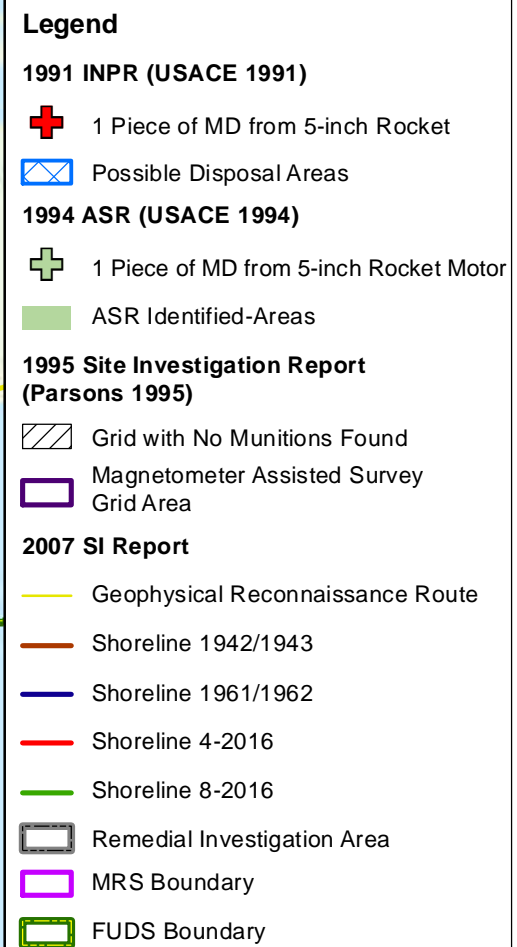


Figure 1-3
Previous Investigation Areas
and Munition-Related Finds
at Rocket Range South (MRS 03)
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

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2009 USACE FUDS Update—USACE completed a Revised INPR and Project Realignment for Property No. C03MD0930. This included an update of the MRS boundaries in the FUDS database from the original boundaries included in the 2004 ASR Supplement to incorporate the findings from the SI and previous investigations. The boundary updates are presented in Figures [1-4](#) and [1-5](#).

2013 EOD Team Response—On 24 June 2013, the 20th Support Command EOD team (from Aberdeen Proving Grounds) responded to additional MD that had washed up on the beach in MRS 01. A total of 234 MD⁷ items were identified at MRS 01 and disposed of by EOD. The EOD team recommended that the USACE be notified of the situation.

2013 USACE Site Visit—The USACE Baltimore District was asked to provide assistance to NPS. USACE Baltimore District personnel conducted magnetometer-assisted surveys of the suspect impact areas in each MRS (approximately 14 acres) and an additional 19 MD items were recovered/removed from MRS 01; however, no MD was identified in MRS 03 (USACE 2013).

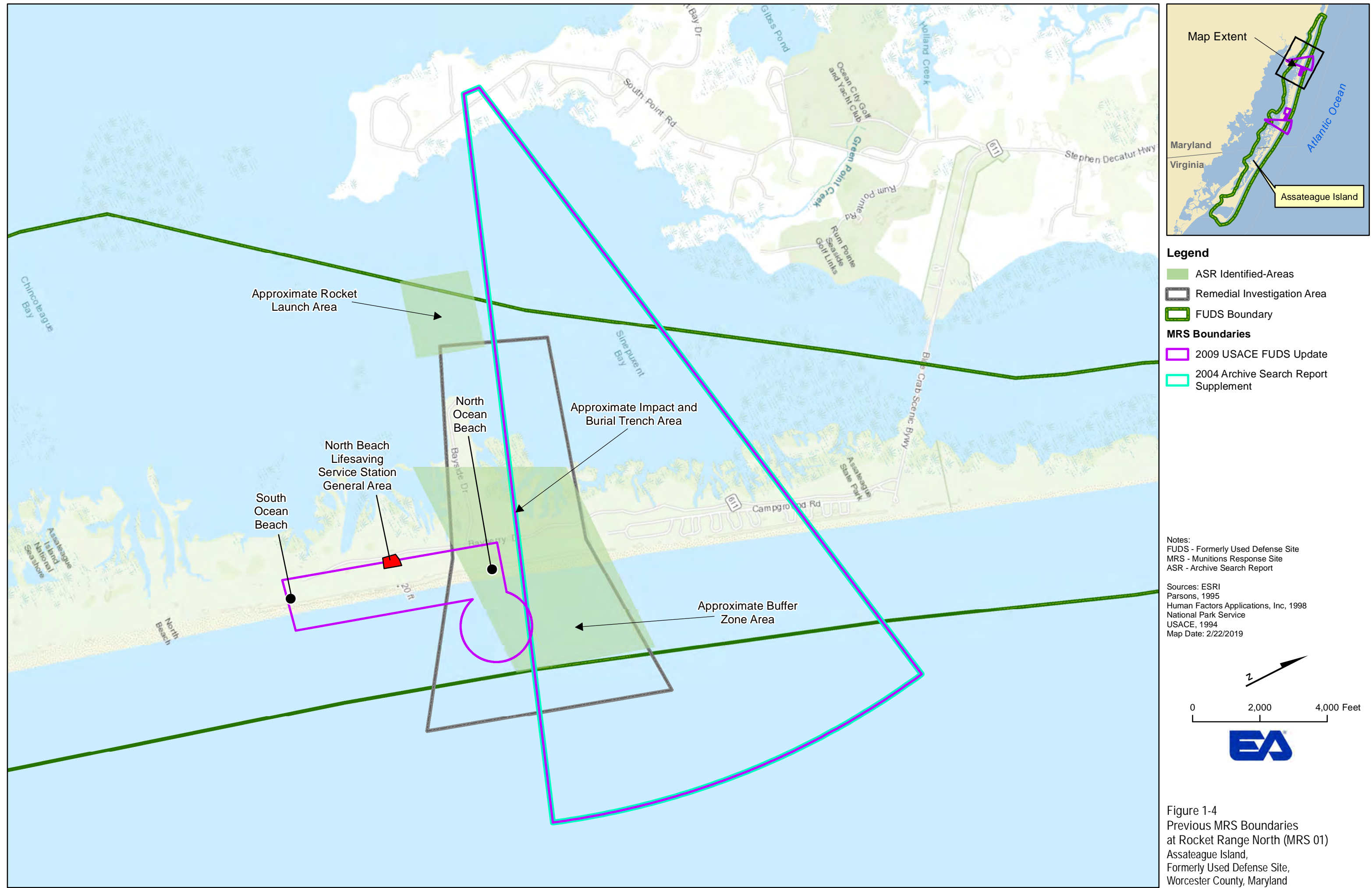
2017 Findings—On 12 June 2017, NPS notified USACE that MD had been found in MRS 01 (Rocket Range North) which were similar to items previously found and removed from the area. NPS reported items in the water that were half-buried in a vertical position, creating a swimming hazard. NPS notified USACE that they posted signs in the area, to alert swimmers of the dangers and prevent swimming in the area. As of 3 July 2017, NPS reported that the items were naturally re-buried by sand and were no longer considered a swimming hazard.

A summary of the MD recovered during previous investigations is provided in Table 1-2. Although not explicitly stated in historic documentation, based on discussions with the NPS and USACE, it is understood that the MD identified during previous investigations was certified as MDAS.

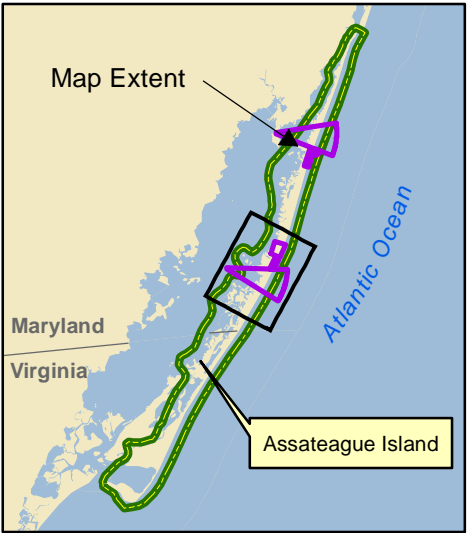
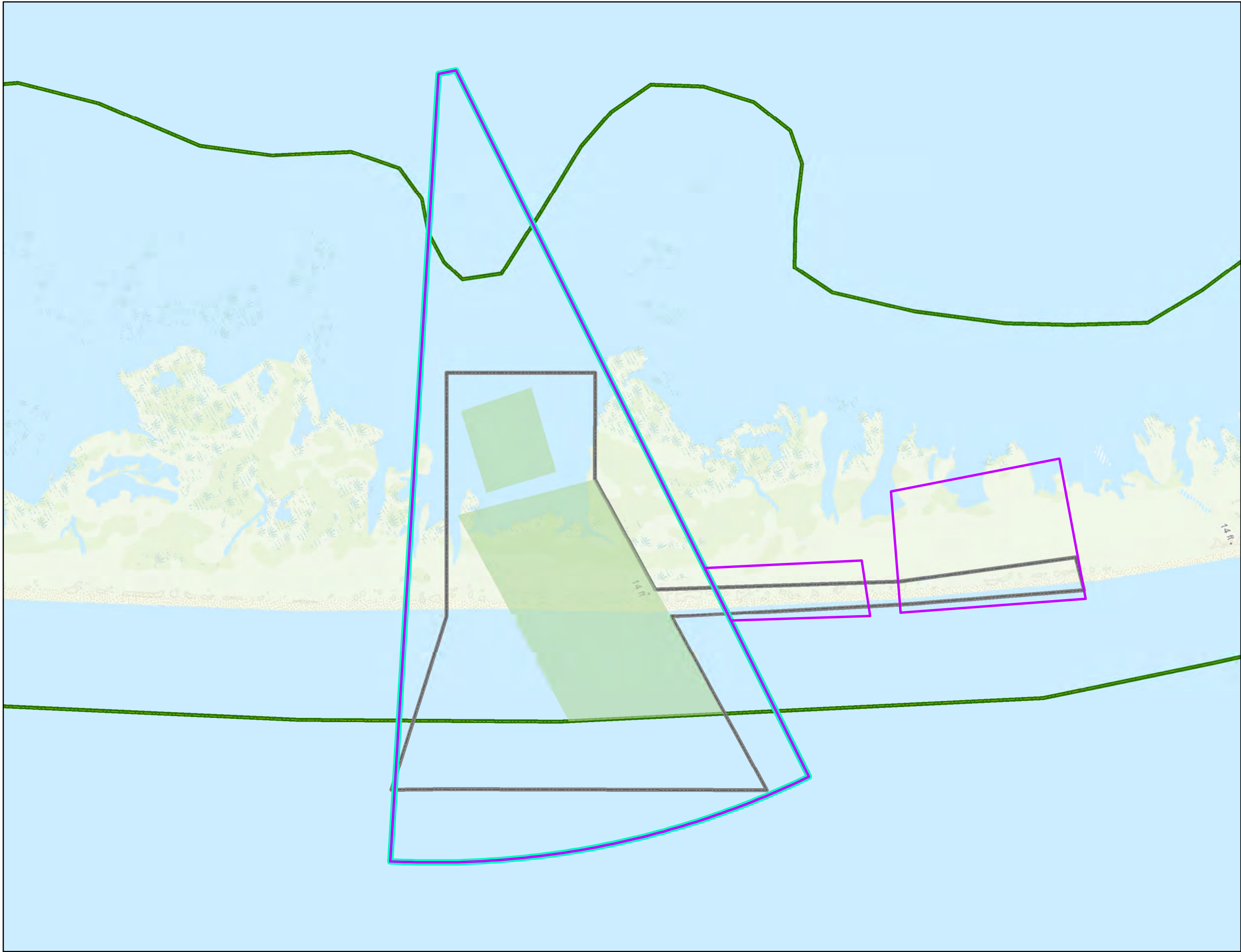
⁷ None of the items initially documented as MPPEH were identified as MEC within the summary of the 2013 EOD Site Visit.

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\\loveton\GIS\GISdata\StateandLocal\Northeast\Maryland\Assateague\MXD\RI\Report\Figure 1-4 MRS Boundary - MRS01.mxd



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Legend

- ASR Identified-Areas
- Remedial Investigation Area
- FUDS Boundary

MRS Boundaries

- 2009 USACE FUDS Update
- 2004 Archive Search Report Supplement

Notes:
FUDS - Formerly Used Defense Site
MRS - Munitions Response Site
ASR - Archive Search Report

Sources: ESRI
Parsons, 1995
Human Factors Applications, Inc, 1998
National Park Service
USACE, 1994
Map Date: 2/22/2019

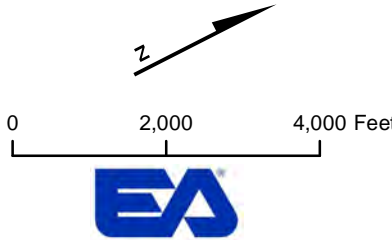


Figure 1-5
Previous MRS Boundaries
at Rocket Range North (MRS 01)
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

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Table 1-2 Summary of Recovered Items at MRS 01 during Previous Investigations

Investigation ^(a)	Description	Surface		Subsurface		Total
		MEC	MD	MEC	MD	
1988 Case Incident	5-inch practice rockets	0	5	0	1	6
	3.25-inch practice rockets	0	0	0	2	2
	2.25-inch practice rockets	0	0	0	11	11
1991 Inventory Project Report ^(b)	Practice bomb (4.5 lb Mk 43)	0	1	0	0	1
	20-mm TP Projectile Casing (inert)	0	1	0	0	1
1994 Archive Search Report	3.25-inch practice rockets	0	1	0	0	1
1995 Site Investigation Report ^(c)	5-inch practice rockets	0	0	0	1	1
	2.25-inch practice rockets	0	20	0	120	140
	3.5-inch practice rockets	0	0	0	3	3
	“Old style” Practice bomb (type not specified)	0	0	0	1	1
1998 Time Critical Removal Action	5-inch practice rockets	0	0	0	3	3
	3.25-inch practice rockets	0	0	0	10	10
	2.25-inch practice rockets	0	0	0	196	196
	Practice bomb (3 lb Mk 23)	0	0	0	3	3
2013 EOD Team Response	MD (type unknown)	0	234	0	0	234
2013 USACE Site Visit	MD (type unknown)	0	19	0	0	19
NPS MD Collection ^(d)	MD (type unknown)	0	250	0	0	250
Total Items (found)		0	531	0	351	882
<p>a. Only MD identified and documented as removed from the MRS is quantified in this table. In 2017, the National Park Service notified USACE that MD had been found in MRS 01; however, the items were naturally reburied and thus were left in place. Furthermore, the NPS has indicated there are other undocumented instances where MD was identified and removed from the MRS.</p> <p>b. Items were initially found by the NPS and locations were not specified. However, due to the remoteness of MRS 03, these items were likely found at or near MRS 01.</p> <p>c. The MD found during the 1995 SI (munition-types and total number of items) as presented in this table are from the Dig Sheets provided as Appendix E of the 1995 SI Report. The main text of the 1995 SI Report presented different MD munition-types and number of items.</p> <p>d. MD found/collected by the NPS that was stored in the maintenance area. The number of pieces of MD found was estimated during the MPPEH inspection process. Approximately 1,724 lb of MDAS from the NPS maintenance area was shipped off-site as MDAS for disposal at the conclusion of the RI.</p> <p>NOTES: lb = Pound. MD = Munitions debris. MDAS = Material documented as safe. MEC = Munitions and explosives of concern. Mk = Mark. mm = Millimeter. MPPEH = Material potentially presenting an explosive hazard. MRS = Munitions Response Site. NPS = National Park Service. USACE = U.S. Army Corps of Engineers.</p>						

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2. PROJECT OBJECTIVES

2.1 CONCEPTUAL SITE MODEL AND PROJECT APPROACH

The conceptual site model (CSM) is intended to assist in planning, interpreting data, and communicating. The CSM is used as a planning tool to integrate information from a variety of resources, to evaluate the information with respect to project objectives and data needs, and to evolve through an iterative process of further data collection or action.

The interim CSMs for MRS 01 and MRS 03 were developed during the SI and updated during the planning phase of the RI based on site-specific data and general historical information including literature reviews, aerial photographs, maps, training manuals, technical manuals, and field observations. Interim CSMs provided the basis for identifying data collection needs. [Figure 2-1](#) presents the interim CSM developed during the planning phase of the RI for both MRS 01 and MRS 03.

The CSM is broken out into three sections: Potential Sources, Interaction, and Receptors for MEC and/or MC, with complete and incomplete exposure pathways identified for each receptor. Each section is discussed below.

- **Sources**—Sources are those areas where MEC or MC has entered (or may enter) the environment. An objective of this investigation is to verify and refine these locations.
- **Interactions**—The hazard from MEC and/or MC arises from direct contact as a result of some human activity. Interactions describe ways that receptors come into contact with a source. For MC, this can include physical transportation of the contaminant and transfer from one media to another through various processes such that media other than the source area can become contaminated. Interactions also include exposure routes (ingestion, inhalation, and dermal contact) for each receptor. For MEC, migration movement is not typically significant, and interaction will occur only at the source area, limited by access and activity. However, there can be some movement of MEC through natural processes such as frost heave and erosion.
- **Receptors**—A receptor is an organism (human or ecological) that is able to make contact with a chemical or physical agent. The pathway evaluation must consider both current and reasonably anticipated future land use, as receptors are determined on that basis. Human receptor subcategories can include site workers, residents, contractors, visitor/recreational users, and biota.

MEC exposure analysis compiles all known information into an illustration of exposure pathways. The CSM is divided into four components: source, activity, access, and receptor. Each component is briefly discussed in the following sections.

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2.1.1 Source

MEC sources typically fall into one of two categories: 1) concentrated munitions use areas (CMUAs) or 2) non-concentrated munitions use areas (NCMUAs). CMUAs are areas within MRSs where there is a high likelihood of finding MEC and that have a high amount of MD within them as a result of historical munitions use and fragmentation. CMUAs are most commonly target areas on ranges; however, they also include explosion sites, open burn/open detonation areas, and potentially even disposal sites where munitions have been disposed of over a relatively large area (USACE 2015). NCMUAs are areas within an MRS where there is a low amount of MD or MEC due to limited historical munitions use and fragmentation. NCMUAs may be entire MRS (e.g., training or maneuver areas) or they may be a portion of an MRS outside of a CMUA (e.g., buffer areas) (USACE 2015). NCMUAs typically include buffer areas that surround target areas where the likelihood of MEC is much lower.

Training activities on Assateague Island consisted of air-to-ground target practice, using practice rockets, 20-mm projectiles, and practice bombs. Previous investigations indicate that potential CMUAs are present at RIA 01, including a target area and two suspect disposal areas ([Figure 1-2](#)). One disposal area (2.41 acres) with four burial pits of MD were removed to a depth of 4 ft during the 1998 TCRA; however, the other suspect disposal area identified in the 1995 SI Report was not historically investigated as it was located offshore. Historically, this suspect disposal area would have been located onshore, but due to the fluctuating conditions and the migration of the shoreline over time it is now potentially located offshore. The remaining portion of MRS 01 is the NCMUA, which is the buffer area around the former target area.

MD from the following types of munitions were historically recovered at MRS 01:

- Practice rockets (2.25-in. Mk 6; 3.25-in. M2, M2A1, M2A2; 3.5-in. and 5-in. Mk 8)
- Practice bombs (3-lb Mk 23, 4.5-lb Mk 43)
- 20-mm TP projectiles (one casing only).

There are also potential CMUAs present at MRS 03, including a target area and two suspect disposal areas ([Figure 1-3](#)). Two suspect disposal areas were also noted in MRS 03 in the 1991 INPR. The evidence to support these suspect disposal areas is the MD found during the 1991 site visit and information obtained by NPS personnel as reported in the 1991 INPR ([Figure 1-3](#)). The remaining portion of MRS 03 is the NCMUA, which is the buffer area around the former target area. Only two pieces of MD from 5-in. Mk 8 practice rockets were historically reported at MRS 03.

As noted in [Section 1.5](#), MC sampling was performed in soil, sediment, surface water, and groundwater, during the 2007 SI. No MC were reported as exceeding human health screening criteria for surface water, sediment, soil, or groundwater in MRS 01. No MC were reported as exceeding human health screening criteria for surface water, sediment, or soil in MRS 03. One MC (aluminum) was reported as exceeding human health screening criteria for groundwater in MRS 03. However, this analyte was not retained as a chemical of potential concern because the sample was from a temporary well point that was not filtered and likely contained sediment particles as evidenced by elevated levels of essential nutrients (Alion 2007).

As noted in [Section 1.5](#) a SLERA was performed for MRS 01 and MRS 03. The SLERA identified antimony as exceeding ecological soil screening criteria at MRS 01 and MRS 03. However, when compared to background soil concentrations, the maximum concentrations of antimony, although at levels above its respective screening value, were not above the range of background concentrations. These exceedances were not considered significant and antimony was not retained as a chemical of potential ecological concern in either MRS (Alion 2007).

The SI concluded that MEC risk is low to moderate and recommended an RI for MEC for both MRS 01 and MRS 03. No unacceptable human health or ecological risks for exposure to MC were identified, based on risk screening results, and no further action was recommended for MC (Alion 2007).

Based on prior site observations (i.e., no MEC has been identified to date) and the MC sampling performed during the 2007 SI, no MC source is present at either MRS. During the planning phase of the RI, stakeholders agreed that if evidence of a potential MC source was identified (i.e., breached MEC) during the RI, MC soil sampling would have been performed pending discussions with the PDT and preparation of an addendum to the UFP QAPP. No MEC and no MC source was identified during the RI; therefore, no MC sampling was proposed/performed. Therefore, the MC pathway is shown as incomplete on [Figure 2-1](#).

2.1.2 Activity

The hazard from MEC arises from direct contact as a result of some human activity. This human activity could be moving or somehow disturbing material potentially presenting an explosive hazard (MPPEH) that, if MEC is present could cause it to detonate. Site workers, construction workers, and visitors in the area could all deliberately or inadvertently disturb MPPEH when performing intrusive activities. An encounter with MPPEH on the surface is possible, but unlikely as most items at this site were buried and to date only MD has been identified on the surface. However, due to the dynamic nature of the island, tidal movement of sands and/or storms or hurricanes could expose MPPEH, if present, and bring it to the surface. At MRS 01 and MRS 03, receptors may come into contact with MPPEH, if present, on the surface during recreational activities or by performing subsurface activities such as digging on the beach, setting stakes for camping, posting signs, or other intrusive work. Activities that can bring receptors into contact with surface MPPEH include recreational uses such as hiking, swimming, and park maintenance activities.

2.1.3 Access

The FUDS is not DoD-controlled and is used by many different entities, including visitors and workers of ASIS and Assateague Island State Park; access to potential MEC areas is unlimited. Future access restrictions are unlikely as the reasonable future site use is expected to remain the same.

2.1.4 Receptors

MRS 01 is located on the State of Maryland and NPS properties; however, the entire area is managed by the NPS and is open to the public for recreational purposes as a State Park and

National Seashore. MRS 03 is located entirely on NPS property and is open to the public for recreational purposes as a National Seashore.

Human receptors include park visitors, site workers, and potential future construction workers. Human receptors have unlimited access to the MRSs. Park visitors typically participate in the following activities while at Assateague Island: camping, swimming, fishing, boating, and hiking. Site workers include ASIS and Assateague Island State Park employees, U.S. Fish and Wildlife Service employees, U.S. Coast Guard employees, and private interest group members. Potential future construction workers would be present if future construction is needed at the MRSs.

2.1.5 Exposure Pathway Analysis

The exposure pathways for MRS 01 and MRS 03 are illustrated on the interim CSM ([Figure 2-1](#)). There is unlimited access to the MRSs. MPPEH could potentially be located on the surface or in the subsurface. The locations could also change as a result of natural processes such as wind and water erosion, storm events, and washing ashore from wave action. Since current and future receptors present at the site will have unlimited access, and there is a potential for finding MEC on the land surface or in the subsurface, there is a potentially complete pathway for the MRSs.

2.2 PRELIMINARY IDENTIFICATION OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Applicable or relevant and appropriate requirements (ARARs) are environmental and/or public health statutes, regulations, and ordinances pertaining to all aspects of potential cleanup actions. ARARs influence the development of remedial action alternatives by establishing numerical cleanup levels, siting, disposal, operating parameters, health and safety standards.

There are five criteria that must be met for a standard, requirement, criteria, or limitation to be considered an ARAR:

1. The requirement must be promulgated.
2. The requirement must be related to a federal or state environmental or siting law.
3. The requirement must be substantive.
4. The requirement must be a cleanup standard, standard of control, or requirement that specifically addresses a CERCLA hazardous substance, pollutant, or contaminant; remedial action; or remedial location.
5. The requirement must be applicable or relevant and appropriate.

In addition, non-promulgated advisories or guidance issued by federal or state governments that are not legally binding and do not have the status of ARARs may be identified as “To Be Considered”. To Be Considered (40 Code of Federal Regulations [CFR] §300.400[g][3])

complement ARARs but do not override them. They are useful for guiding decisions regarding cleanup levels or methodologies when regulatory standards are not available.

The U.S. Environmental Protection Agency identifies three basic types of ARARs: chemical-, location-, and action-specific. The definitions of chemical-, location-, and action-specific ARARs and their applicability to the MRSs are defined below along with To Be Considered criteria:

- **Chemical**—Chemical-specific ARARs govern the level or extent of site cleanup in relation to a specific constituent. Chemical-specific ARARs are usually health- or risk-based standards that limit constituent concentrations found in or discharged to the environment. These ARARs govern the extent of site cleanup by providing cleanup levels or a basis for calculating cleanup levels. Preliminary chemical-specific ARARs are typically identified in the RI to provide benchmarks with which to compare environmental sampling results (i.e., for MC). However, MC were not identified as a risk to human health or the environment; therefore, there are no chemical-specific ARARs to be evaluated.
- **Location**—Location-specific ARARs pertain to existing site features. Location-specific ARARs place restrictions on constituent concentrations or remedial activities solely based on site setting or location (e.g., within or adjacent to wetlands, flood plains, existing landfills, disposal areas, and places of historical or archeological significance). Typical examples of location-specific ARARs include protection of historical and archaeological resources and protection of wildlife and habitat resources, including endangered species, fish, migratory birds, and wetlands. Two location-specific ARARs were identified.
- **Action**—Action-specific ARARs pertain to proposed site removal actions and govern implementation of the selected site remedy. Action-specific ARARs set controls or restrictions on activities related to the management of contaminated and/or hazardous materials. After remedial alternatives are developed, action-specific ARARs pertaining to proposed site remedies provide a basis for assessing their feasibility and effectiveness. These action-specific requirements do not themselves determine the cleanup alternative but define how the chosen cleanup alternative should be achieved. No potential action-specific ARARs were identified.
- **To Be Considered**—Non-promulgated policies, criteria, advisories, guidance, and proposed standards developed by Federal and State environmental and public health agencies that are not legally enforceable but contain helpful information are collectively referred to as To Be Considered criteria. They can be helpful in carrying out selected remedies or in determining the level of protectiveness of selected remedies. One action-specific To Be Considered criteria relevant to MEC was identified.

The potential ARARs identified for Assateague Island MRS 01 and MRS 03 are summarized in Table 2-1.

Table 2-1 Potential Federal and State Applicable and Relevant and Appropriate Requirements

Federal or State Statute, Regulation or Guidance	Summary of Requirement	Comment
Chemical-Specific ARARs		
Not applicable.	Not applicable.	Not applicable.
Location-Specific ARARs		
Endangered Species Act (16 U.S.C. § 1538(a)(1)(B) and 16 U.S.C. §1538(a)(2)(B))	No action may be taken that would jeopardize the continued existence of a listed species, result in destruction or adverse modification of critical habitat, or result in the take of a listed species.	Applicable when endangered or threatened species or designated critical habitats are present where remediation activities may occur. ^a
Action-Specific ARARs		
Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities (40 CFR Part 264 Subpart X)	Establishes standards for owners and operators of hazardous waste treatment, storage, and disposal facilities.	Applicable to detonation of multiple MEC onsite using a consolidated shot.
To Be Considered		
Executive Order 13514	Encourage the preferred remedial alternative to support sustainability.	To be considered during remedial alternative development (i.e., FS).
<p>a. Short nose and Atlantic Sturgeon, four species of sea turtles, and three species of whales may be present if the remedial action extends into the Ocean or the Coastal Bays. On land, the piping plover, roseate tern, red knot, and sea beach amaranth may occur. The presence of these species at Assateague Island was documented in the Environmental Protection Plan (Appendix G of the UFP-QAPP) and confirmed by NPS.</p> <p>NOTES:</p> <p>ARAR = Applicable Relevant and Appropriate Requirement. CFR = Code of Federal Regulations. FS = Feasibility study. MEC = Munitions and Explosives of Concern. USACE = U.S. Army Corps of Engineers. EPA = U.S. Environmental Protection Agency.</p>		

2.3 INSTITUTIONAL ANALYSIS

The hazards of MEC can be mitigated by controlling access and/or controlling the activities that occur at the site. Access control and behavior modification may be achieved through land use controls. The success of land use controls at controlling access and activities at the site depend on the site-specific institutions that have jurisdiction or authority at the site.

MRS 01 is controlled by the NPS and State of Maryland and MRS 03 is controlled by the NPS. Since the MRSs are controlled by the NPS (and State of Maryland) and are anticipated to remain so in the future, the NPS (under the Department of Interior) and State of Maryland are the only institutions that have the authority to implement institutional controls at the MRSs. NPS and the State of Maryland possess all proprietary controls and have complete control of access to the MRSs. Therefore, they could potentially implement more restrictive controls for the MRSs, if necessary.

2.4 DATA NEEDS AND DATA QUALITY OBJECTIVES

The data needs and data quality objectives (DQOs) were determined at the planning stage and are outlined in the UFP QAPP (EA 2017). The data needs included characterization of the nature and extent of MEC contamination associated with former military munitions activities. DQOs were developed to ensure: 1) the collection of sufficient data; 2) the quality of data generated was acceptable for its intended use; and 3) valid assumptions could be inferred from the data.

For MEC, data needs included determining the types, locations, depths, condition, and numbers of MEC present (if any) at the site so that the hazard to human health can be assessed and remedial decisions can be made. DQOs were developed based on USACE guidance and past experience with sites containing MEC. The DQOs for the RI are included in Table 2-2 as were presented in the UFP QAPP (EA 2017).

Table 2-2 Data Quality Objectives for the Assateague Island FUDS (RIA 01 and RIA 03)

Step		DQO
1.	State the Problem	<ul style="list-style-type: none"> • The nature and extent of MEC related to historical training with practice rockets, practice bombs and 20-mm projectiles at MRS 01 and MRS 03 is unknown. An MMRP RI/FS, as recommended by the SI, will be performed to determine the nature and extent of MEC to meet DoD obligations under CERCLA and the National Contingency Plan to address potential residual hazards and risks to human health and the environment. • The interim CSM indicates a potentially complete human exposure pathway to surface/subsurface MEC. • The site is a barrier island open to the public for recreation. The interim CSM identified multiple source areas in MRS 01 and MRS 03, including practice rocket and bombing targets/impact areas and disposal areas (known and suspected). Previous investigations and removal actions at MRS 01 have only identified MD in a target area and a disposal area in MRS 01. Previous investigations and removal actions at MRS 03 have identified limited MD in scattered locations, with no clear evidence of a target area or disposal area. Investigations to date have been limited in scope, and there remains the potential that MEC exists at or near the target areas. Because of the dynamic conditions at the site (i.e., barrier island subject to extreme wind and wave energy), MEC could be present in the surface and subsurface soil, as well as in the surrounding water bodies within the MRSs. Based on the findings to date, the overall MEC risk is considered low to moderate. MEC, if present, may present an unacceptable explosive hazard to site workers and visitors, including recreational and educational users.
2.	Identify the Goals of the Study	<ul style="list-style-type: none"> • Determine if MEC is present in MRS 01 and MRS 03. • Identify CMUAs (for example, target areas or suspect disposal areas) in MRS 01 and MRS 03. Determine the nature of anomalies (i.e., munitions type, quantify explosive hazard, quantity, depth) and the lateral and vertical extent of the CMUAs. Determine nature (i.e., munitions type, quantify explosive hazard, quantity, depth) of MEC in NCMUAs such as target area overshoot/undershoot areas. • The necessary information will be collected to develop, screen, and analyze remediation alternatives in the FS, if necessary.
3.	Identify Information Inputs	<ul style="list-style-type: none"> • Data collection will be performed based on historical information, current site conditions, and the results from previous studies, including the 1994 Archives Search Report, 1995 Site Investigation, 1998 Time Critical Removal Action, and the 2007 SI. These previous studies were used to develop the interim CSM and to focus MEC characterization efforts during the RI and during development of this QAPP. Geophysical surveys and intrusive investigations will be conducted on land and in marine environments (bay and ocean) in MRS 01 and MRS 03. The goal of the geophysical survey is to identify munitions related items identified in Worksheet #10 in the UFP QAPP that include 20-mm projectiles, practice bombs, and practice rockets with sufficient quantity and quality to accurately locate the lateral extent of potential CMUAs and provide data to intrusive investigation teams to characterize the nature (e.g., munition type, depth, quantity) of MEC in CMUAs and NCMUAs. DGM data will be collected from marine-based surveys conducted along transects over the ocean east of the surf zone, from land-based surveys conducted along transects and grids over the island and in the surf zone, and from marine-based surveys conducted along transects over the back-bay west of the island. Analog geophysical data (i.e., “mag and flag”) using GPS and analog instruments will be collected from survey areas where execution of DGM is not feasible due to terrain and vegetation. Specific geophysical survey quantities and locations are discussed in Step 7 and in Worksheet #17 of the UFP QAPP. Anomaly selection criteria are discussed in Step 4 of this worksheet, in Worksheet #17, and in the Geophysical Investigation Plan (Appendix B).

Table 2-2 Data Quality Objectives for the Assateague Island FUDS (RIA 01 and RIA 03)

Step		DQO
		<p>Data will be collected from intrusive results from investigation of grids and transects within the CMUAs and NCMUAs and dive investigations of anomalies identified from the DGM surveys along transects within the surf, ocean, and bay.</p> <ul style="list-style-type: none"> Quality control logs confirming attainment of measurement performance criteria identified in Worksheet #12, including Geophysical System Verification results (e.g., instrument verification strip results and blind seeding program results) will be used to evaluate data quality.
4.	Define the Boundaries of the Study	<ul style="list-style-type: none"> Based on the CSM, MEC, if present, is likely to be located in the RIAs, which are smaller than the MRSs as currently defined. The horizontal boundaries of the RIAs are shown on Figure 1-1 and consist of approximately 1,150 acres for RIA 01 and 1,831 acres for RIA 03. The RIAs contain the likely locations of any CMUAs, if present. Although not anticipated, should a CMUA be identified near a boundary of either RIA, then the boundary of the RIA may be expanded, contingent on discussions with and approval from USACE. The vertical boundary of MEC is expected to be highly variable, due to the nature of the physical environment, which is a barrier island with significant wave action and a continuously changing shoreline. Individual MEC or MD anomalies may only be reliably identified by DGM to a depth of approximately 0.6 ft bgs for a 20-mm projectile, the smallest potential item of interest, or approximately 4.5 ft bgs for a 5-in. practice rocket, depending on background noise. Individual items may be rendered invisible if significant quantities of sand have been deposited overtop. However, if disposal areas or burial pits are present within the RIAs, the depths of detection may go as deep as 10 ft bgs depending on the quantity of metallic material present. DGM targets will be selected from the DGM data, based on readings on the leveled time gate 2 channel and exceeding the anomaly selection thresholds (which will be based on expected signals of suspected MEC types). These targets will be reacquired and investigated to the spatial requirement of a 2.5-ft (0.762-meter) lateral radius and from the ground surface to 4 ft (1.219 meters) bgs. Thresholds for target selection will be developed and validated according to the established instrument verification strip. All analog geophysical survey anomalies acquired from “mag and flag” efforts must be investigated similarly. Intrusive investigations (on land and in water) will proceed until the anomaly is found and the item identified or until it is no longer safe to continue (i.e., visibility is diminished, the excavation area collapses on itself, etc.) or equipment limitations are reached.
5.	Develop the Analytic Approach	<ul style="list-style-type: none"> If no MEC, MPPEH, and/or fragments indicative of MEC are detected during the RI, the transect data will be evaluated to determine if sufficient data were collected to support the assumptions used in the VSP transect calculations. If the assumptions are valid (i.e., site coverage is determined to be sufficient) then no additional DGM survey work will be performed, the area will be identified as not having an explosive hazard, and the MRSs would likely be recommended for No Further Action. However, if the data are not sufficient, then additional transects may be completed, with the approval of USACE. If MEC, MPPEH, and/or fragments indicative of MEC are present, the CMUA or NCMUA affected by the MEC (e.g., target area and/or buffer area) will be defined. If there is possible interaction (exposure pathway) between MEC and human receptors under current or anticipated future land use, then the human health risk associated with the MEC hazards identified onsite will be

Table 2-2 Data Quality Objectives for the Assateague Island FUDS (RIA 01 and RIA 03)

Step		DQO
		assessed using the memorandum dated 3 January 2017 regarding a Trial Period for Risk Management Methodology at FUDS MMRP Projects, and the appropriate response alternatives will be evaluated in an FS.
6.	Specify Performance or Acceptance Criteria	<ul style="list-style-type: none"> • Overall, the baseline condition for MEC characterization during the RI is that “MEC is potentially present,” and that if present it is characteristic of the type of munitions historically used, whereas the alternative condition is “MEC is not present.” Conclusive data indicating that no MEC is present will be obtained prior to rejecting the baseline condition. Specific details regarding MEC investigation performance and acceptance criteria are presented in Worksheet #12. • Review and approval of the RI Report and subsequent FS (if needed) by stakeholders.
7.	Develop the Plan for Obtaining Data	<ul style="list-style-type: none"> • The sampling approaches for RIA 01 and RIA 03 are designed to locate CMUAs, characterize the nature and extent of MEC in the CMUAs, and quantify the density, nature, and extent of MEC in NCMUAs across the sites. The survey design for each area within each RIA is based on the interim CSM presented in Worksheet #10. Statistics-based tools were used to develop the investigation plan for the RI. The UXO module of VSP was used to determine the quantity and location of sampling required in each area. The specific tools include VSP Target Area Location tool, and VSP TOI Estimation tool (UXO Estimator equivalent). These methods are rigorous and defensible and are commonly used for RI sampling designs at MRSs. • The RI MEC characterization includes performing statistically based DGM transects and, where necessary, analog geophysical transect surveys to provide traversal coverage and detection of CMUAs with a high level of confidence. A CMUA is defined by more than 60 munitions related items (including MEC and MD) per acre along two or more adjacent transects. Analog geophysical transect surveys will be performed in areas where dense vegetation is present. The analog geophysical data will be used to assess potential MEC hazards associated with CMUAs. • For MRS 01 and MRS 03, a 2.25-in. rocket was used as the TOI to locate potential targets. It has the smallest maximum fragmentation distance of all the potential munitions that typically may have been used for target practice (790 ft for a 2.36-in.) at the MRSs. To be conservative, a target radius of 360 ft was used for this parameter. Other munitions potentially present at the site (e.g., 20-mm projectiles, 3.5-in. and 5-in. rockets, and practice bombs) have larger fragmentation distances and as such, those target areas should be easily detected using the search parameters for the smaller 2.25-in. rocket target area, • Areas containing MEC and other munitions-related anomalies are expected to have a density greater than background. Based on data collected during the 1995 Site Investigation Report (Parsons 1995), there is one known target area in MRS 01, and using information from previous investigations, a conservative density of 40 anomalies per acre above background of 20 anomalies per acre was used for this VSP parameter for both MRSs to calculate transect spacing. Most of the background anomalies are expected to be from anthropogenic clutter rather than geology, and a lower density would generally mean the area was a NCMUA rather than a CMUA. • To detect potential CMUAs with dimensions of 360 ft radius and density at its edge of at least 40 anomalies per acre higher than background (conservative density estimate for a target area), with greater than a 95 percent probability of detection based on VSP calculations, a geophysical survey traversing the MRSs at a spacing of 150 ft between transects using either DGM or analog instrumentation (Schonstedt magnetometer) will be performed. Anomaly locations will be analyzed using VSP to

Table 2-2 Data Quality Objectives for the Assateague Island FUDS (RIA 01 and RIA 03)

Step	DQO
	<p>identify areas (above background density) that may be CMUAs for follow-on geophysical grid surveys to determine the nature of subsurface anomalies and delineate the extent of MEC. The planned transect locations for MRS 01 and MRS 03 are shown on Figures 17-1 and 17-2, respectively. The planned transect coordinates for MRS 01 and MRS 03 are presented in Table 17-2 of the UFP QAPP. The MEC investigation design summary is provided in Table 17-3 of the UFP QAPP.</p> <ul style="list-style-type: none"> • The CSM for the portions of RIA 01 and RIA 03 that consist of the central and east side of the island (including marshes and the campground in RIA 01) assumes a limited number of munitions (practice rockets and bombs) existing short of the intended target areas due to misfires or early release from aircraft. These areas are considered NCMUAs, and VSP TOI Estimation tool was utilized to determine the amount of DGM and intrusive investigation needed to estimate the MEC density. Using a 95 percent confidence level and a 0.5 MEC per acre for input parameters (moderate public use), VSP calculated approximately 6 acres of DGM and intrusive investigation are needed in each RIA to assess these areas. In the portions of RIA 01 and RIA 03 where GPS positioning of the DGM is likely to permit the accurate reacquisition of DGM anomalies, DGM anomalies identified along the transects will be intrusively investigated. In areas where the tree canopy prohibits the accurate use of GPS, grids will be established randomly, data will be collected using fiducial positioning methods (described further in Worksheet #17), and 100 percent of identified anomalies will be investigated. • The CSM for the portions of RIA 01 and RIA 03 that consist of the central and east side of the island (including beach and surf zone) takes into account the existence of a known target area and munitions disposal areas in RIA 01 (beach and surf zone) with the potential for additional target areas and munitions disposal areas. This Central and East side of the Island is considered the most likely area for CMUAs to exist. The VSP Target Area Location tool determined that 150-ft transects are required to more accurately determine the boundary of the known target area and to locate potentially unidentified target areas. However, 15-ft line spacing was selected along the beach and surf zone to identify potential disposal areas that are much smaller than target areas. • Guidance from USACE Engineer Manual 200-1-15 was used to determine the method to intrusively characterize the known target area and any additional target areas identified during the transect surveys. Population sampling is the recommended approach whereby approximately 4-8 intrusive grids are established within the target area, mapped with DGM methods, and 100 percent of DGM TOIs are intrusively investigated. Prior to establishing any DGM grids in potential target areas, a small subset of DGM anomalies identified on the transects within the elevated anomaly area will be investigated to ensure the TOIs are in fact munitions-related and not anthropogenic clutter. Disposal areas identified during the 15-ft transect DGM survey will be intrusively investigated by sampling the center of each individual burial pit using earth moving machinery (mini-excavator) to determine the nature and vertical extent of the disposal area. Depending on the length of each burial pit, one or two trenches will be excavated across the short side of each burial pit, to the depth where disposal items no longer exist or until it is no longer safe to continue (i.e., visibility is diminished, the excavation area collapses on itself, etc.) or equipment limitations are reached. • The CSM for the ocean portions of RIA 01 and RIA 03 assumes that there is a limited number of munitions (20-mm projectiles, rockets, and bombs) that may exist beyond the intended target areas due to “overshoots.” These areas are considered NCMUAs and VSP TOI Estimation tool was used to determine the amount of DGM and intrusive investigation needed to estimate the MEC density. Using a 95 percent confidence level and a 0.5 MEC per acre for input parameters (for sites associated with

Table 2-2 Data Quality Objectives for the Assateague Island FUDS (RIA 01 and RIA 03)

Step		DQO
		<p>moderate public use), VSP calculated that approximately 6 acres of DGM and intrusive investigation in each MRS are needed to assess these areas. Using dive boats, UXO divers will relocate all identified TOIs using RTK GPS and anchor lines and will dive on each anomaly. Using hand-held underwater metal detectors and hand tools, the UXO divers will investigate each anomaly to positively identify and inspect the source of the anomaly.</p> <ul style="list-style-type: none"> • MPPEH and MD will be subject to dual inspection. This process will be completed by two qualified UXO technicians performing independent inspections. Material classified as material documented as safe will be segregated, containerized, and secured until final disposition. Material classified as MEC will be disposed of onsite by detonation.
<p>NOTES: bgs = Below ground surface. CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act. CMUA = Concentrated munitions use area. CSM = Conceptual site model. DGM = Digital geophysical mapping. DoD = Department of Defense. DQO = Data quality objective. FS = Feasibility study. ft = Feet. FUDS = Formerly Used Defense Site. GPS = Global positioning system. in. = Inch(es).</p> <p>MD = Munitions debris. MEC = Munitions and explosives of concern. mm = Millimeter. MMRP = Military Munitions Response Program. MPPEH = Material potentially presenting an explosive hazard. MRS = Munitions response site. NCMUA = Non-concentrated munitions use area. QAPP = Quality assurance project plan. RI = Remedial investigation. RIA = Remedial investigation area. RTK = Real-time kinematic. SI = Site inspection. TOI = Target of interest. UFP = Uniform Federal Policy. USACE = United States Army Corps of Engineers. VSP = Visual Sample Plan.</p>		

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3. CHARACTERIZATION OF MATERIAL POTENTIALLY PRESENTING AN EXPLOSIVE HAZARD

This section describes the methodology and procedures followed for RI field activities to characterize the nature and extent of MPPEH at MRS 01 and MRS 03. Field activities in the water portion of the MRSs were completed primarily from 7 November 2017 to 20 December 2017 and 24, 25, and 26 January 2018 and field activities for the land portions of the MRSs were completed under a separate mobilization from 5 March to 2 May 2018. All activities were completed in accordance with the UFP QAPP and schedule (EA 2017). Daily Field Reports are provided in [Appendix A](#), and a Photographic Log is provided in [Appendix B](#).

3.1 WATER INVESTIGATION

EA mobilized for water-based digital geophysical mapping (DGM) surveys on 7 November 2017. The survey effort included site-specific training, DGM equipment and survey vessels setup and rigging, establishment of underwater DGM instrument verification strip (IVS), DGM surveying, identification of DGM targets of interest (TOIs), and intrusive investigation of DGM TOIs. Two Bureau of Alcohol, Tobacco, and Firearms Type-2 storage magazines (for the storage of MEC, if found) were sited and placed at both MRS 01 and MRS 03 in accordance with the approved Explosives Site Plan as part of the initial mobilization.

3.1.1 Digital Geophysical Mapping

Marine-based DGM surveys were performed along transects across the back bay and ocean portions of MRS 01 and MRS 03. This section details the various methods and procedures used during the geophysical investigation. The primary reason DGM was used during the RI was that it allows for a more complete picture of the subsurface than analog surveys. A systematic sampling approach can be employed that allows for the determination of nature and extent of potential MEC contamination at the site. Other advantages of DGM include:

- Uniform process for data collection and analysis
- Geo-referenced location of data and anomalies
- Ease of data collection versus underwater analog methods
- No operator subjectivity (to place or not to place a flag)
- Ability to further evaluate electronic data
- A permanent electronic record.

A total of 13 linear miles (10.4 acres) within MRS 01 and 17 linear miles (13.6 acres) within MRS 03 were surveyed during the DGM survey. Figures [3-1](#) and [3-2](#) show the DGM transect locations within the water portions of MRS 01 and MRS 03, respectively.

3.1.1.1 Data Acquisition Equipment and Procedures

Geometrics G882 Gradiometer—The Geometrics G882 transverse gradiometer (TVG) consists of two cesium vapor magnetometers spaced horizontally 1.0 meter apart. Magnetometers are passive sensors that detect anomalous distortions in the earth's magnetic field caused by concentrations of natural and anthropogenic ferrous materials. Magnetic anomalies resulting

from submerged and/or buried objects, as well as nearby structures may range in intensity from five to several thousand nanotesla (nT), depending on such factors as the mass of ferrous materials present, the distance of the mass from the sensor, and the orientation of the mass relative to the sensor.

Global Positioning System (GPS)—Trimble SPS985 real-time kinematic (RTK) GPS units were used to position the data collected during the Geometrics G882 gradiometer surveys. Two GPS antennas were placed at the front of the boat, one on each side, and connected to a laptop computer running HYPACK navigation and logging software (Photograph 2 in the IVS Report located in [Appendix C](#)). The Trimble SPS985 RTK units were integrated parallel channel GPS receivers with a built-in cellular-modem communication system that received precision position corrections from the regional KeyNetGPS virtual reference station (VRS) network to provide horizontal control at an accuracy of 2 centimeters (cm). HYPACK calculated gradiometer sensor positions using sensor/GPS antenna offsets measured on the survey vessel and transmitted them to the laptop computer running Geometrics MagLog software.

Survey Platform—Two survey platforms were utilized to carry out the DGM marine surveys, one vessel for the shallow water back bay portions of each MRS, and one vessel for the deeper water ocean portions of each MRS (Photographs 1 and 4, respectively, in IVS Report. The shallow water vessel consisted of a small boat with the gradiometer suspended from a rope/pulley system mounted at the front of the vessel on extension poles (Photograph 3 in IVS Report). This allowed the gradiometer to be lowered or raised depending on the water depth. The gradiometer was equipped with internal depth sensors and the survey boat was equipped with a water depth sensor (fathometer) so that the depth of the sensors could be compared to the depth of the water. Adjustments were made, as necessary, to keep the gradiometer between 0.5 and 1.0 meter above the sea floor. The deep-water vessel consisted of a larger boat with the gradiometer mounted on a sled that was towed behind the boat along the sea floor providing a 0.4-meter sensor height above the sea floor (Photograph 5 in the IVS Report). The sled layback was 3 times the water depth, with a minimum distance behind the boat of about 60 ft. The boat fathometer and the gradiometer depth sensor readings were monitored real-time to ensure the sled stayed in contact with the sea floor. The large boat and survey sled were equipped with an Ultrashort Baseline (USBL) system that allowed HYPACK to calculate the position of the survey sled and gradiometer sensors while it was underwater.

Side Scan Sonar Equipment—Side scan sonar is a geophysical survey technique used to acoustically characterize and map the surficial sediment types (e.g., fine-grained versus coarse-grained, vegetated, hard bottom), substrate features (e.g., physical relief and bedforms such as sand waves), as well as identify any hard targets (munitions, rock, debris, wrecks, etc.). Side scan sonar is a swath data type that provides an acoustic image of the seafloor by emitting acoustic pulses at a known frequency from a towed side scan sonar transducer array and detecting the strength of the backscatter returns.

An EdgeTech 4125, dual frequency, digital side scan sonar system (or equivalent) was used to record acoustic seafloor imagery along the survey lines established for each MRS. The 4125 system used the acoustic frequencies of 600 kHz (low) and 1600 kHz (high) as a means

to map substrate type, as well as detect and classify hard targets residing at the sediment-water interface along each survey line.

DGM data were collected in accordance with the UFP QAPP and met all Measurement Quality Objectives (MQOs) for DGM. These MQOs along with the field documentation used to capture this information are included in [Appendix A](#). The geophysical team began data acquisition by performing all specified pre-mapping instrument checks at the dock and underwater IVS. Once the morning quality control (QC) tests were completed and the instruments were determined to be operating within performance metrics specified in the UFP QAPP, the geophysical team collected data along the assigned transects.

Figures [3-1](#) and [3-2](#) show the water-based survey transects along with the planned transect locations at MRS 01 and MRS 03, respectively. The DQOs for data collection quantities, shown in Table 17-3 of the UFP QAPP and summarized in Table 3-1, were mostly met or exceeded, except for the near shore transects. There were issues with obtaining transect coverage in the shallow surf due to extremely rough conditions; therefore, although the total amount of DGM in the ocean portion of the MRS met the DQOs, the amount of DGM near the shoreline was less than planned. It does not appear that the area located in the surf zone that was identified during the 1998 TCRA, and labeled by EA as a suspect disposal area, was identified from the land-based DGM transects or from the marine-based DGM transects. This area likely lies somewhere between the area covered by these two surveys. As previously stated, this area is likely in the surf zone which was not conducive to land or water surveys due to health and safety factors.

Table 3-1 Summary of Water-Based Digital Geophysical Mapping Surveys Performed During RI

Munitions Use	Area	DGM Miles Planned	DGM Acres Planned	DGM Miles Collected	DGM Acres Collected
MRS 01					
NCMUA	Back Bay	3.6	2.9	4.1	3.3
NCMUA	Ocean	7.5	6	8.9	7.1
Total		11.1	8.9	13.0	10.4
MRS 03					
NCMUA	Back Bay	3.25	2.6	6.1	4.9
NCMUA	Ocean	7.5	6	10.9	8.7
Total		10.75	8.6	17.0	13.6
NOTES: CMUA = Concentrated munitions use area. DGM = Digital geophysical mapping. MRS = Munitions response site. NCMUA = Non-concentrated munitions use area.					

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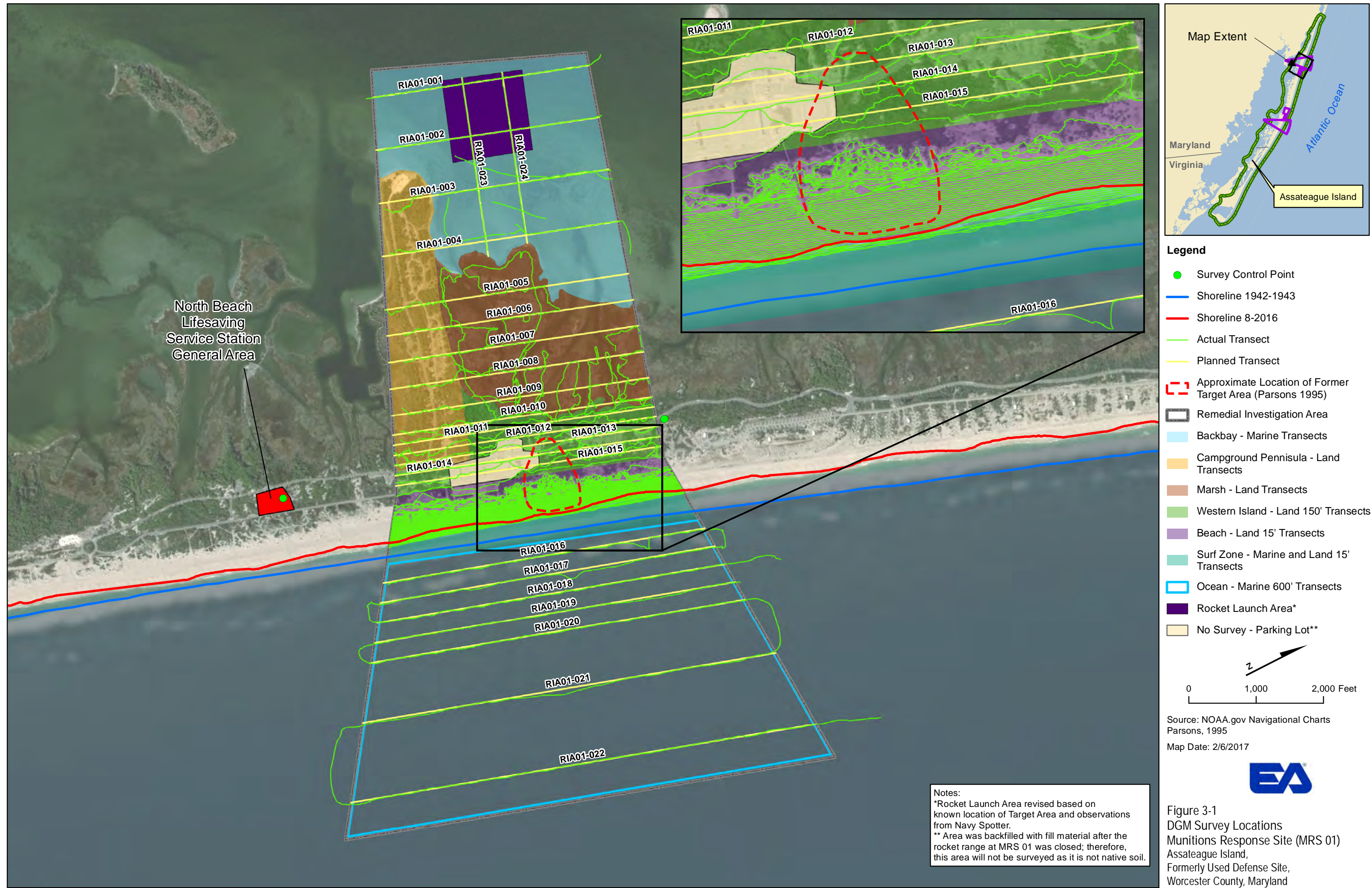
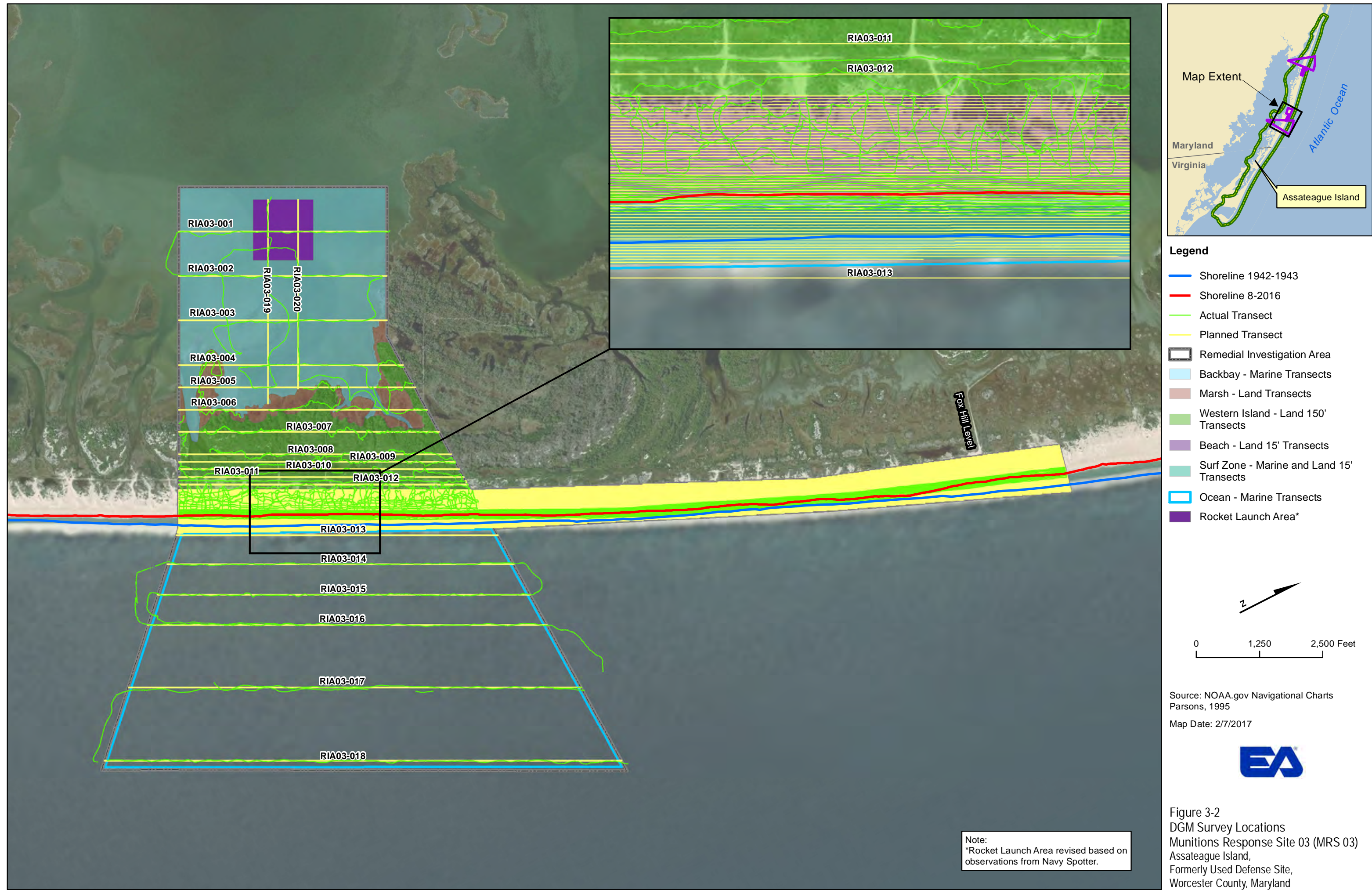


Figure 3-1
DGM Survey Locations
Munitions Response Site (MRS 01)
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

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\\loveton\GIS\GISdata\StateandLocal\Northeast\Maryland\Assateague\MXD\DIR\Report\Figure 3-2 DGM Survey Locations - RIA 03.mxd



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3.1.1.2 Data Processing and Target Selection

Standard data processing included a review of data in the field for data gaps followed by more intensive analysis to include latency and drift correction, statistical assessment of the DGM performance metrics, and generation of color-coded images of the G882 TVG data channels and GPS track path. Processing tasks were completed using Geosoft's Oasis Montaj software.

Based on the smallest munition item of interest at MRS 01 and MRS 03 (i.e., 20-mm projectile), IVS test results, the background survey results, and on an early look at the production data, a TOI selection threshold of 3 nT was proposed for anomalies.

3.1.1.3 Digital Geophysical Mapping Quality Control

IVS—EA's geophysicists established a DGM IVS in the back bay near the marina located in Ocean City (Figure 1 of IVS Report in [Appendix C](#)). Background data were collected over the IVS, and four Industry Standard Objects (ISOs) and a long chain were buried in locations with no pre-existing anomalies. Geometrics G882 TVG sensor data were collected over the IVS with both platforms (shallow water and deep water) and data analysts compared the measured responses over the test items with expected values to verify that the TVG sensor was functioning correctly. The geophysical anomaly locations were compared with the actual ISO burial locations to confirm the accuracy of the RTK GPS. The measured responses met the MQO requirements for the static tests (position and instrument response); however, due to the difficulty in repeating transect surveys over IVS items within the required lateral offset requirements to get repeatable responses, the MQOs for dynamic tests could not be assessed. This is a common problem for underwater dynamic IVS tests, and static IVS tests are typically used for daily instrument assessments. A detailed description of the IVS results is provided in the IVS Letter Report provided in [Appendix C](#). The expected responses from the initial IVS tests were used for twice-daily IVS test comparisons during the production phase of the DGM survey to confirm that the sensors were functioning correctly. There were no IVS QC test failures during the DGM survey. The production DGM IVS QC test results are presented in [Appendix C](#).

Blind Seeding—In accordance with the approved UFP QAPP, a blind seeding program was not instituted for the underwater survey due to the difficulty inherent with underwater transect surveys to navigate DGM equipment directly over the seeds within the lateral offset requirements needed to detect the seed (i.e., less than 0.5 meter).

Feed-Back Process—The QC geophysicist reviewed 100 percent of the dig results and compared what was found by the intrusive teams with the geophysical anomalies selected from the DGM data to establish whether the stated source was representative of the identified anomaly. Any anomalies that the site geophysicist determined were not representative of the intrusive results were rechecked in the field and the dig sheet was updated.

3.1.1.4 Data Management

Information pertaining to all data collected during DGM surveys were stored in a Microsoft Access project database. The database(s) was maintained throughout the duration of the project and contains records of all daily QC test results, DGM anomalies identified in the survey area,

anomalies selected for intrusive investigation, and the results of the intrusive investigation. The project database was updated and posted to the file transfer protocol (FTP) site on a weekly basis. The project database is included on the CD in [Appendix D](#).

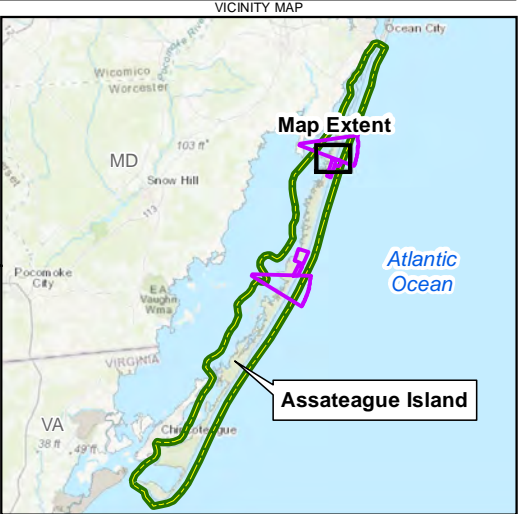
Digital data collected in the field were stored electronically on the data logger and transferred to a personal computer at the end of each day. Raw field data were backed up and kept separate from the day-to-day operations data. Raw field and processed data were transmitted to the USACE–Baltimore District Geophysicist via FTP site. A header line in the ASCII files identify the data contained in each column, and the file names reflect the data collection date (raw data) or transect number (final data) for the data being transmitted. A CD that includes all DGM data including raw and processed ASCII files, Geosoft maps, databases, dig packages and an “Explanation of Files” MS Word document are included in [Appendix D](#).

3.1.2 Digital Geophysical Mapping Data Analysis

A total of 17 DGM TOIs were identified from the MRS 01 back bay DGM survey, and 92 TOIs were identified from the MRS 01 ocean DGM survey. The TOIs in the back bay survey appear were evenly distributed and there was no appearance of any clustering of TOIs indicative of a target area. Of the 92 total TOIs along the ocean transects, 70 of them were identified on the two transects closest to the shore. The side scan data were reviewed to further characterize the DGM TOIs as to whether they were lying on the surface, and if so, if they could be identified as munitions or non-munitions related. None of the MRS 01 DGM TOIs were classified as non-munitions from the side scan data review, and therefore all the MRS 01 DGM TOIs were put on the intrusive dig list. [Figure 3-3](#) shows the MRS 01 DGM TOI locations.

A total of 31 DGM TOIs were identified from the MRS 03 back bay DGM survey, and 9 TOIs were identified from the MRS 03 ocean DGM survey. There appeared to be a few more targets located near the fish camp in the back bay survey than the rest of the back bay. Similar to the MRS 01 ocean survey, all of the ocean side DGM TOIs were located on the transect closest to the shoreline. After review of the side scan data, 3 of the back bay TOIs were classified as non-munitions related but were not removed from the dig list. One quality assurance (QA) TOI was added to the back bay target list by the USACE Project Geophysicist. None of the ocean side TOIs were removed from the dig list. [Figure 3-4](#) shows the MRS 03 DGM TOI locations.

Acronyms:
MD = Munitions Debris
NMRD = Non-Munitions Related Debris
CMUA = Concentrated Munitions Use Area
DGM = Digital Geophysical Mapping
MRS = Munitions Response Site
RIA = Remedial Investigation Area



Legend

- Anomaly
- ▲ Survey Control Point
- Shoreline 1942-1943
- Shoreline 8-2016
- Actual Transect
- CMUA Polygon
- Approximate Location of Former Target Area (Parsons 1995)

Subareas

- No Survey - Parking Lot
- Backbay - Marine
- Beach - Land
- Campground - Land
- Marsh - Land
- Ocean - Marine
- Rocket Launch Area
- Surf Zone - Marine
- Western Island - Land

Map Date: 9/10/2018
Source: ESRI 2017, Parsons 1995
Projection: NAD 1983 UTM 18N Meter

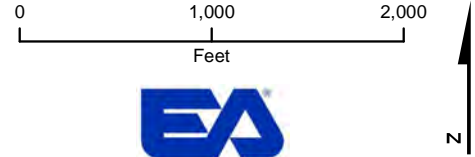
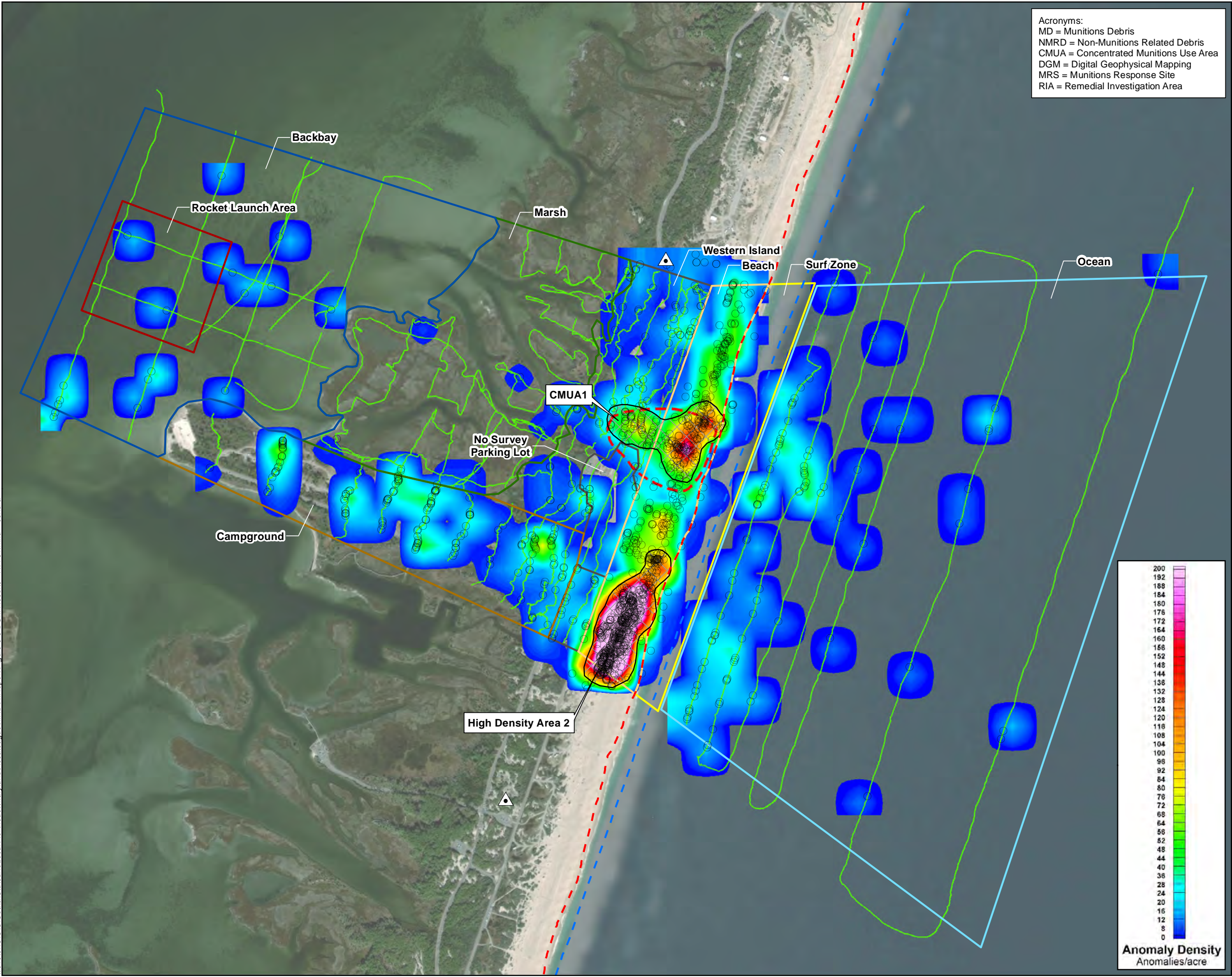
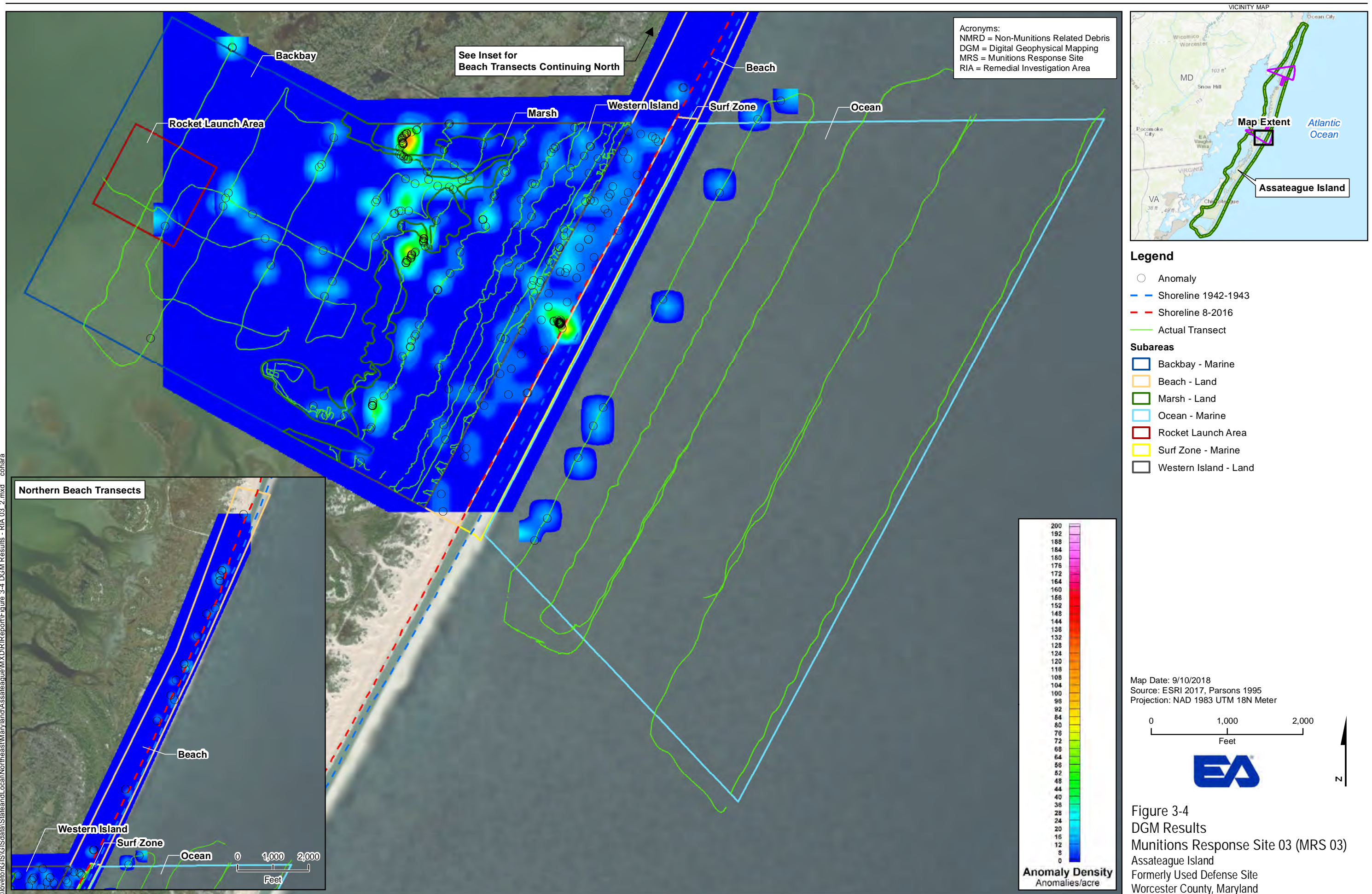


Figure 3-3
DGM Results
Munitions Response Site 01 (MRS 01)
Assateague Island
Formerly Used Defense Site
Worcester County, Maryland



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\\loveton\GIS\GISdata\StateandLocal\Northeast\Maryland\Assateague\MXD\Report\Figure 3-4 DGM Results - RIA 03 2.mxd cochara



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3.1.3 Intrusive Investigation

Due to the logistics associated with diving at Assateague Island during the winter and holiday seasons, it was necessary to conduct the diving operations as two independent efforts. The initial diving effort was performed between 28 November and 19 December 2017, while a second effort was conducted between 23 and 27 January 2018. A five-person dive team comprised of four UXO Technicians and a boat Captain provided by Explosive Ordnance Technologies, Inc. was mobilized to the worksite to intrusively investigate anomalies. EA provided a UXO Safety Officer (UXOSO)/Quality Control Specialist (UXOQCS), and a GPS technician for target reacquisition.

Similar to the DGM survey element of this investigation, precision positioning was accomplished using a Trimble R8 GNSS receiver interfaced with a broadband cellular modem to convey corrections for the satellite positioning data in real-time through a subscription to the KeyNetGPS VRS Network. Prior to deploying divers, each anomaly targeted for investigation was marked by placing a weighted line at the desired coordinates using the Trimble R8 GNSS receiver and HYPACK. Sand and gravel bags (50-100 lb), tethered by polypropylene line to surface nonferrous buoys were used to avoid introducing metallic objects into the search area. At each dive location, the boat was anchored using a multi-point mooring arrangement to position the boat in proximity to the desired target. Once surface checks were complete, the diver entered the water in proximity to the surface buoy and the search effort commenced. The diver descended each buoyed line and reacquired the anomaly using a hand-held underwater metal detector to identify the source of the anomaly, dig the anomaly, and determine if the source was a MEC-related item.

All diving operations were conducted using SCUBA equipment and remained within standard “No Decompression Limits” dive tables. Water depths in the back bay ranged from 1 to 6 ft while diving depths for the ocean investigation ranged from 10 to 35 ft. Full-face masks (i.e., Ocean Technology AGA) were incorporated into each SCUBA system, allowing two-way communication between the divers and the surface. In the back bay, many targets were investigated via “wading” to the target due to the shallow water.

Once on the bottom, the diver interrogated the riverbed directly under the sand bag using the all metals detector⁸, then conducted searches within concentric circles at a 5-ft and 10-ft radius from the mark, commonly known as a circle search. The diver investigated all surface metallic objects detected at the location and maintained constant communication with topside personnel to report status and results of the investigation effort. In the event no metallic objects were found within the 10-ft search radius, the diver would repeat the process and make a single pass at an annulus of 10-20 ft before reporting a “no find.”

Metallic items that were reacquired by the divers resided both at and beneath the sediment-water interface. In cases where the source of the DGM anomaly was buried by sediments, the diver attempted to excavate the area using simple hand-digging techniques. Surface and sub-surface sedimentary conditions varied across the site. Due to diver explosive safety concerns in limited visibility conditions, excavation of a buried object was generally limited to approximately 24 in.

⁸ A Whites Surf PI Dual Field Metal Detector was used for all anomalies.

(elbow depth) below the top of the sediment. In many cases, metal detector responses indicated items were deeper than the 2 ft excavation limit and were left in place.

Of the 109 underwater targets investigated in MRS 01, 29 were “no finds” and 33 were buried deeper than the diver could safely excavate (i.e., deeper than 24” but still a signal on hand-held metal detector). In MRS 03, of the 41 targets investigated, 7 were “no finds” and 10 were deeper than the diver could excavate. Many of the “no finds” were low amplitude DGM anomalies which may have played a factor in locating during intrusive operations. These items may have been deeper than the detection capabilities of the hand-held instrument could detect, or the item was so small the diver could not relocate the target. Another possibility for these “no finds” is that they may have moved between the DGM survey and the intrusive investigation due to ocean currents. A detailed summary of what was found in MRS 01 and MRS 03 is provided in [Section 4.2](#).

3.2 LAND INVESTIGATION

EA mobilized for land-based field activities on 4 March 2018. Land-based activities included site-specific training, establishment of investigation transects, brush clearance, installation of an IVS at each MRS, DGM surveys, and DGM anomaly investigations.

Vegetation clearance and surface sweeps in MRS 01 began on 4 March 2018 along 13 southwest/northeast trending transects (Transects 04 through 15) through existing marshes, campgrounds, and beach dunes ([Figure 3-1](#)). An additional transect, 15b, was added east of Transect 15 through the back-dune area. The northern and southern boundaries were located and marked, and each transect was cleared using hand-tools, flagged, and labeled. Transects were located using a VRS-enabled, Trimble Geo7x GPS. In coordination with the NPS natural resource advisor, EA cleared transects in a manner that avoided unnecessary overcutting of vegetation, avoided sensitive species (i.e., beach heather), and limited visible public accesses to sensitive habitat areas (i.e., back-beach dunes). As practicable, transects were cleared corresponding to the locations depicted in the UFP QAPP (EA 2017). Detector-aided visual surface sweeps were performed along each transect to identify and remove any MPPEH that posed a hazard to the DGM crew and surface metal that could interfere with the DGM equipment.

Following completion of vegetation clearance at MRS 01, nine transects were cleared and swept at MRS 03 (Transects 04 through 12). Transect 11 was offset from the work plan location by approximately 25 ft east along a former access road to allow for access ([Figure 3-2](#)). All transects in MRS 03 were surface-swept as described for MRS 01.

3.2.1 Digital Geophysical Mapping

Concurrent with establishment of transect locations, EA’s subcontractor, Zapata Inc. (Zapata), conducted DGM surveys of transects in MRS 01 and MRS 03 across the open beach and surf zones, campgrounds, marshes, and woods. This section details the various methods and procedures used during the land-based geophysical investigation. The primary reason DGM was used during the RI was that it allows a more complete picture of the subsurface than analog

surveys. A systematic sampling approach can be employed that allows for the determination of nature and extent of MEC contamination at the site. Other advantages of DGM include:

- Uniform process for data collection and analysis
- Geo-referenced location of data and anomalies
- No operator subjectivity (to place or not to place a flag)
- Ability to further evaluate electronic data
- A permanent electronic record.

A total of 50 linear miles (20 acres) within MRS 01 and 83.4 linear miles (33.1 acres) within MRS 03 were surveyed during the DGM survey. Figures [3-1](#) and [3-2](#) show the land-based DGM transect locations within MRS 01 and MRS 03, respectively.

3.2.1.1 Digital Geophysical Mapping Data Acquisition Equipment and Procedures

The EM61-MK2 time domain electromagnetic sensor was used to collect DGM data along the planned transects within each MRS. Time domain electromagnetic technology was used because it provides highly effective detection capabilities, can detect both ferrous and nonferrous metallic objects, is less prone to geologic influences therefore producing fewer “false positives” (e.g., no finds), and provides a more simplistic response for buried objects than often complex magnetic responses, making it easier to identify and locate individual targets.

The EM61-MK2 device generates an electromagnetic pulse that triggers eddy currents in the subsurface. The eddy current decay produces a secondary magnetic field that is recorded by a receiving coil. For this project the EM61-MK2 sensors were configured to record all four-time gates (216 microseconds [μ s], 366 μ s, 660 μ s and 1,266 μ s). The multiple platforms utilized for the RI included:

- A vehicle-towed, single EM61S-MK2 marine coil, measuring 1.0 by 0.5 meters with the long axis perpendicular to the direction of travel, 35 cm above ground surface. Used on the beach and surf zone.
- A hand-pulled cart equipped with balloon tires and a standard EM61-MK2 coil, measuring 1.0 by 0.5 meters with the long axis perpendicular to the direction of travel, 41 cm above ground surface. Used primarily in the marsh.
- A hand-pulled cart equipped with standard tires and a standard EM61-MK2 coil, measuring 1.0 by 0.5 meters with the long axis perpendicular to the direction of travel, 43 cm above ground surface. Used primarily in the dunes.
- A 1.0 by 1.0-meter coil configured in skirt mode, 41 cm above ground surface. Used primarily in the wooded areas.

RTK-GPS positioning of all DGM platforms was completed using a Trimble R10 with an SPS855 receiver. A GPS base station used for RTK corrections was established within each MRS at a known NPS control point located near the survey areas. All coordinates reported in

this document and in the IVS data are listed in North American Datum (NAD) 1983 Universal Transverse Mercator (UTM) Zone 18 North, meters.

DGM data were collected in accordance with the UFP QAPP and met all MQOs for DGM. The geophysical team began data acquisition by performing all specified pre-mapping instrument checks. Once the morning QC tests were completed and the instruments were determined to be operating within performance metrics specified in the UFP QAPP, the geophysical team collected data along the assigned transects, moving around any major obstacles. Obstacles include objects such as larger diameter trees, shrubs, steep drainages, deep water, fences, or other areas identified by NPS for avoidance. For transects located within the surf zone and marsh, tide charts for Assateague were used to determine the lowest tide conditions to schedule data collection.

The DQOs for data collection quantities for MRS 01, shown in Table 17-3 of the UFP QAPP and summarized in Table 3-2, were for the most part met or exceeded, except for the Beach and Shallow Surf transects. The intent of the full coverage DGM on the beach and surf zone (i.e., 15 ft transects) was to locate disposal areas and burial pits. There were issues with obtaining transect coverage on the beach due to NPS restrictions covering vegetation removal in the beach dunes, and in the shallow surf due to extremely rough surf. Therefore, the amount of DGM in these areas was less than planned. The 150 ft transect spacing used to identify the target area was not impacted by the restrictions of data collection in the dunes and the goal of refining the location of the known target area was achieved. As per the CSM, disposal areas were only anticipated on the beach and not in the dunes; therefore, it is not anticipated that any potential disposal areas on the beach were missed, as the coverage between the low-tide water edge and the dunes is considered fully covered at the planned transect spacing. However, it does not appear that the area located in the surf zone that was identified during the 1998 TCRA and labeled by EA as a suspect disposal area in the UFP QAPP, was identified from the land-based DGM transects or from the marine-based DGM transects. This area likely lies somewhere between the area covered by these two surveys. As previously stated, this suspect disposal area is now likely in the surf zone, which was not conducive to land or water surveys due to health and safety concerns associated with active surf. Since the 1940s the shoreline has eroded significantly and, if present, the suspect disposal area would have been located on the beach in the 1940s (refer to [Figure 1-2](#)). It should be noted that DGM coverage in other subareas (i.e., Marsh, Back Bay Campground, and West Island) was higher than planned, and the total achieved coverage (20.0 acres) for the land portion of MRS 01 was only slightly less than the planned DGM coverage (20.4 acres).

Table 3-2 Summary of Land-Based Digital Geophysical Mapping Surveys Performed at MRS 01

Munitions Use	Area	DGM Miles Planned	DGM Acres Planned	DGM Miles Collected	DGM Acres Collected
NCMUA	Marsh	2.6	1	6.5	2.6
NCMUA/CMUA	Back Bay Campground	2	0.8	3.6	1.4
NCMUA/CMUA	West Island	3.5	1.4	5.2	2.1
NCMUA/CMUA	Beach	32	12.8	28.7	11.4
NCMUA/CMUA	Shallow Surf	11	4.4	6.3	2.5
Total		51.1	20.4	50.2	20.0
NOTES: CMUA = Concentrated munitions use area. DGM = Digital geophysical mapping. NCMUA = Non-concentrated munitions use area.					

The DQOs for data collection quantities for MRS 03, shown in Table 17-3 of the UFP QAPP and summarized in Table 3-3, were met or exceeded, except for the Beach and Shallow Surf transects. There were issues with obtaining transect coverage on the beach due to NPS restrictions covering vegetation removal in the beach dunes, and in the shallow surf due to extremely rough surf. The DQO for this area was to survey the beach and shallow surf using a 15 ft transect spacing for the purpose of identifying target areas and disposal pits. The original acreage calculation for the beach was overestimated based on the planned survey area inadvertently including areas outside of the beach and shallow surf (i.e., ocean and back dunes) using the most recent aerial photographs at the time the UFP-QAPP was produced. Additionally, the aerial photographs used for the planned beach transects showed much more of the beach to be accessible than the conditions at the time of data acquisition allowed (i.e., accessible areas estimated in the UFP QAPP were higher than those observed during the field work). Although the DGM acreage for the beach and shallow surf was less than planned, the beach was fully covered at the planned transect spacing meeting DQOs for the beach.

Table 3-3 Summary of Land-Based Digital Geophysical Mapping Surveys Performed at MRS 03

Munitions Use	Area	DGM Miles Planned	DGM Acres Planned	DGM Miles Collected	DGM Acres Collected
NCMUA	West Island	1.3	0.5	7.8	3.1
CMUA	West Island	4.6	1.9	3.6	1.5
NCMUA/CMUA	Beach	146.0	59.0	65.0	25.8
NCMUA/CMUA	Shallow Surf	11.0	4.4	6.9	2.7
Total		163.0	66.2	83.4	33.1
NOTES: CMUA = Concentrated munitions use area. DGM = Digital geophysical mapping. NCMUA = Non-concentrated munitions use area.					

3.2.1.2 Digital Geophysical Mapping Data Processing and Target Selection

Standard data processing included a review of data in the field for data gaps followed by more intensive analysis at Zapata's data processing center to include latency and drift correction, statistical assessment of the DGM performance metrics, and generation of color-coded images of the EM61-MK2 data channels and GPS track path. Processing tasks were performed by Zapata and were completed using the equipment manufacturers' software (Geonics' Da61MK2), in-house software (Zapata's MakeXYZ), and Geosoft's Oasis Montaj software.

Based on the smallest munition item of interest at MRS 01 and MRS 03 (i.e., 20-mm projectile), IVS test results, the background survey results, and on an early look at the production data, a TOI selection threshold of 3 millivolts on Channel 2 for all EM61-MK2 surveys was proposed for anomalies that displayed decay characteristics consistent with those typically caused by the presence of metallic items; i.e., a stepwise decrease in amplitude across each of the time channels (Channels 1 through 4) was seen in profile and the anomaly showed a parabolic decrease in amplitude to either side of the peak response. Anomalies that met the TOI selection criteria but corresponded to above ground features (e.g., traffic/park signs, light poles, etc.) or obvious below ground utilities (e.g., linear features across multiple transects) were removed from the TOI list.

3.2.1.3 Digital Geophysical Mapping Quality Control

Geophysical System Verification—The geophysical systems verification (GSV) process was implemented to ensure that the geophysical DQOs and data needs were achieved. The GSV process consists of an IVS and a blind seeding program in the production area. The purpose of the IVS is to ensure the DGM equipment is functioning properly prior to the collection of data in the production area, determine background noise levels, and to quantify variations in expected responses due to site-specific variables including location, depth, and orientation of buried seed items, instrument in-line and cross-line offsets, and instrument platform noise. The purpose of the blind seeding program is to evaluate the dynamic detection and positioning repeatability within the production area.

Instrument Verification Strips—Zapata's geophysicists established a DGM IVS within each of the MRSs. Zapata collected background data over the IVS and EA personnel buried six medium ISOs in locations with no pre-existing anomalies. Single-sensor and towed array EM61-MK2 data were collected over the IVS, and data analysts compared the measured responses over the test items with expected values to verify that the EM61-MK2 sensor was functioning correctly. They also compared the geophysical anomaly locations with the actual ISO burial locations to confirm the accuracy of the RTK GPS. The measured responses met the performance metric or MQO requirement of at least 75 percent of the expected responses. A detailed description of the IVS results is provided in the IVS Letter Report located in [Appendix C](#). The expected responses from the initial IVS tests were used for twice-daily IVS test comparisons during the production phase of the DGM survey to confirm that the sensors were functioning correctly. RTK GPS accuracy was measured twice-daily and compared with the NPS control point "2010ASIS006" at MRS 01 and NPS control point "2010ASIS009" at MRS 03. There were no IVS QC test failures during the DGM survey. The production DGM IVS QC test results are presented in [Appendix C](#).

One dataset from the balloon wheel system showed elevated noise levels in the data (greater than 5 millivolts) and the data was recollected.

Blind Seeding—A blind seeding program was instituted to provide ongoing monitoring of the geophysical survey detection performance. During the RI, ISOs similar to those used for the IVS were used as blind QC seeds to verify that the geophysical systems were functioning properly and that the performance requirements for detection and positioning were in accordance with the project MQOs.

The QC seeds were placed in the survey area at a rate such that each geophysical team encountered at least one seed item each day. QC seeds were placed at similar depths and orientations as those placed in the IVS. These depths were selected to achieve a high enough signal-to-noise ratio to compare the measured response values with known ISO response values. Upon placement, the specific locations, depth, orientation, and azimuth of the ISO seeds were recorded. The locations of the blind QC seeds were not shared with personnel performing DGM surveys or data processing tasks until these respective tasks were completed.

After each dig package was completed, the QC Geophysicist reviewed the dig package and compared the data against the blind seed information to verify that the detection and positioning MQOs were being met. Seven out of the eight blind QC seeds placed ahead of surveys in MRS 01 and all nine of the blind seeds in MRS 03 were successfully recovered by the UXO team. It should be noted that one seed emplaced in the surf zone was detected during the DGM survey and was selected for intrusive investigation; however, it was determined by the UXOQCS to have washed away by the time the seed was intrusively investigated.⁹ The blind seeding tracking logs are presented in [Appendix A](#).

Feed-Back Process—The QC geophysicist reviewed 100 percent of the dig results and compared what was found by the intrusive teams with the geophysical anomalies selected from the DGM data to establish whether the stated source is representative of the identified anomaly. Any anomalies that the site geophysicist determined were not representative of the intrusive results were rechecked in the field and the dig sheet was updated.

3.2.2 Digital Geophysical Mapping Data Analysis

After the TOIs along the DGM transects were identified, the DGM track path and target list were incorporated into the Visual Sampling Plan (VSP) Geostatistical Mapping of Anomaly Density module and into Geosoft Oasis Montaj direct gridding (anomaly density) module. The anomaly density maps for MRS 01 and MRS 03 are presented in Figures [3-3](#) and [3-4](#), respectively. Each figure shows the MRS boundary and includes an aerial view of the MRS, the MRS sub-areas (e.g., marsh, campground, West Island, Beach, Surf Zone), the land-based DGM transect locations, the land-based DGM anomaly locations that met the selection criteria presented in the IVS Report, a color-shaded contour map of the DGM anomaly density, the results from the

⁹ It should be noted that during the field work a series of nor'easters had hit the Ocean City and Assateague Island area. The effect on Assateague Island included flooding and high surf events changing the beach elevations and relocating sand. Given the dynamic nature of the beaches, it is assumed that the potential exists that there could be anomalies classified as “no finds” due to these storm events.

water-based DGM and intrusive investigation, and the previously identified target area in MRS 01 from the SI.

3.2.2.1 Munitions Response Site 01 Analysis

A Preliminary Characterization Memorandum for MRS 01 was submitted to the PDT on 27 March 2018 that provided an analysis of the DGM data and refined the intrusive activities for the RI (refer to [Appendix C](#)).

Based on the VSP analysis and Oasis Montaj anomaly density calculations, the measured anomaly density was variable across MRS 01. In areas of high public use (i.e., campgrounds, the maintenance yard, boardwalks, concession stand), the anomaly density was over 100 anomalies per acre. In the low public use areas such as the marsh and the West Island wooded area, the anomaly density ranged from 5 to 50 anomalies per acre. The Oasis Montaj anomaly density color contour map is presented in [Figure 3-3](#). Anomaly density calculations for each of the subareas within MRS 01 are presented in Table 3-4.

Table 3-4 Digital Geophysical Mapping Anomaly Density Calculations for MRS 01

Munitions Use	Area	DGM Miles Collected	DGM Acres Collected	Total Number of Targets on Transects	Average Anomaly Density
NCMUA	Marsh	6.49	2.58	13	5
NCMUA	Back Bay Campground	3.57	1.42	160	113
NCMUA	West Island	4.66	1.85	88	48
NCMUA	Beach	15.52	6.17	203	33
NCMUA	Shallow Surf	6.27	2.49	17	7
CMUA 1	Target Area	6.09	2.42	208	86
High Density Area 2 NCMUA	Beach Campground	7.60	3.02	532	176
Total		50.20	19.95	1221	61
NOTES: CMUA = Concentrated munitions use area. DGM = Digital geophysical mapping. NCMUA = Non-concentrated munitions use area.					

A 12.5-acre high-density area shown in [Figure 3-3](#) is identified as CMUA 1. This area had an average anomaly density of 86 anomalies per acre, which corresponds extremely well with the previously known/identified target area in MRS 01. This area is considered a CMUA. One acre of intrusive investigation took place within the area boundary in accordance with the UFP QAPP. Based on the coverage and transect spacing within this CMUA (approximately 15-ft transects throughout) the 1-acre of intrusive investigation occurred along the transects.

A second area with a large number of anomalies was identified as “High-Density Area 2.” This area was located at the southern portion of MRS 01 at the Beach Campground and had an anomaly density of 176 anomalies per acre. Because the location of this high anomaly density area corresponded with an area that likely would result in elevated anomaly densities not related to munitions use, it was determined by the project delivery team, in accordance with the UFP

QAPP, to sample a subset of DGM TOIs (i.e., 35) first to determine the nature of the TOIs (i.e., munitions related or not). To add confidence that the area was not related to munitions use, two 50-ft by 50-ft mag and dig grids were subsequently added to this high-density area for additional investigation following the intrusive investigation of the 35 DGM TOIs. Refer to [Section 3.2.3](#) for additional details. Similar to the Beach Campground, the Back Bay Campground appears to have an anomaly density above background with 113 anomalies per acre; however, the land where the campground is currently located did not exist during the use of the former Rocket Range and was more recently brought in as backfill. The higher than normal anomaly density in this area is associated with the more recent use as a campground and therefore, was not treated as a CMUA. This assumption was confirmed based on the intrusive results, which included campground related material such as tent spikes, cables, wire, nails, and other miscellaneous metal scrap, and no munitions-related items.

The areas outside the CMUA were treated as one NCMUA and were sampled using the VSP design presented in Table 17-3 of the UFP QAPP. To ensure that a normal distribution of targets was intrusively investigated throughout each subarea, randomly selected anomalies throughout each subarea were investigated rather than investigating all anomalies on randomly selected “transects” within each of the subareas. This prevented large areas within each subarea from being uninvestigated and small areas from getting over-investigated. The calculation for the number of anomalies that were identified for investigation in each subarea is presented in Table 3-5. The number of anomalies investigated was based on the ratio of DGM acreage investigated relative to the acreage that VSP determined should be investigated, multiplied by the total number of anomalies in each subarea.

Initially, intrusive investigations were to be performed on the DGM transects in the marsh, the Back Bay Campground, the beach, and the shallow surf, and DGM grids were to be utilized for the intrusive investigation of the wooded areas based on the assumption that the tree canopy would prohibit the use of accurate GPS. However, based on the actual results from the DGM transect survey through the woods, GPS accuracy was sufficient for target reacquisition on the wooded transects; therefore, grids were not required for intrusive investigations in the woods (i.e., anomaly investigations occurred along the DGM transects). A total of 336 TOIs were selected for intrusive investigation in MRS 01.

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Table 3-5 MRS 01 MEC Intrusive Design Summary (Land-Based)

.	Area	Intrusive Approach	Survey/ Intrusive Method ^(a)	VSP Required Acreage ^(b)	DGM Acres Collected	Ratio of Intrusive Acreage to DGM Acreage	Total Number of Targets on Transects	Number of Targets to Dig based on Intrusive/ DGM Ratio	Recomm ended Intrusive Acreage	Number of Targets Recommended
NCMUA	Marsh	100 percent of transect anomalies	Transects	1.34	2.58	0.52	13	7	2.58	13
NCMUA	Back Bay Campground	VSP-NCMUA	Transects	0.94	1.42	0.66	160	106	0.94	106
NCMUA	West Island	VSP-NCMUA	Transects	0.59	1.85	0.32	88	28	0.97	46
NCMUA	Beach	VSP-NCMUA	Transects	0.58	6.17	0.09	141	13	1.97	45
NCMUA	Shallow Surf	VSP-NCMUA	Transects	0.21	2.49	0.08	17	1	0.73	5
CMUA 1	Target Area	Population Sampling	Transects	1.00	2.42	0.41	208	86	1.00	86
High Density Area 2 NCMUA	Beach Campground	VSP-NCMUA	Transects + mag & dig grids	0.29	3.02	0.10	594	57	0.30	35 ^(c)
Total				4.95	19.95	N/A	1221	298	8.49	336
<p>a. Intrusive investigations were performed on transects in back bay, ocean, marsh, beach, and shallow surf. Intrusive investigations were performed on transects in wooded areas where GPS quality was good.</p> <p>b. Intrusive acreages are based on VSP estimate for NCMUAs using 95 percent confidence and 0.5 MEC per acre. Intrusive acreages listed do not cover CMUAs found within these areas. One acre of transects per CMUA. Two NCMUAs were proposed/identified for each MRS. Back Bay and Island for one NCMUA (undershoots and misses north and south) and Ocean for the second NCMUA (overshoots). NCMUA acreages presented in this table do not include the Back Bay and Ocean acreages previously presented in Table 3-1.</p> <p>c. Number of recommended targets does not include 100 TOIs investigated in the 50 x 50 ft mag and dig grid.</p> <p>NOTES: CMUA = Concentrated munitions use area. DGM = Digital geophysical mapping. MEC = Munitions and explosives of concern. MRS = Munitions response site. N/A = Not Applicable. NCMUA = Non-concentrated munitions use area. VSP = Visual Sample Plan.</p>										

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3.2.2.2 Munitions Response Site 03 Analysis

A Preliminary Characterization Memorandum for MRS 03 was submitted to the PDT on 4 April 2018 that provided an analysis of the DGM data and refined the intrusive activities for the RI (refer to [Appendix C](#)).

Based on the VSP analysis and Oasis Montaj anomaly density calculations, the measured anomaly density was variable but generally low across MRS 03. The average anomaly density for the land-portion of MRS 03 was 7 anomalies per acre. The Oasis Montaj anomaly density color contour map is presented in [Figure 3-4](#). There are three locations with above background anomaly density. One is located on the beach and is directly attributed to the Green Run Life Saving Station debris, visible on the ground surface. Another area is located in the northwest part of the MRS, north of the Back Bay, and is attributed to the high use area boardwalk at that location. The third location is south of the fish camp near the fenced area. Anomaly density calculations for each of the subareas within MRS 03 are presented in Table 3-6.

Table 3-6 Digital Geophysical Mapping Anomaly Density Calculations for MRS 03

Munitions Use	Area	DGM Miles Collected	DGM Acres Collected	Total Number of Targets on Transects	Average Anomaly Density
NCMUA	West Island	7.83	3.11	96	31
NCMUA	West Island	3.64	1.45	37	26
NCMUA	Beach	65.00	25.84	85	3
NCMUA	Shallow Surf	6.89	2.74	1	<1
Total		83.36	33.14	219	7
NOTES: CMUA = Concentrated munitions use area. DGM = Digital geophysical mapping. NCMUA = Non-concentrated munitions use area.					

No high anomaly density areas that might indicate a target area or disposal trench were identified on the DGM transects; therefore, the entire MRS 03 is considered a NCMUA and was sampled using the VSP design presented in Table 17-3 of the UFP QAPP. The VSP-based calculation for the number of anomalies to be investigated in each subarea of MRS 03 is presented in Table-3-7. A total of 219 TOIs were selected for intrusive investigation in MRS 03. The number of anomalies investigated was based on taking the ratio of DGM acreage investigated relative to the acreage that VSP determined should be investigated, multiplied by the total number of anomalies in each subarea. However, because no obvious CMUA/disposal area/target area was identified from the transect data in MRS 03, it was recommended to the project delivery team that 100 percent of the DGM anomalies meeting selection criteria be intrusively investigated to ensure the area is fully characterized. If any of the anomalies identified along the strip of beach that extends north of the main portion of the MRS had resulted in munitions-related materiel, additional geophysical and intrusive data collection (i.e., mag and dig) would have been recommended around that location to determine if the munition-related item was associated with a target area. None of the anomalies resulted in munitions-related materiel and no further intrusive investigations took place.

Initially, intrusive investigations were to be performed on the DGM transects in the marsh, the beach, and the shallow surf, and DGM grids were to be utilized for the intrusive investigation of

the wooded areas based on the assumption that the tree canopy would prohibit the use of accurate GPS. However, based on the actual results from the DGM transect survey through the woods, GPS accuracy was sufficient for target reacquisition on the wooded transects; therefore, grids were not required for intrusive investigations in the woods (i.e., anomaly investigations occurred along the transects).

3.2.3 Intrusive Investigation

All selected anomalies were provided to the field crew for reacquisition, and the locations were field marked with yellow pin-flags prior to intrusive investigation. These specific locations were reacquired and marked using a Trimble R10 VRS-enabled, RTK GPS unit. RTK GPS accuracy at MRS 01 was checked against NPS control points “GPS-15,” “2010ASIS006,” and “NORTH BEACH 2,” and at MRS 03 accuracy was checked against “2010ASIS009” and “GPS-19.”

Intrusive investigations were conducted at MRS 01 on 2-13 April and 18 April 2018 and at MRS 03 on 17 April and 19-30 April 2018. A five-person field crew of UXO technicians investigated each reacquired anomaly. Following navigating to each anomaly, the location and surrounding ground surface was cleared using an analog magnetometer (Schonstedt Model GA-52Cx). If surface clearance did not resolve the anomaly, UXO technicians dug the location with hand tools, clearing the excavation area with magnetometers at 6-in. intervals until the metallic anomaly was identified and removed. At locations in the back-bay marsh area, a pump was used to remove water from saturated investigation areas. Intrusive investigations were conducted in accordance with EA Standard Operating Procedure 07 in the UFP-QAPP (EA 2017).

For locations located within the surf zone, tide charts for Assateague were used to determine the lowest tide conditions for safe access and investigation. The maximum low tide was identified on 12 April 2018 and all surf zone locations were reacquired and investigated on that date.

At MRS 01, four anomalies in the dunes (B-253, B-174, B-245 and B-257) and three anomalies on the beach (B-242, B-243, and B-295) were initially unable to be identified in the former target area/dune area due to the depth of the anomaly (and sloughing sand). A mini-excavator (CAT 304E) was mobilized on 17 April to bench and slope an adequate excavation pit to investigate these locations. The UXO team performed intrusive activities on the 7 deep anomaly locations on 18 April. In the dunes, anomalies B-174 and B-257 were each associated with 1 piece of MD, anomaly B-245 was associated with 14 pieces of MD, and anomaly B-253 was associated with a physical target identified as range related debris. After removing a total of 14 pieces of MD from location B-245, the UXO Team reported additional anomalies in the excavation sidewalls (5-6 ft bgs). The Senior Unexploded Ordnance Supervisor (SUXOS) and Project Manager analyzed the findings and determined that the area was not a potential disposal area, rather the findings were associated with practice rounds being fired at the physical target. Anomaly location B-253 was identified as approximately 20 ft by 20 ft and covered by a vegetated dune, which may have shielded the true size of this anomaly. A portion of this anomaly was excavated to a depth of 66-in., and a large metal plate was observed that was identified as a physical target that was historically used at the former range. The item appeared to extend to the south and west from the original coordinates of the anomaly (refer to [Figure 3-5](#)). The metal target was left in-place, as it was too large to recover without destroying the existing vegetated sand dune. The

excavation perimeter boundaries were measured and recorded with the Trimble R10 GPS unit for the metal target.

The UXO Team then moved down to the beach to anomaly locations B-242, B-243, and B-295 (at the high tide area where the 1998 TCRA was conducted). Anomaly locations B-243 and B-295 produced only a few pieces of MD from 2.25-in. practice rockets. At location B-242 the crew dug to approximately 6 ft bgs and recovered five 2.25-in. practice rockets. The crew identified an area, approximately 12 ft by 12 ft, which contained a high concentration of anomalies at the bottom of the excavation area for B-242. The SUXOS in conjunction with the UXOSO and the Project Manager decided not to perform additional recovery due the excavation area filling with water, sloughing sands from the sides of the excavation, and the concern that the excavation could collapse. The excavation perimeter boundaries were measured and recorded with the Trimble R10 GPS unit for the remaining anomalies in the disposal pit. These locations are presented on [Figure 3-5](#).

At the conclusion of intrusive investigations, all pin flags and flagging tape along the transects and the IVS in MRS 01 were removed to restore the Site.

Along the southern boundary of MRS 01 is the current Assateague National Seashore group camping area. EM61-MK2 data from this area indicated a high concentration of metallic anomalies that did not conform to known historical target or disposal areas for ordnance. A central location was selected to establish two 50 ft by 50 ft grids for a mag/flag investigation. The selected grids were identified as “MRS 01-B-G1” and “MRS 01-B-G2,” and the investigations were conducted on 13 April 2018. A total of 101 anomalies were flagged in MRS 01-B-G1 and 174 were flagged in MRS 01-B-G2. All anomaly locations and grid boundary locations were recorded with the RTK GPS unit. All anomalies flagged at MRS 01-B-G1 were investigated and determined to be non-munitions related debris (NMRD) (i.e., debris related to the group camping area). Following a conference call with the project delivery team, the High Density #2 campground area was considered fully characterized based on the intrusive results from the DGM transect anomalies and mag and dig grid. During the call, the PDT decided that further intrusive investigation in MRS 01-B-G2 was unnecessary due to the high density of camping debris (NMRD) on the surface, and the flags were removed.

At MRS 03, the 1991 INPR indicated that a piece of MD was reportedly found in the vicinity of point B-113 (refer to Figures [1-3](#) and [3-6](#)). To further investigate the location, a 50 ft by 50 ft grid was established around this location on 25 April 2018, and 16 anomalies were identified and flagged. All anomaly locations and the grid boundary were recorded with the RTK GPS unit. Intrusive investigation determined the anomalies to be NMRD.

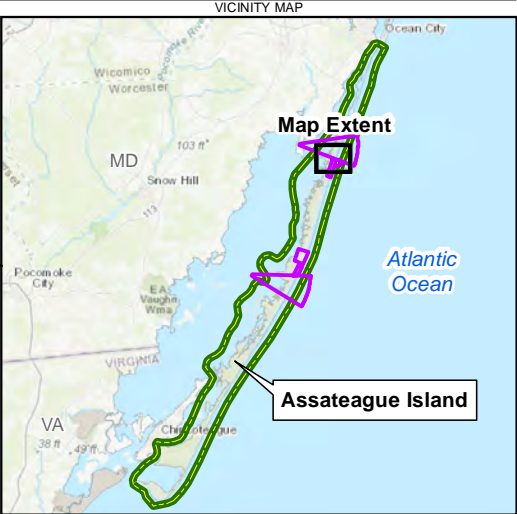
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Table 3-7 MRS 03 MEC Intrusive Design Summary (Land-Based)

Munitions Use	Area	Intrusive Approach	Survey/ Intrusive Method^(a)	VSP Required Intrusive Acreage^(b)	DGM Acres Collected	Ratio of Intrusive Acreage to DGM Acreage	Total Number of Targets on Transects	Number of Targets to Dig based on Intrusive/DGM Ratio	Recommended Intrusive Acreage	Number of Targets Recommended
NCMUA	West Island	100 percent of transect anomalies	Transects	0.93	3.11	0.30	96	29	3.11	96
NCMUA	West Island	Population Sampling on follow on DGM grids in CMUA, VSP-NCMUA	Transects	0.56	1.45	0.39	37	14	1.45	37
NCMUA	Beach	Population Sampling on transect anomalies- CMUA, VSP-NCMUA. Also includes DGM grids.	Transects	1.74	25.84	0.07	85	6	25.84	85
NCMUA	Shallow Surf	Population Sampling on transect anomalies- CMUA, VSP-NCMUA	Transects	0.08	2.74	0.03	1	1	2.74	1
Total				3.31	33.14	0.10	219	50	33.14	219
<p>a. Intrusive investigations were performed on transects in back bay, ocean, marsh, beach, and shallow surf. Intrusive investigations were performed on transects in wooded areas where GPS quality was good.</p> <p>b. Intrusive acreages are based on VSP estimate for NCMUAs using 95 percent confidence and 0.5 MEC per acre. Two NCMUAs were proposed/identified for each MRS. Back Bay and Island for one NCMUA (undershoots and misses north and south) and Ocean for the second NCMUA (overshoots). NCMUA acreages presented in this table do not include the Back Bay and Ocean acreages previously presented in Table 3-1.</p> <p>NOTES: CMUA = Concentrated munitions use area. DGM = Digital geophysical mapping. MEC = Munitions and explosives of concern. NCMUA = Non-concentrated munitions use area. VSP = Visual Sample Plan.</p>										

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Acronyms:
MD = Munitions Debris
NMRD = Non-Munitions Related Debris
CMUA = Concentrated Munitions Use Area
MRS = Munitions Response Site
RI = Remedial Investigation



Legend

- MD
- NMRD
- No Contact
- Actual Transect
- CMUA Polygon
- Disposal Pit (Remnants from 1998 TCRA)
- Physical Target
- Revised Target Area
- Subareas
 - No Survey - Parking Lot
 - Backbay - Marine
 - Beach - Land
 - Campground - Land
 - Marsh - Land
 - Ocean - Marine
 - Rocket Launch Area
 - Surf Zone - Marine
 - Western Island - Land

Note: Grids B-G1 and B-G2 were 50 ft x 50 ft.

Map Date: 9/26/2018
Source: ESRI 2017, Parsons 1995
Projection: NAD 1983 UTM 18N Meter

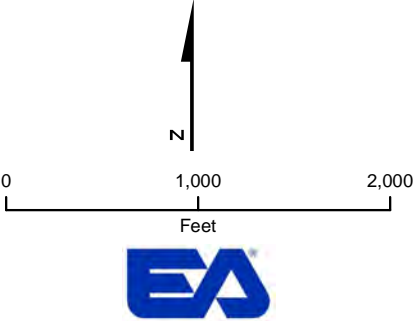
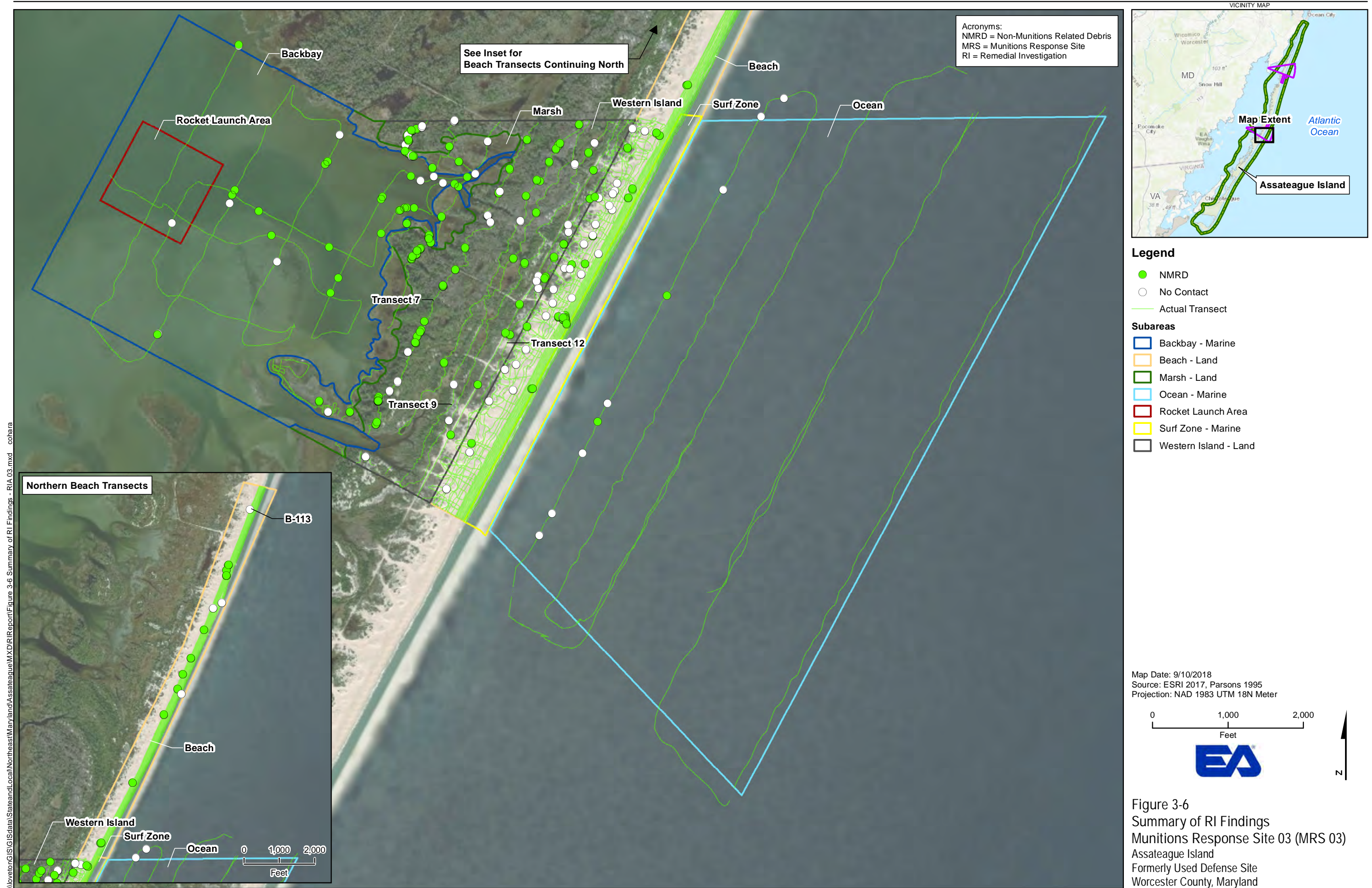


Figure 3-5
Summary of RI Findings
Munitions Response Site 01 (MRS 01)
Assateague Island
Formerly Used Defense Site
Worcester County, Maryland

\\loveton\GIS\GISdata\StateandLocal\Northeast\Maryland\Assateague\MXD\RI\Report\Figure 3-5 Summary of RI Findings - RIA.01.mxd cohara

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Additionally, at MRS 03, a former sand access road was observed running approximately east to northwest across the center of the MRS. The road location aligned with the beach front and possible former rocket firing point in the back bay and potentially may have provided access to a target area. UXO technicians conducted a surface clearance of the sand access road from the intersection of Transect 12 to the intersection of Transect 7 ([Figure 3-6](#)). Several small anomalies were identified as NMRD. Additionally, a high concentration of metallic anomalies was observed at the intersection with Transect 9 and a grid approximately 20 ft by 70 ft was established. All anomalies from this grid were identified as NMRD.

There were a larger than normal number of “no contacts” in the land portion of MRS 03, which were reviewed during the intrusive investigation. A total of 62 out of 219 TOIs investigated on the land portion (28 percent) were “no contacts. Over half of the “no contacts” (34) were located on the beach or surf zone and were rechecked by QC. It is suspected that many of these were moved or washed away by the surf. Another large set of “no contacts” (46) that, although were above the selection threshold, were relatively low amplitude (below 7 millivolts). Based on the review of the DGM data, it is suspected that these were localized anomalies caused by noise (e.g., coil bumps, coil height variations) that appeared as legitimate TOIs. Other “no contacts” included TOIs that were abandoned due to water filled holes, or deeper than 4 ft. 100 percent of the “no contacts” were rechecked by the UXOQCS.

At the conclusion of intrusive investigations, all pin flags and flagging tape along the transects and the IVS at MRS03 were removed to restore the Site.

3.3 MATERIAL MANAGEMENT AND DISPOSAL

All recovered items from the analog surveys were deemed MPPEH until further inspections and final certification by the SUXOS and UXOSO documented the items as MDAS. Digital photographs of munition-related items and significant or unusual items recovered during the intrusive investigation were taken and entered into the geographic information system (GIS) database. The database includes an accounting of munitions-related items, anomalies excavated, surface MD, and subsurface MD.

All MPPEH underwent a thorough inspection and re-inspection process to determine that the item was free of explosives. These items were then segregated and classified as MDAS upon final inspection. Items were then containerized and secured until released to a subcontractor for demilitarization and disposition. The completed DD 1348-1A Form, MDAS certification (signed by the SUXOS and UXOSO), and certification of destruction are provided in [Appendix E](#).

No MEC were identified during field activities in either MRS. All items were determined to be MDAS and NMRD. During the RI, 525 lb of MDAS were identified, recovered, and shipped offsite for demilitarization. Approximately 570.2 lb of NMRD were identified, recovered, and recycled. Additional details regarding the types of items found are provided in [Section 4.2](#).

3.4 DATA MANAGEMENT

Information pertaining to all data collected during DGM surveys are stored in a Microsoft Access project database. The database(s) was maintained throughout the duration of the project

and contains records of all daily QC test results, DGM anomalies identified in the survey area, anomalies selected for intrusive investigation, and the results of the intrusive investigation. The project database was updated and posted to the FTP site on a weekly basis. The project database is included on the CD in [Appendix D](#).

Digital data collected in the field were stored electronically on the data logger and transferred to a personal computer at the end of each day. Raw field data was backed up and kept separate from the day-to-day operations data. Raw field and processed data was transmitted to the USACE–Baltimore District Geophysicist via FTP site. A header line in the ASCII files identify the data contained in each column, and the file names reflect the data collection date (raw data) or transect number (final data) for the data being transmitted. A CD that includes all DGM data including raw and processed ASCII files, Geosoft maps, databases, dig packages and “Explanation of Files” MS Word document are included in [Appendix D](#).

Field-ruggedized electronic tablets were used during surface clearance and intrusive investigation to record item details, with locations confirmed by handheld GPS survey. The Field Data Manager ensured proper collection, recording, and storage of field data. GPS and other spatial data were transferred to and stored as GIS databases. GIS files were stored on a separate directory and backed-up on a regular basis. The electronic files produced are securely stored in a specified project directory on EA’s servers. Access to these files is limited to personnel with key responsibilities to the project. These electronic files are backed up on a regular schedule.

Hardcopy data, such as daily reports, were stored and organized in file folders, as well as scanned into electronic format as a backup. A portion of the hardcopy data were transferred to either Access or GIS databases for further analysis. Field documentation is provided in [Appendix A](#) and Dig Sheets are provided in [Appendix F](#).

3.5 QUALITY CONTROL

In addition to the GSV QC program discussed in [Section 3.1.1.3](#) and [3.2.1.3](#) (IVS and blind seeding), other QC checks were performed for intrusive operations. These included daily testing of instruments (i.e., metal detectors, GPS, etc.), 100 percent excavation area checks by the team leader, and 10 percent QC checks performed by the UXOQCS. As defined in the UFP QAPP, a failure was defined as an occurrence where an excavation had more than 5 metal pieces or metal greater than 3 in. in any dimension remaining at the anomaly location. Additionally, in accordance with the UFP QAPP, the UXOQCS implemented the three-phase control process for each definable feature of work. The UXOQCS performed inspections and completed initial and follow-up forms documenting the completion of this QC process.

There were no QC failures documented during intrusive activities during the waterborne investigation. At the start of intrusive activities, during the QC process, it was determined that the Fisher X1280 was not detecting deeper anomalies, as expected. Therefore, the UXO Team replaced the Fisher X1280 for a Whites Surf PI Dual field metal detector, which was able to detect deeper anomalies. All anomalies that were initially investigated with the Fisher X1280 were re-inspected with the Whites Surf PI Dual field metal detector.

No QC failures were identified during intrusive activities on land. It was noted on the 4 April 2018 Daily Report, shortly after intrusive activities began, the UXOQCS observed minor pieces of NMRD in the first few excavations where QC was being performed. None of the excavation areas reached failure criteria (i.e., more than 5 pieces of metal or metal greater than 3-inches in any dimension); however, as a preemptive measure the UXOQCS had the dig team re-clear the excavations and coached the teams on the importance of clearing the excavations of any anomaly.

The USACE Ordnance and Explosives Safety Specialist (OESS) provided oversight and performed QA throughout the RI field activities. Upon completion of QC by the UXOQCS following intrusive investigation, the USACE OESS) completed a QA inspection. Upon QA acceptance, USACE Form 948 was completed and signed by the OESS and UXOQCS, documenting no discrepancies or QA failures. The completed Form 948 is provided in [Appendix A](#).

3.6 FIELD CHANGE REQUESTS

No field change requests were completed during this project.

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4. REMEDIAL INVESTIGATION RESULTS AND REVISED CONCEPTUAL SITE MODEL

The RI was performed as discussed in [Section 3.0](#) during several mobilizations from November 2017 to May 2018. A consolidated discussion of the results is provided below. The dig sheets summarizing the intrusive data for both MRSs is provided in [Appendix F](#). Intrusive results are summarized in Table 4-1 for MRS 01 and MRS 03. All MD discovered during the RI was ultimately inspected and certified as MDAS.

Table 4-1 Summary of Intrusive Results Per Location at MRS 01 and MRS 03

Location	Total TOIs Investigated	MEC	MD	NMRD	No Find ^(b)	QC Seeds	RRD
MRS 01							
MRS 01 Land	336	0	51 ^a	246	31	7	1
MRS 01 Back Bay	17	0	0	8	9	0	0
MRS 01 Ocean	92	0	13	26	53	0	0
MRS 01 Total	445	0	64	280	93	7	1
MRS 03							
MRS 03 Land	219	0	0	148	62	9	0
MRS 03 Back Bay	32	0	0	23	9	0	0
MRS 03 Ocean	9	0	0	2	7	0	0
MRS 03 Total	260	0	0	173	78	9	0
<p>a. Multiple pieces of MD were identified at several locations where MD was found. A total of 90 pieces of MD were found on land (1 on the surface and 89 in the subsurface) and 13 pieces of MD were found in the water.</p> <p>b. No finds also includes TOIs that were too deep to excavate.</p> <p>NOTES: MD = Munitions debris. MEC = Munitions and explosives of concern. MRS = Munitions response site. NMRD = Non-munitions related debris. RRD = Range related debris. TOI = Target of interest.</p>							

4.1 DESCRIPTION OF IMPACTED AREAS

Land Investigation MRS 01

Two high anomaly density areas were initially identified from the DGM performed on land at MRS 01. The primary high-density area was located within the approximate historical target location and, following intrusive investigation of anomalies, was determined to be CMUA 1 ([Figure 3-3](#)). All of the MD identified on land was located within or adjacent to CMUA 1 ([Figure 3-5](#)). Another high-density area (High Density Area 2) was identified south of the historical target area; however, all anomalies investigated within this area were determined to be NMRD (i.e., debris related to the group camping area). In the surf zone, MD was identified at 24

in. and greater bgs. There were five subsurface anomalies in the surf zone that were not reached. The intrusive investigation had to be terminated after digging to 60 in. because the excavation areas were continuously filling back in with sands and collapsing. These anomalies are likely remnants of the burial pit removed during the 1998 TCRA. The TCRA was performed in a limited area at low tides near the surf zone and was terminated at a depth of 48 inches (or 4 ft) bgs.

MD on land at MRS 01 was found at depths ranging from 0 to 60 in. bgs; however, the majority of items were found at depths greater than 12 in. bgs. The anomalies located in the surf zone, on the edge of the target area closest to the ocean, were at depths greater than 60 in. and were not recoverable due to collapsing sands.

Water Investigation MRS 01

No high-density areas were identified from the DGM performed on water at MRS 01. However, an area with elevated levels of anomalies was observed where additional MD was identified in the water portion of MRS 01. The elevated number of anomalies combined with the MD observed, suggest the MD is coming from the target area and/or remnants of the burial pits as they washed out to sea.

MD recovered from the water portion of MRS 01 was found at depths ranging from 6 to 14 in. bgs and were only found in the Ocean portion of the MRS. The water depths that the MD was found ranged between 13 and 23 ft.

MRS 03 Investigation

No high-density areas were identified from the DGM performed on land or water at MRS 03.

4.2 TYPES OF ITEMS FOUND

No MEC was identified during the RI at MRS 01.

Previous investigations ([Section 1.5](#)) have found MD consistent with items found during the RI at MRS 01. Table 4-2 summarizes all the MD recovered from MRS 01 on land and in the water during the RI.

No MEC or MD was observed during the RI at MRS 03. A combination of NMRD (e.g., remnants of crab traps, tin cans, scrap metal, etc.) and “no finds” occurred at MRS 03.

Table 4-2 Summary of Recovered Items at MRS 01 During the RI

Description	Surface		Subsurface		Total
	MEC	MD	MEC	MD	
Land					
20-mm Training Practice Projectile	0	1 ^a	0	0	1
2.25-in. practice rockets	0	0	0	88	88
Practice bomb (3 lb Mark 23) ^b	0	0	0	1	1
Water					
2.25-in. practice rockets	0	0	0	13	13
Total	0	1	0	102	103
a. The Unexploded Ordnance Safety Officer identified a single inert 20-mm TP projectile (MD) approximately 6 ft to the northwest of intrusive location B-249 (outside the DGM transect). It was likely exposed due to shifting sands from heavy rains and high winds experienced earlier in the week.					
b. The material documented as safe from the practice bomb was co-mingled with a 2.25-in. practice rocket and was identified during the MD inspection process; therefore, the location within MRS 01 where it was found was not documented.					
NOTES:					
ft = Feet (foot).					
in. = Inch(es).					
lb = Pound.					
MD = Munitions debris.					
MEC = Munitions and explosives of concern.					
RI = Remedial investigation.					
TP = Training practice.					

4.3 DISTRIBUTION AND DENSITY

The distribution and density of items found during the intrusive investigation at MRS 01 on land and in the water are shown on [Figure 3-5](#).

All the MD identified on land during the RI were found in and around the approximate historical target area ([Figure 3-3](#)). A total of 336 subsurface anomalies were investigated on land in MRS 01, and of the 336 anomaly locations, 51 anomaly locations were attributed to MD. In several instances, multiple pieces of subsurface MD were identified on land from several anomaly locations, resulting in more MD (89) than anomaly locations reported with MD (51). The target area has been revised based on the location of MD observed during the RI ([Figure 3-5](#)). The revised target area consists of approximately 27.6 acres. Based on the intrusive and DGM data collected during the RI, there are approximately 20 MD items per acre within the target area, which translates statistically to approximately 501 MD items may still remain within the revised target area. The amount of MD estimated remaining in the revised target area has been extrapolated from the amount of MD that was identified on the DGM transects within the revised target area during the RI. No MD was identified on land outside the revised target area.

The MD identified in the water is located just offshore from the target area and is in line with the target and burial pits, suggesting MD is being transported offshore by the ocean currents. A total of 17 anomalies were investigated in the Back Bay area and all were identified as NMRD. A total of 92 anomalies were investigated on the Ocean side of MRS 01, and 13 were identified as MD. At MRS 03, a total of 219 subsurface anomalies were investigated on land and 41 anomalies in the water, none of which were attributed to MD ([Figure 3-6](#)).

4.4 REVISED CONCEPTUAL SITE MODEL

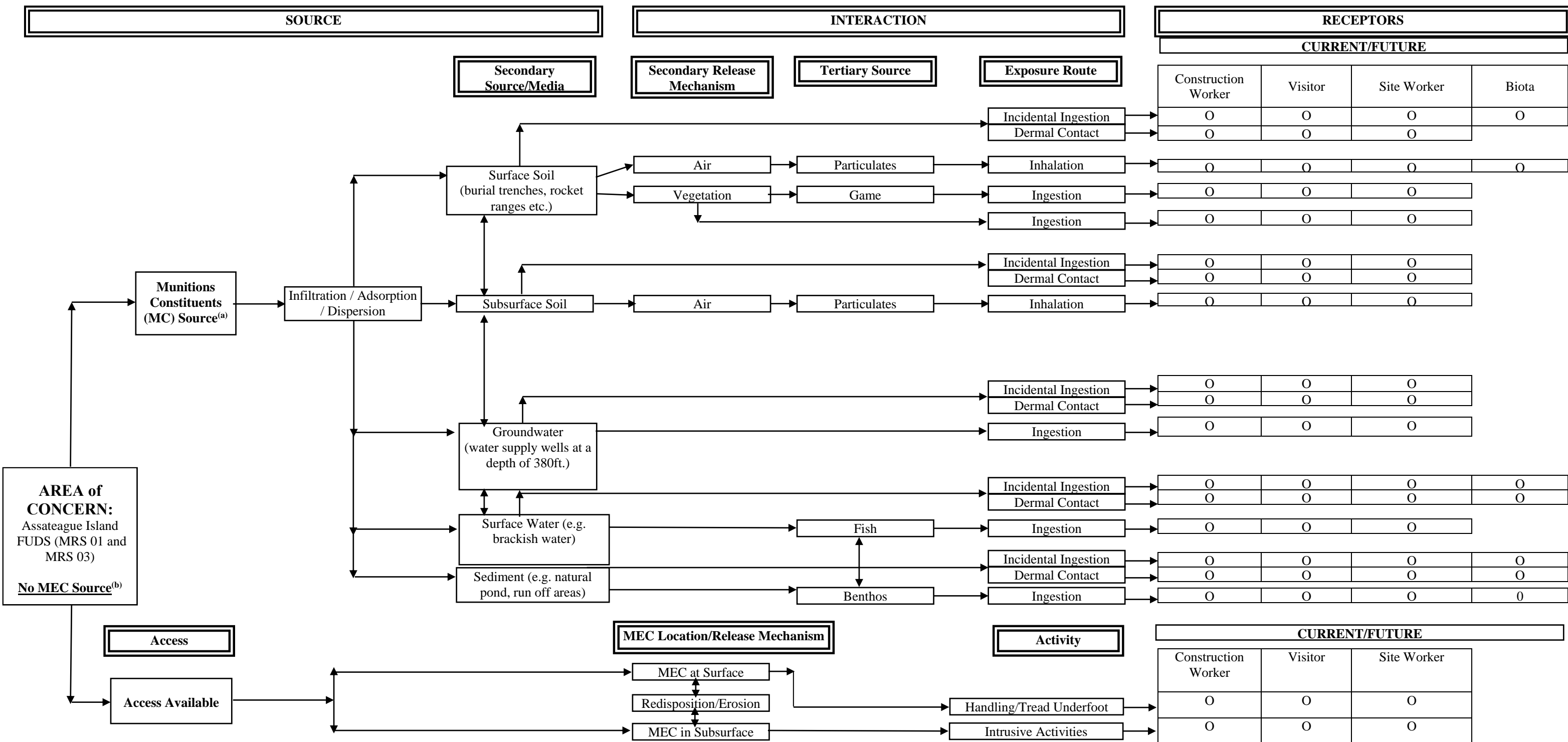
The information collected during the RI was used to update the CSM for MRS 01 and MRS 03 and identify all actual, potentially complete, or incomplete source-receptor interactions for the site, for both current and reasonably anticipated future land uses. An exposure pathway is the mechanism by which a chemical or physical agent takes from a source to a receptor. Each pathway includes a source, activity, access, and receptors. A summary of the updated CSM for MRS 01 and MRS 03 is presented in [Figure 4-1](#). There were no complete exposure pathways for MEC or MC at either MRS 01 or MRS 03.

The activity, access, and receptors have not changed from the Interim CSM (refer to [Section 2.1](#)); however, an exposure pathway is contingent on a source being present. At MRS 01, historically and during the RI only MD from 2.25-in. practice rockets, 3.25-in. practice rockets, 3.5-in. practice rockets, 5-in. practice rockets, 3-lb Mk 23 practice bombs, 4.5-lb Mk 43 practice bombs, and 20-mm Training Practice (TP) projectile (one TP projectile and one casing) were identified. None of the items found were determined to be MEC. The practice bombs have the potential to have an intact spotting charge if they did not function as intended; however, no evidence of an intact spotting charge has ever been found. The spotting charges used were blank 10-gauge shotgun shells, the shell cartridge was made of cardboard during this time period which would have been exposed to the elements for 70 plus years; therefore, it is unlikely a practice bomb with an intact spotting charge would be encountered.

All MD found to date that were related to past DoD use at the site have been determined to be MDAS. In addition, very few practice bombs and 20-mm projectiles were uncovered, less than one percent of the MDAS. Over ninety-nine percent of the MDAS was associated with the spent practice rockets. Once fired, the practice rockets no longer present an explosive hazard because the only explosive component (propellant) is expended when fired. The 20-mm TP projectile was a practice item (inert). Neither spotting charges nor propellant was found in any of the items. Based on the results of the RI, it is anticipated that future encounters with similar MPPEH identified at MRS 01 would also be MDAS. There is no evidence of CWM being used or present at this FUDS.

At MRS 03, only two pieces of MD from 5-in. practice rockets (no 20-mm TP rounds or practice bombs) have historically been identified; therefore, it is unlikely that MRS 03 was significantly used as a former practice rocket range, if it was used at all.

Based on the results of the RI, a potential MEC source has not been identified at MRS 01 or MRS 03. Therefore, the exposure pathway for MRS 01 and MRS 03 is incomplete.



LEGEND




-  Complete Pathway
 Potentially Complete Pathway
 Incomplete Pathway (no expected exposure)

FIGURE 4-1 REVISED CONCEPTUAL SITE MODEL FOR ROCKET RANGES NORTH AND SOUTH (MRS 01 AND MRS 03) AT ASSATEAGUE ISLAND MMRP FUDS

Source: U.S. Army Corps of Engineers (USACE). 2012. *Engineer Manual 200-1-12 Conceptual Site Models*. 28 December.

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5. RISK MANAGEMENT METHODOLOGY EVALUATION

This section presents the Risk Management Methodology that was completed for MRS 01 and MRS 03. The Risk Management Feedback Form and Risk Management Methodology Matrixes completed for each MRS are provided in [Appendix G](#). For reference, the munitions technical data sheets for the types of munitions associated with the MD identified at the MRSs are provided in [Appendix H](#).

5.1 RISK MANAGEMENT METHODOLOGY

The MEC risk characterization was conducted using the methodology included in the study paper *Decision Logic to Assess Risks Associated with Explosive Hazards, and to Develop Remedial Action Objectives (RAOs) for MRS* (USACE 2016). This methodology has three main purposes: to provide decision logic to differentiate acceptable versus unacceptable site conditions at MRSs; to establish a systematic approach for developing remedial action objectives (RAOs); and to assist in developing acceptable response alternatives to meet the RAOs. The methodology utilizes MRS characteristics of Accessibility, Sensitivity, and Severity to illustrate site-specific conditions, and assign acceptable versus unacceptable scenarios for each MRS.

The methodology contains a series of risk matrices that use site-specific CSM data to relate accessibility, munitions sensitivity, and severity of an explosive event if it were to occur, to determine baseline risks. The following matrices are included as [Appendix G](#):

- **Matrix 1**—the “Likelihood to Encounter” relates the site characterization data for the amount of MEC potentially present to site use, including accessibility, in order to determine the likelihood of encountering MEC at a specific site. “Amount of MEC” is determined using site-specific characterization data or anticipated or completed results of a remedial action. “Access Conditions” are selected based on considerations of the access and frequency of use for the MRS.
- **Matrix 2**—the “Severity of an Incident” relates the “Likelihood of Encounter” from Matrix 1 to the severity of an unintentional detonation. Unlike the two factors affecting the “Likelihood of Encounter” in Matrix 1, the “Severity” factor in Matrix 2 is a static characteristic of each of the munitions known or suspected to exist at the property.
- **Matrix 3**—the “Likelihood of Detonation” relates the sensitivity of site-specific munitions items to the likelihood for energy to be imparted on an item, such that the interaction results in detonation (an incident). The “sensitivity” of a munitions item is alone a static component, inherent to the known or suspected munitions present at the site. The likelihood to impart energy is selected from the known activities at the site that may cause an interaction that results in energy being imparted on a munitions item by human activity.
- **Matrix 4**—represents the overall risk for the site and differentiates “acceptable” from “unacceptable” conditions. This is determined based on the likelihood of an encounter (Matrix 1), with consideration given to the severity of the incident (Matrix 2), combined

with the likelihood of an interaction that results in detonation (Matrix 3). This matrix identifies acceptable conditions, which become possible remedial action goals that are ultimately achievable (via remedial response actions) for all portions of the MRS.

5.2 SUMMARY OF RISK EVALUATION FOR MUNITIONS RESPONSE SITE 01

During previous investigations and during the RI, no MEC was identified at MRS 01. However, MD from the following munitions was identified at MRS 01: 2.25-in. practice rockets, 3.25-in. practice rockets, 3.5-in. practice rockets, 5-in. practice rockets, 3-lb Mk 23 practice bomb, 4.5-lb Mk 43 practice bomb, and 20-mm TP projectiles (one TP projectile and one casing). The 2.25-in. practice rockets, 3.25-in. practice rockets, 3.5-in. practice rockets, 5-in. practice rockets and the 20-mm TP projectile can contain propellant. However, the discovery of practice rocket MD in the target area indicates that the propellant was expended upon firing the practice rockets to reach the target areas. In addition, the 3-lb Mk 23 and 4.5-lb Mk 43 practice bombs that were dropped can continue to contain spotting charges, if they did not function as intended. The spotting charges used with the practice bombs were blank 10-gauge shotgun shells, containing primer and black powder. The shell cartridge during this time period was made of cardboard which likely would have been exposed to the elements for 70 plus years. There is a remote chance however, that an intact spotting charge could exist within a practice bomb on site and be encountered, however it is very unlikely. Neither spotting charges nor propellant was found in any of the items during the RI. All the MD found to date that were related to past DoD use at the site have been determined to be MDAS. Very few practice bombs and 20-mm projectiles were uncovered, less than one percent of the MDAS. Over ninety-nine percent of the MDAS was associated with the spent practice rockets. Once fired, the practice rockets no longer present an explosive hazard because the only explosive component (propellant) is expended when fired. The 20-mm TP projectile was a practice item (inert). No live munitions nor explosives of concern were found at MRS 01. Based on the results of the RI, it is anticipated that future encounters with similar MPPEH identified at MRS 01 would also be MDAS.

Sufficient area was investigated during the RI to support the conclusions presented in the Risk Management Methodology. Below is a summary of the evaluation of MRS 01 for Matrix 1 through 4 of the Risk Management Methodology. [Appendix G](#) includes the matrix tables for MRS 01, and the explanation of the justification used for each matrix choice.

For Matrix 1—Likelihood of Encounter—No MEC has been found and all MD identified to date has been fired, expending the potential explosive component. However, MRS 01 is used daily as it is open to the public for recreational use and there is suspected, a low possibility of MEC presence, based only on historical evidence of munitions use. Therefore, the likelihood of encounter with MEC is considered “Seldom”.

For Matrix 2—Severity of Explosive Incident—No MEC has been found and all MD identified to date has been fired, expending the potential explosive components. However, if based on a “rare occurrence”, a practice bomb containing a spotting charge was encountered, injury would be considered “Modest” resulting in potential emergency medical treatment.

For Matrix 3—Likelihood of Detonation—No MEC has been found and all MD identified to date has been fired, expending the potential explosive components. The fired/spent 20-mm practice projectile and fired practice rockets are not sensitive to detonation. A practice bomb with an intact spotting charge would have a “Low” sensitivity to detonation. Based on the current use of MRS 01, which is a National Seashore/Park not planned for development, the likelihood to impart energy on an item is “Modest”.

For Matrix 4—Acceptable and Unacceptable Site Conditions—the result from Matrix 2 and the result from Matrix 3, input into Matrix 4 indicate that conditions at MRS 01 are “**Acceptable**”.

Based on the completion of the Risk Management Methodology evaluation, MRS 01 was identified as having acceptable site conditions.

5.3 SUMMARY OF RISK EVALUATION FOR MUNITIONS RESPONSE SITE 03

During previous investigations and during the RI, no MEC was identified at MRS 03. Historically, only two pieces of MD from 5-in. practice rockets were identified at MRS 03 (no practice bombs or 20mm TP rounds were found). Once fired, the practice rockets no longer present an explosive hazard because the only explosive component (propellant) is expended when fired. Since no MEC has been identified at MRS 03 and only two pieces of MD have been identified, this suggests the MRS may not have been used as a practice range.

Sufficient area was investigated during the RI to support the conclusions presented in the Risk Management Methodology. Below is a summary of the evaluation of MRS 03 for Matrix 1 through 4 of the Risk Management Methodology. [Appendix G](#) includes the matrix tables for MRS 03 and the explanation of the justification used for each matrix choice.

For Matrix 1—Likelihood of Encounter—No MEC has been found and the two pieces of MD identified suggest the MRS may not have been used; therefore, the likelihood of encounter with MEC is “Unlikely”.

For Matrix 2—Severity of Incident—“No MEC has been found and the two pieces of MD identified suggest the MRS may not have been used; therefore, the encounter with explosive munitions is “Unlikely” and severity of injury is “Improbable”.

For Matrix 3—Likelihood of Detonation—No MEC has been found and the two pieces of MD identified suggest the MRS may not have been used; therefore, the likelihood of energy to be imparted is “Inconsequential” and the munitions sensitivity to detonation is “Not Sensitive”.

For Matrix 4—Acceptable and Unacceptable Site Conditions—the result from Matrix 2 and the result from Matrix 3, input into Matrix 4 indicate that conditions at MRS 03 are “**Acceptable**”.

Based on the completion of the Risk Management Methodology evaluation, MRS 03 was identified as having acceptable site conditions.

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6. MUNITIONS RESPONSE SITE PRIORITIZATION PROTOCOL

This section presents application of the Munitions Response Site Prioritization Protocol (MRSP) for MRS 01 and MRS 03 based on the RI findings. The MRSP tables are provided in [Appendix I](#).

6.1 BACKGROUND

In 2005, DoD published the MRSP as a Federal Rule (32 CFR Part 179) to assign a relative risk priority to each defense site in the MMRP Inventory for response activities. These response activities are based on the overall conditions at each MRS, taking into consideration various factors related to explosive safety and environmental hazards. The application of the MRSP applies to all the following locations:

- Locations that are or were owned, leased to, or otherwise possessed or used by the DoD.
- Locations that are known to or are suspected of containing MEC or MC.
- Locations that are included in the MMRP Inventory.

In assigning a relative priority for response activities, the DoD generally considers MRSs posing the greatest hazard as being the highest priority. The MRSP priority will be one factor in determining the sequence in which munitions response actions are funded. The following sections are a brief summary of the modules of the MRSP and the results of the evaluations for this RI. As noted in [Section 2](#), no potential sources of MC were noted during the RI, and no addition sampling was conducted. Sampling data from the 2007 SI as used to populate the third module of the MRSP as discussed below.

6.2 EXPLOSIVE HAZARD EVALUATION MODULE

The Explosive Hazard Evaluation (EHE) module assesses the explosive hazards of a site based on the known or suspected presence of an explosive hazard. The EHE Module is composed of three factors, each of which has two to four data elements that were intended to assess the specific conditions at an MRS. Based on the site-specific information, each data element is assigned a numeric score and the sum of these values is the EHE Module score and is used to determine the corresponding EHE Module rating. The data elements are as follows:

- Explosive Hazard Factor: This factor includes the data elements Munitions Type and Source of Hazard and constitutes 40 percent of the EHE Module score.
- Accessibility Factor: This factor includes the data elements Location of Munitions, Ease of Access, and Status of Property and constitutes 40 percent of the EHE Modules score.
- Receptor Factor: This factor includes the data elements Population Density, Population Near Hazard, Types of Activities/Structures, and Ecological and/or Cultural Resources and constitutes 20 percent of the EHE Module Score.

Based on RI results, there is no evidence that MEC is present at MRS 01 and MRS 03; therefore, both MRSs received the alternative EHE Module rating of No Known or Suspected Explosive Hazard.

6.3 CHEMICAL WAREFARE MATERIEL HAZARD EVALUATION MODULE

The CWM Hazard Evaluation (CHE) module provides an evaluation of the chemical hazards associated with the physiological effects of CWM. The CHE Module is used only when CWM in the form of MEC or MC are known or suspected of being present at an MRS.

Similar to the EHE Module, each data element is assigned a numeric value, and the sum of these values is the CHE Module score that is used to determine the corresponding CHE Module rating. If CWM is not known or suspected, then the CHE Module rating is No Known or Suspected CWM Hazard.

No historical or physical evidence was found during the RI that indicates CWM was present at either MRS. Based on RI results, MRS 01 and MRS 03 received the alternative CHE Module ratings of No Known or Suspected CWM Hazard for the CHE module.

6.4 HEALTH HAZARD EVALUATION MODULE

The Health Hazard Evaluation (HHE) module provides a consistent DoD-wide approach for evaluating the relative risk to human health and the environment posed by contaminants (i.e., MC) present at an MRS. The module has three factors that are as follows:

- **Contamination Hazard Factor:** This factor evaluates potential risk posed by contaminants and contributes a level of High, Medium, or Low based on Significant, Moderate, or Minimal contaminants present.
- **Migration Pathway Factor:** This factor assesses the potential for MC or incidental contaminants to migrate from an MRS and contributes a level of H, M, or L based on Evident, Potential, or Confined pathways.
- **Receptor Factor:** This factor evaluates the presence of receptors that may be exposed and contributes a level of H, M, or L based on Identified, Potential, or Limited receptors.

The HHE builds on the DoD Relative Risk Site Evaluation framework. The HHE evaluation factors are based on quantitative evaluation of MC and/or CERCLA hazardous substances. It also includes a qualitative evaluation of pathways, human receptors, and ecological receptors in the surface soil, groundwater, surface water, and sediment. The HHE does not address subsurface soils. In addition, the HHE does not consider air as a pathway due to the generally minimal risk through this medium from DoD munitions sites.

The H, M, and L levels for the three factors are combined in a matrix to obtain composite three-letter combination levels that integrate considerations of all three factors. The three-letter combination levels are organized by frequency and the combination of the frequencies result in the HHE Module Rating.

As previously noted no sources of MC were identified during the RI and no additional MC sampling was completed; therefore, both MRSs received alternative HHE Module ratings of No Known or Suspected MC Hazard.

6.5 MRSPP SCORES

Typically, each MRS is assigned an MRSPP Priority ranging from 1 to 8. Priority 1 indicates the highest potential hazard and Priority 8 indicates the lowest potential hazard. Only a site with a potential CWM Hazard can receive a Priority 1 rating. The priority is determined by selecting the highest rating among the EHE, CHE, and HHE Modules. However, MRS 01 and MRS 03 received alternative rankings in each module. The overall MRSPP priorities for MRS 01 and MRS 03 were determined as follows:

- EHE Ratings of No Known or Suspected Explosive Hazard
- CHE Ratings of No Known or Suspected CWM Hazard
- HHE Ratings of No Known or Suspected MC Hazard.

Therefore, MRS 01 and MRS 03 were assigned the alternative rating of No Known or Suspected Hazard.

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7. SUMMARY AND RECOMMENDATIONS

This section summarizes the key findings of the RI and presents recommendations based on the results of the RI at the Assateague Island FUDS.

7.1 SUMMARY OF KEY FINDINGS

7.1.1 Munitions Response Site 01

At MRS 01, a DGM survey was performed over a total of 50 linear miles (20 acres). Based on the smallest munition item of interest (i.e., 20-mm projectile) anomalies were selected for the intrusive investigation to support the finding, at a 95 percent confidence level, that there is less than 0.5 MEC per acre within the RIA. The DGM data were reviewed to identify potential CMUAs and to identify anomalies for intrusive investigation. One CMUA was identified at MRS 01 associated with the former target area. All the MD identified on land during the RI was located in and around the target area and was consistent with MD historically identified at MRS 01. The target area has been revised slightly to encompass all the intrusive locations where MD was observed and consists of approximately 27.6 acres. Based on the intrusive and DGM data collected during the RI, statistically there are approximately 20 MD items per acre within the target area. Therefore, potentially 501 MD items may still remain within the revised target area. The amount of MD estimated remaining in the revised target area has been extrapolated from the amount of MD that was identified on the DGM transects within the revised target area during the RI. No MD was identified on land outside the revised target area.

In the surf zone, five anomalies were not fully investigated after digging to 60 in. as the excavation areas were filling back in with collapsing sands. These anomalies are likely remnants of the burial pit removed during the 1998 TCRA. The TCRA was performed in a limited area at low tides near the surf zone and was terminated at 48 inches or (4 ft.) bgs. The elevated number of anomalies combined with the MD observed suggest the MD is coming from the target area and/or remnants of the burial pits as they washed out to sea. To date, only MD from 2.25-in. practice rockets, 3.25-in. practice rockets, 3.5-in. practice rockets, 5-in. practice rockets, 3-lb Mk 23 practice bombs, 4.5-lb Mk 43 practice bombs, and 20-mm TP projectile (one TP projectile and casing) have been identified at MRS 01. No MEC has been identified at MRS 01.

No MEC (no live munitions or explosives of concern) has been found at MRS 01 and all MD identified to date has been fired, expending the potential explosive components. The RI did not identify any MEC; however, MEC presence is possible based only on historical evidence of munitions use (practice bombs with spotting charges). Therefore, the likelihood of encounter with MEC is considered “Seldom” (infrequent). In the event that such a rare encounter would occur with a practice bomb containing an intact spotting charge, the injury would be considered “Modest” resulting potentially in emergency medical treatment. The likelihood of energy to be imparted is “Modest” given the property use as a park and the munitions sensitivity to detonation is “Low” since the munitions items used only propellant and black powder. The result of the Risk Methodology evaluation for site conditions for MRS 01 is **Acceptable** (i.e., negligible risk to an explosive hazard at site).

7.1.2 Munitions Response Site 03

At MRS 03, DGM survey was performed over a total of 83.4 linear miles (33.1 acres) within MRS 03. Based on the smallest munition item of interest observed (i.e., 20-mm projectile) anomalies were selected for intrusive investigation to support the finding, at a 95 percent confidence level, that there is less than 0.5 MEC per acre within the RIA. The DGM data were reviewed to identify potential CMUAs and to identify anomalies for intrusive investigation. No CMUAs were identified within MRS 03. A total of 219 subsurface anomalies were investigated on land and 41 anomalies in the water, none of which were attributed to MD. No MEC has been identified at MRS 03 and historically only two pieces of MD from 5-in. practice rockets were reportedly found at MRS 03. Based on these observations it is unlikely MRS 03 was used significantly by the Navy as a practice bombing and strafing range, if it was used at all.

The CSM for MRS 03 was built with all available information, which includes historical information (i.e., Navy spotter recollections and previous investigations) and NPS and USACE findings (to include the isolated findings of MD in the area labeled as MRS 03). The areas were investigated during the RI in accordance with the Work Plan to determine presence of a range. No additional information was found in historical records or during the RI to indicate any other location(s) should be investigated as a potential range area. The DQOs, include determining presence/absence and nature and extent, were completed during the RI to support the conclusion that MRS 03 was not significantly used by the Navy, if at all.

Furthermore, it should be noted that aside from the two pieces of MD historically reported in MRS 03 (where an extensive RI has been performed), no MD has been historically identified outside of MRS 01 in the past 70 years. Considering the amount of MD that has washed ashore from MRS 01, it is unlikely remnants of MRS 03 would not likely have been uncovered and noticed over time if present. Also, there was no information found to date which would suggest that the spotter's recollections were incorrect.

As no MEC has been found at MRS 03, the encounter with explosive munitions is considered "Unlikely" and severity of injury is "Improbable", and the likelihood of energy to be imparted is "Inconsequential" and the munitions sensitivity to detonation is "Not Sensitive". The result of the Risk Methodology evaluation for site conditions for MRS 03 is **Acceptable** (i.e., negligible risk to an explosive hazard at site).

7.2 RECOMMENDATIONS

Training activities on Assateague Island consisted of air-to-ground target practice, using practice rockets, and practice bombs as well as inert 20-mm projectiles used for strafing. To date, MDAS from the following munitions have been identified at MRS 01: 2.25-in. practice rockets, 3.25-in. practice rockets, 3.5-in. practice rockets, 5-in. practice rockets, 3-lb Mk 23 practice bombs, 4.5-lb Mk 43 practice bombs, and 20-mm TP projectiles (casing) along with two pieces of MD from 5-in. practice rockets which were reportedly found at MRS 03. No evidence of live munitions (items containing explosives) has been found at MRS 01 or MRS 03.

The 2.25-in. practice rockets, 3.25-in. practice rockets, 3.5-in. practice rockets, 5-in. practice rockets and the 20-mm TP projectile can contain propellant. However, it is likely that all the

propellant from the rockets and 20-mm projectiles had been expended due to the firing at the targets on Assateague Island. Also, the 3-lb Mk 23 and the 4.5-lb Mk 43 practice bombs can potentially still contain spotting charges after being dropped if they did not function as intended. The spotting charges used with the practice bombs were blank 10-gauge shotgun shells, the casings were made of cardboard during this time period and would have been exposed to the elements for 70 plus years; therefore, unlikely the spotting charge would remain intact. In addition, very few practice bombs and 20-mm projectiles were uncovered, less than one percent of the MDAS. Over ninety-nine percent of the MDAS was associated with the spent practice rockets. Neither spotting charges nor propellant was found in any of the items. Based on the results of the RI, no MEC was identified and it is anticipated that future encounters with similar MPPEH identified at MRS 01 would also be MDAS.

Based on the results of the RI and all the previous findings at the FUDS, no MEC has ever been identified to date at either MRS, nor is it anticipated in the future that MEC will be encountered. Therefore, it is concluded that acceptable site conditions exist (i.e., negligible risk is posed by the FUDS) and no further action is recommended for MRS 01 and MRS 03.

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8. REFERENCES

- Alion. 2007. *Final Site Inspection Report for Assateague Island. Project Number C03MD093001*. September.
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- National Oceanic and Atmospheric Administration. 2017. *Coastal Zone Management Act*. <https://coast.noaa.gov/czm/act/>, accessed on 12 July 2017.
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- Sudol, Taryn. 2014. *The Proposed Assateague Island Wilderness: Building Blocks for the Wilderness Character Monitoring Report*. Prepared for U.S. Fish & Wildlife Service, U.S. National Park Service. May.
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- . 1994. *Defense Environmental Restoration Program for Formerly Used Defense Sites Ordnance and Explosives, Archive Search Report (ASR) Findings for Assateague Island Project No.C03MD093001*.
- . 2003. *Summary of Staff Visit, Assateague Island*. CENAB-EN-HI (200-1c).
- . 2004. *Defense Environmental Restoration Program DERP FUDS Program Policy*. ER 200-3-1.
- . 2005. *Engineer Manual 200-1-10, Environmental Quality, Guidance for Evaluating Performance Based Chemical Data*. 30 June.
- . 2007. *Memorandum: Application of Munitions Response Site Prioritization Protocol (MRSP) for the Formerly Used Defense Site (FUDS) Military Munitions Response Program (MMRP) Site Inspection (SI) Program*.
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- . 2015. *Technical Guidance for Military Response Actions*. Engineer Manual 200-1-15. 30 October.
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Appendix A - Field Documentation

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**APPENDIX A-1: Assateague Island FUDS Project Number
Memorandum for Record (MFR)**

Note: This MFR clarifies the renumbering of the Rocket Range South MRS from MRS 02 up to through the SI Report and revised INPR to MRS 03.

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DEPARTMENT OF THE ARMY

REPLY TO
ATTENTION OF

CENAD-IIS/ES

MEMORANDUM FOR THE RECORD

SUBJECT: Correction to Project Number in the Revised Inventory Project Report (INPR),
Assateague Island Formerly Used Defense Site, C03~~DE~~0930, dated 22 March 2011

md

1. Subject INPR was revised to add a Military Munitions Response Program (MMRP) project, in accordance with the then current HQUSACE Implementation Guidance for FUDS MMRP Project Realignment dated 13 August 2007.
2. An MMRP project was added to the property, to reflect the delineation of distinct munitions response sites (MRS) into separate projects. This new project was referred to as Project 02, Rocket Range South & Burial Areas, in the above-cited INPR documentation.
3. The FUDS Management Information System (FUDSMIS) had previously "reserved" Project 02 for the realignment effort, originally to be conducted by the St. Louis District. The Baltimore District subsequently assumed the responsibility for realignment and delineation. After the INPR revision was approved and the new project data was uploaded to FUDSMIS, the project number of 03 was automatically assigned in FUDSMIS.
4. The correct project number for the Rocket Range South & Burial Areas project is 03. The INPR revision documents incorrectly state that the project number is 02.
5. The point of contact for this information is Julie Kaiser in the Baltimore District, at 443-986-3449.

Alan R. Koppel
Regional Program Manager
Formerly Utilized Defense Sites Program
CENAD-IIS/ES

13 JAN 2014
Date

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APPENDIX A-2: Daily Reports

Note: Worksheet #22: Equipment Testing, Inspection, and Quality Control from the UFP-QAPP is included prior to the Daily Reports as it summarizes the Measurement Quality Objectives that were used during the field effort.

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QAPP Worksheet #22: Equipment Testing, Inspection, and Quality Control

This worksheet documents procedures for performing testing, inspections, and QC for all field equipment. References to the applicable DFW and SOPs (Appendix C) are included. Where appropriate, the failure response will prescribe a Corrective Action (CA). Otherwise, a Corrective Action Request (CAR) and CA is required.

Measurement Quality Objective (MQO)	Definable Feature of Work (DFW)/SOP Reference	Frequency	Responsible Person/ Report Method/ Verified by	Acceptance Criteria^a	Failure Response
Hand-held sensor detection performance	Transect/Grid Stakeout-Surface Clearance-Target Reacquisition-Intrusive Investigation/ SOP 11, SOP 16, SOP 07	Daily	Field Tech/Logbook/Team Lead	Positive response of hand-held sensor to the seeds in the IVS.	CA: Make necessary adjustments, and re-verify
RTK GPS Accuracy	Grid Stakeout-Target Reacquisition-QC/ SOP 19, SOP 20 and SOP 16	Daily	Field Tech/Logbook/Team Lead	Positional error for the RTK GPS at a known monument will not exceed 2 in.	CA: Make necessary adjustments, and re-verify
Verify correct assembly	Digital Geophysical Mapping (DGM) Survey/SOP 19 and SOP 20	Once following assembly	Field Team Leader/Operations Manual/Project Geophysicist	As specified in Geonics EM61-MK2 Operations Manual.	CA: Make necessary adjustments, and re-verify
DGM Static Repeatability	DGM Survey/ SOP 19 and SOP 20	Beginning and end of each day	Data Processor /DGM QC Log/QC Geophysicist	Response (mean static spike minus mean static background) within 10 percent of predicted response for Channel 2.	CA: Make necessary adjustments, and re-verify
DGM Dynamic Positioning Repeatability (Instrument Verification Strip [IVS])	DGM Survey/ SOP 15, SOP 19 and SOP 20	Beginning and end of each day	Data Processor /DGM QC Log/QC Geophysicist	Position offset of seed items ≤ 1 ft or as determined and documented IVS Report.	CAR/CA

Measurement Quality Objective (MQO)	Definable Feature of Work (DFW)/SOP Reference	Frequency	Responsible Person/ Report Method/ Verified by	Acceptance Criteria ^a	Failure Response
DGM Dynamic Response Repeatability (IVS)	DGM Survey/ SOP 15, SOP 19 and SOP 20	Beginning and end of each day	Data Processor /DGM QC Log/QC Geophysicist	Response amplitudes ≥ 75 percent of minimum expected response	CAR/CA
DGM In-line measurement spacing	DGM Survey/ SOP 19 and SOP 20	Verified for each data file	Data Processor /DGM QC Log/QC Geophysicist	90 percent ≤ 6 in. between successive measurements	CAR/CA assumption: data set fails, (re-collect portions that fail)
DGM Transect Spacing	DGM Survey/Geophysical Investigation Plan	Verified for each RIA sub area (e.g., RIA-1, beach)	Data Processor /DGM QC Log/QC Geophysicist	VSP Post-Survey Probability of Target Transversal $>90\%$	CAR/CA assumption: Gaps require fill-in DGM lines or mag and dig to achieve required coverage
DGM Grid Coverage	DGM Survey/ Geophysical Investigation Plan	Verified for each grid	Data Processor/DGM QC Log/QC Geophysicist	>90 percent Cross-line spacing ≤ 2.5 ft, $>95\% \leq 3.3$ ft, (excluding site-specific access limitations, e.g., obstacles, unsafe terrain)	CAR/CA assumption: Gaps require fill-in DGM lines or mag and dig to achieve required coverage
DGM dynamic detection repeatability	DGM Survey/ SOP 19 and SOP 20	Once daily	Data Processor/blind seed tracking log/QC Geophysicist	Peak Response ≥ 75 percent of minimum expected response	CAR/CA
DGM dynamic positioning repeatability	DGM Survey/ SOP 19 and SOP 20	Once daily	Data Processor/blind seed tracking log/QC Geophysicist	Position offset of seed items ≤ 3.28 ft for transects and ≤ 2.25 ft for grids.	CAR/CA



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 11/7/17

REPORT NO.: 1

Note: This form is to be completed in lieu of a SUXOS Dailey Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Preparation for DGM of water areas of MRS 1 and 3

LOCATION OF THE WORK: EA office (Ocean Pines)

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – N/A

Personnel/Position/Hours Onsite

Personnel/Position/Hours Onsite

John Morris – SSHO/alt Boat Operator/Geophysicist/ 8 hours
Mike McGuire – Senior Geophysicist/QC Geophysicist / 8 hours
Michael Stephens – Site Supervisor/ Boat Operator / 8 hours
Anna DeGeorge – Data collection/ alt Boat Operator / 8 hours

USACE Oversight –

David King
Todd Steelman

1b. WORK PERFORMED TODAY:

Mobilization to include delivery and set up of DGM equipment, health and safety overview meeting, site specific training, and kick off meeting with USACE personnel.

1c. EQUIPMENT USED:

Boats, DGM equipment, GPS, and sensors.

2. TYPE AND RESULTS OF INSPECTION:

Preparatory inspection of Mobilization, IVS, and Marine Geophysical Survey, included inspection of equipment and equipment set up for mobilization.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

None.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

IVS strip deployment is expected on Thursday, 11/9 with survey activities anticipated to begin on Friday, 11/10.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

Julie Kaiser - USACE PM



Assateague Island Daily Report 11/7/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for water DGM operations to include, general AHA, Large Hand tools AHA and Boating AHAs. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 4

Number of subcontractor personnel attending = 0

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

Assembly and testing of DGM equipment and sensors. Prepare equipment for IVS.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

11/7/17

Contractor's Authorized Representative Signature and Date



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 11/8/17

REPORT NO.: 2

Note: This form is to be completed in lieu of a SUXOS Dailey Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: DGM of water areas MRS 1 and 3

LOCATION OF THE WORK: EA office (Ocean Pines)

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – N/A

Personnel/Position/Hours Onsite

Personnel/Position/Hours Onsite

John Morris – SSHO/alt Boat Operator/Geophysicist/ 9 hours
Mike McGuire – Senior Geophysicist/QC Geophysicist / 9 hours
Michael Stephens – Site Supervisor/ Boat Operator / 9 hours
Anna DeGeorge – Data collection/ alt Boat Operator / 9 hours

USACE Oversight –

David King
Todd Steelman (not on site)

1b. WORK PERFORMED TODAY:

Mobilization to include set up of DGM equipment and static tests. GPS and magnetometer validations.

1c. EQUIPMENT USED:

DGM equipment and sensors, small hand tools.

2. TYPE AND RESULTS OF INSPECTION:

Preparatory inspection of Mobilization, IVS, and Marine Geophysical Survey, included inspection of equipment and equipment set up for mobilization.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

Preformed static tests with both magnetometers in field next to EA Ocean Pines office. Preformed GPS Validation at NGS Tidal Benchmark at the Ocean City Inlet Boardwalk.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

Strong N winds (20-25 knots sustained, gusting over 30 knots) forecasted on Friday, 11/10. If the forecast holds, survey activities most likely will be suspended on Friday due to safety concerns.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 11/8/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Discussed equipment set up, logistics of operations, and safety concerns, contact info, etc.

Number of Contractor personnel attending = 4

Number of subcontractor personnel attending = 0

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

IVS strip pre-survey and deployment, IVS survey.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

11/8/17

Contractor's Authorized Representative Signature and Date



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 11/9/17

REPORT NO.: 3

Note: This form is to be completed in lieu of a SUXOS Dailey Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: DGM of water areas MRS 1 and 3

LOCATION OF THE WORK: EA office (Ocean Pines), West Ocean City Marina

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – N/A

Personnel/Position/Hours Onsite

Personnel/Position/Hours Onsite

John Morris – SSHO/alt Boat Operator/Geophysicist/ 10 hours
Mike McGuire – Senior Geophysicist/QC Geophysicist / 10 hours
Michael Stephens – Site Supervisor/ Boat Operator / 10 hours
Anna DeGeorge – Data collection/ alt Boat Operator / 10 hours

USACE Oversight –

David King
Todd Steelman (not on site)

1b. WORK PERFORMED TODAY:

Mobilization to include set up of DGM equipment, dynamic and static tests, launch of survey vessels.

1c. EQUIPMENT USED:

DGM equipment and sensors, small hand tools, and survey vessels.

2. TYPE AND RESULTS OF INSPECTION:

Preparatory inspections of Mobilization, IVS, and Marine Geophysical Survey, included inspection of equipment and equipment set up for mobilization.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

Launched both survey vessels, constructed towfish assembly for magnetometers, and performed static tests with both magnetometers at the West Ocean City boat ramp. Performed dynamic testing of shallow water geophysical system (magnetometer platform and RTK GPS) in marina to assess platform stability and system noise.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

Strong N winds (25-30 knots sustained, gusting over 40 knots) forecasted on Friday, 11/10. Survey activities will most likely will be suspended on Friday due to safety concerns.



Assateague Island Daily Report 11/9/2017

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent:*)

None.

7. HEALTH and SAFETY: (*Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.*)

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Discussed equipment set up, logistics of operations, and safety concerns, emergency personnel contact information, etc.

Number of Contractor personnel attending = 4 Number of subcontractor personnel attending = 0

8. WASTE MATERIAL: (*Include quantities of materials*)

None.

9. TOMORROW'S EXPECTATIONS:

Additional DGM survey preparations.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

11/9/17

Contractor's Authorized Representative Signature and Date



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 11/10/17

REPORT NO.: 4

Note: This form is to be completed in lieu of a SUXOS Dailey Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: DGM of water areas MRS 1 and 3

LOCATION OF THE WORK: EA office (Ocean Pines), West Ocean City Marina

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – N/A

Personnel/Position/Hours Onsite

Personnel/Position/Hours Onsite

John Morris – SSHO/alt Boat Operator/Geophysicist/ 10 hours
Mike McGuire – Senior Geophysicist/QC Geophysicist / 10 hours
Michael Stephens – Site Supervisor/ Boat Operator / 10 hours
Anna DeGeorge – Data collection/ alt Boat Operator / 10 hours

USACE Oversight –

David King (not on site)

Todd Steelman (not on site)

1b. WORK PERFORMED TODAY:

Mobilization to include set up of DGM equipment, additional static tests, and construction of benthic sled for Oceanside geophysical survey activities.

1c. EQUIPMENT USED:

DGM equipment and sensors, small hand tools.

2. TYPE AND RESULTS OF INSPECTION:

Additional inspections of Marine Geophysical Survey equipment.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

Conducted additional static tests of geophysical gear, and conducted offset tests for GPS systems.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



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7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Discussed equipment set up, logistics of operations, and safety concerns, emergency personnel contact information, etc.

Number of Contractor personnel attending = 4

Number of subcontractor personnel attending = 0

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

IVS pre-survey and IVS deployment.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

11/10/17

Contractor's Authorized Representative Signature and Date



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 11/11/17

REPORT NO.: 5

Note: This form is to be completed in lieu of a SUXOS Dailey Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006

EA Engineering, Science, and Technology, Inc., PBC (EA)

EA Project No: 62732.06

DESCRIPTION OF WORK: DGM of water areas MRS 1 and 3

LOCATION OF THE WORK: Sinepuxent Bay (IVS location)

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – N/A

Personnel/Position/Hours Onsite

Personnel/Position/Hours Onsite

John Morris – SSHO/alt Boat Operator/Geophysicist/ 11 hours
Mike McGuire – Senior Geophysicist/QC Geophysicist / 11 hours
Michael Stephens – Site Supervisor/ Boat Operator / 11 hours
Anna DeGeorge – Data collection/ alt Boat Operator / 11 hours

USACE Oversight –

David King (not on site)

Todd Steelman (not on site)

1b. WORK PERFORMED TODAY:

Static tests of DGM equipment, pre-survey of IVS area, IVS deployment and survey.

1c. EQUIPMENT USED:

DGM equipment and sensors, small hand tools, survey vessels.

2. TYPE AND RESULTS OF INSPECTION:

Static tests of DGM equipment performed and functional.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

IVS pre-survey, IVS set up and IVS survey conducted.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 11/11/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Discussed equipment set up, logistics of operations, and safety concerns, emergency personnel contact information, etc.

Number of Contractor personnel attending = 4

Number of subcontractor personnel attending = 0

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

DGM survey activities on the bayside of MRS-01.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

11/11/17

Contractor's Authorized Representative Signature and Date



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 11/12/17

REPORT NO.: 6

Note: This form is to be completed in lieu of a SUXOS Dailey Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: DGM of water areas MRS 1 and 3

LOCATION OF THE WORK: Sinepuxent Bay MRS 1

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – N/A

Personnel/Position/Hours Onsite

Personnel/Position/Hours Onsite

John Morris – SSHO/alt Boat Operator/Geophysicist/ 11 hours
Mike McGuire – Senior Geophysicist/QC Geophysicist / 11 hours
Michael Stephens – Site Supervisor/ Boat Operator / 11 hours
Anna DeGeorge – Data collection/ alt Boat Operator / 11 hours

USACE Oversight –

David King (not on site)
Todd Steelman (not on site)

1b. WORK PERFORMED TODAY:

Static tests of DGM equipment, IVS survey run and DGM survey activities in the back bay portion of MRS-01.

1c. EQUIPMENT USED:

DGM equipment and sensors, small hand tools, survey vessels.

2. TYPE AND RESULTS OF INSPECTION:

Static tests of DGM equipment performed and functional, IVS survey responses as expected.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

Static tests and IVS survey.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 11/12/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Discussed equipment set up, logistics of operations, and safety concerns, emergency personnel contact information, etc.

Number of Contractor personnel attending = 4

Number of subcontractor personnel attending = 0

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

Rain anticipated tomorrow AM. Will attempt to survey the back bay of MRS-03 if weather allows.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

11/12/17

Contractor's Authorized Representative Signature and Date



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 11/13/17

REPORT NO.: 7

Note: This form is to be completed in lieu of a SUXOS Dailey Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: DGM of water areas MRS 1 and 3

LOCATION OF THE WORK: Sinepuxent Bay, Chincoteague Bay

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – N/A

Personnel/Position/Hours Onsite

Personnel/Position/Hours Onsite

John Morris – SSHO/alt Boat Operator/Geophysicist/ 12 hours
Mike McGuire – Senior Geophysicist/QC Geophysicist / 12 hours
Michael Stephens – Site Supervisor/ Boat Operator / 12 hours
Anna DeGeorge – Data collection/ alt Boat Operator / 12 hours

USACE Oversight –

David King (not on site)
Todd Steelman (not on site)

1b. WORK PERFORMED TODAY:

Static tests of DGM equipment, IVS survey run and DGM survey activities in the back bay portion of MRS-03.

1c. EQUIPMENT USED:

DGM equipment and sensors, small hand tools, survey vessels.

2. TYPE AND RESULTS OF INSPECTION:

Static tests of DGM equipment performed and functional, IVS survey responses as expected.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

Static tests and IVS survey.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



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7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Discussed equipment set up, logistics of operations, and safety concerns, emergency personnel contact information, etc.

Number of Contractor personnel attending = 4

Number of subcontractor personnel attending = 0

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

High winds anticipated tomorrow. Will most likely stand down from survey activities and prep DGM equipment for Oceanside work.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

11/13/17

Contractor's Authorized Representative Signature and Date



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 11/15/17

REPORT NO.: 8

Note: This form is to be completed in lieu of a SUXOS Dailey Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: DGM of water areas MRS 1 and 3

LOCATION OF THE WORK: Sinepuxent Bay, Chincoteague Bay

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – N/A

Personnel/Position/Hours Onsite

Personnel/Position/Hours Onsite

John Morris – SSHO/alt Boat Operator/Geophysicist/ 11 hours
Mike McGuire – Senior Geophysicist/QC Geophysicist / 0 hours
Michael Stephens – Site Supervisor/ Boat Operator / 11 hours
Anna DeGeorge – Data collection/ alt Boat Operator / 11 hours

USACE Oversight –

David King (not on site)
Todd Steelman (not on site)

1b. WORK PERFORMED TODAY:

Deployment of tide gauge in Chincoteague Bay and sidescan sonar survey in MRS-03 bayside.

1c. EQUIPMENT USED:

Sidescan sonar equipment and sensors, small hand tools, survey vessels.

2. TYPE AND RESULTS OF INSPECTION:

Sidescan sonar inspection found to be functional and responding as expected.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

None.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 11/15/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Discussed equipment set up, logistics of operations, and safety concerns, emergency personnel contact information, etc.

Number of Contractor personnel attending = 3

Number of subcontractor personnel attending = 0

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

Deployment of Oceanside tide gauge and DGM survey activities at MRS-01 ocean side of MRS.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

11/15/17

Contractor's Authorized Representative Signature and Date



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 11/16/17

REPORT NO.: 9

Note: This form is to be completed in lieu of a SUXOS Dailey Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: DGM of water areas MRS 1 and 3

LOCATION OF THE WORK: Sinepuxent Bay, Atlantic Ocean

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – N/A

Personnel/Position/Hours Onsite

Personnel/Position/Hours Onsite

John Morris – SSHO/alt Boat Operator/Geophysicist/ 11 hours
Mike McGuire – Senior Geophysicist/QC Geophysicist / 11 hours
Michael Stephens – Site Supervisor/ Boat Operator / 11 hours
Anna DeGeorge – Data collection/ alt Boat Operator / 11 hours

USACE Oversight –

David King (not on site)

Todd Steelman (not on site)

1b. WORK PERFORMED TODAY:

Deployment of tide gauge in the Atlantic Ocean, mobilization of survey vessel for open ocean work, and IVS run with open ocean sled.

1c. EQUIPMENT USED:

DGM equipment and sensors, small hand tools, survey vessels.

2. TYPE AND RESULTS OF INSPECTION:

Static tests of DGM equipment performed and functional, IVS survey responses as expected.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

Static tests and IVS survey.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



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7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Discussed equipment set up, logistics of operations, and safety concerns, emergency personnel contact information, etc.

Number of Contractor personnel attending = 4

Number of subcontractor personnel attending = 0

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

DGM survey activities at MRS-01.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

11/16/17

Contractor's Authorized Representative Signature and Date



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 11/17/17
REPORT NO.: 10

Note: This form is to be completed in lieu of a SUXOS Dailey Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: DGM of water areas MRS 1 and 3

LOCATION OF THE WORK: Sinepuxent Bay, Atlantic Ocean

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – N/A

Personnel/Position/Hours Onsite

Personnel/Position/Hours Onsite

John Morris – SSHO/alt Boat Operator/Geophysicist/ 12 hours
Mike McGuire – Senior Geophysicist/QC Geophysicist / 12 hours
Michael Stephens – Site Supervisor/ Boat Operator / 12 hours
Anna DeGeorge – Data collection/ alt Boat Operator / 12 hours

USACE Oversight –

David King (not on site)
Todd Steelman (not on site)

1b. WORK PERFORMED TODAY:

DGM survey activities on the Ocean side of Assateague Island in MRS-01.

1c. EQUIPMENT USED:

DGM equipment and sensors, small hand tools, survey vessels.

2. TYPE AND RESULTS OF INSPECTION:

Static tests of DGM equipment performed and functional, IVS survey responses as expected.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

Static tests and IVS survey.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

Based on a review of sidescan data, what appears to be an uncharted shipwreck was discovered in MRS-01. Wreck snagged gradiometer sled and caused casing on magnetometer cable to split. Cable still functional.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



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7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Discussed equipment set up, logistics of operations, and safety concerns, emergency personnel contact information, etc.

Number of Contractor personnel attending = 4

Number of subcontractor personnel attending = 0

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

Strong winds and weather expected all weekend. Field crew will demob tomorrow, with survey activities expected to resume on Monday, 11/20.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

11/17/17

Contractor's Authorized Representative Signature and Date



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 11/20/17
REPORT NO.: 11

Note: This form is to be completed in lieu of a SUXOS Dailey Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: DGM of water areas MRS 1 and 3

LOCATION OF THE WORK: Sinepuxent Bay, Atlantic Ocean

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – N/A

Personnel/Position/Hours Onsite

Personnel/Position/Hours Onsite

John Morris – SSHO/alt Boat Operator/Geophysicist/ 12 hours
Michael Stephens – Site Supervisor/ Boat Operator / 12 hours
Anna DeGeorge – Data collection/ alt Boat Operator / 12 hours

USACE Oversight –
David King (not on site)
Todd Steelman (not on site)

1b. WORK PERFORMED TODAY:

DGM survey activities on the Oceanside of MRS-03. DGM for MRS 1 and MRS 3 is complete. Data is being processed.

1c. EQUIPMENT USED:

DGM equipment and sensors, small hand tools, survey vessels.

2. TYPE AND RESULTS OF INSPECTION:

Static tests of DGM equipment performed and functional, IVS survey responses as expected.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

Static tests and IVS survey.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 11/20/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Discussed equipment set up, logistics of operations, and safety concerns, emergency personnel contact information, etc.

Number of Contractor personnel attending = 3

Number of subcontractor personnel attending = 0

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

De-mobilization will occur which includes recovery of IVS ISO materials and bayside tide gauge remove boats from the water and and transport equipment to the warehouse.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

11/20/17

Contractor's Authorized Representative Signature and Date



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 11/21/17
REPORT NO.: 12

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: DGM of water areas MRS 1 and 3

LOCATION OF THE WORK: Sinepuxent Bay, Atlantic Ocean

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – N/A

Personnel/Position/Hours Onsite

Personnel/Position/Hours Onsite

John Morris – SSHO/alt Boat Operator/Geophysicist/ 8 hours
Anna DeGeorge – Data collection/ alt Boat Operator / 8 hours

USACE Oversight –
David King (not on site)
Todd Steelman (not on site)

1b. WORK PERFORMED TODAY:

Recovery of bayside tide gauge and IVS. Demobilization of survey vessels and DGM equipment. Sidescan sonar survey of IVS.

1c. EQUIPMENT USED:

Small hand tools and survey vessels.

2. TYPE AND RESULTS OF INSPECTION:

None.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

None.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



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7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Discussed equipment set up, logistics of operations, and safety concerns, emergency personnel contact information, etc.

Number of Contractor personnel attending = 2 Number of subcontractor personnel attending = 0

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

Demobilization of field personnel and equipment complete. Marine based data acquisition activities are complete. No activities planned.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

11/21/17

Contractor's Authorized Representative Signature and Date



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 11/27/17
REPORT NO.: 13

Note: This form is to be completed in lieu of a SUXOS Dailey Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Preparation for Intrusive investigation of water areas of MRS 1 and 3

LOCATION OF THE WORK: EA warehouse and MRS 1

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

Personnel/Position/Hours Onsite

No personnel onsite.

John Monk – UXO Safety QC/ 5 hours
Jeff Smith – Technician/ 5 hours

USACE Oversight –
Todd Steelman - not present

1b. WORK PERFORMED TODAY:

Mobilization to include transporting of magazines.

1c. EQUIPMENT USED:

Truck, trailer, hand tools, and magazines.

2. TYPE AND RESULTS OF INSPECTION:

None.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

None.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



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7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) including general AHA and Large Hand tools AHA. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 2

Number of subcontractor personnel attending = 0

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

Placement of Magazines. Grounding of Magazines.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

11/27/17

Contractor's Authorized Representative Signature and Date



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 11/28/17
REPORT NO.: 14

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Preparation for Intrusive investigation of water areas of MRS 1 and 3

LOCATION OF THE WORK: MRS 1 and 3.

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

Personnel/Position/Hours Onsite

No personnel onsite.

John Monk – UXO Safety QC/ 8 hours
Jeff Smith – Technician / 8 hours

USACE Oversight –
Todd Steelman - not present

1b. WORK PERFORMED TODAY:

Mobilization to include set up of magazines and grounding of Magazines. EA met with the EOTI dive personnel Tuesday afternoon (offsite) to go over the WP/APP, ESP, and APP with team personnel.

1c. EQUIPMENT USED:

Truck, trailer, magazines, small hand tools for grounding of magazines.

2. TYPE AND RESULTS OF INSPECTION:

Preparatory inspection of mobilization and magazine placement, included inspection of equipment and equipment set up for mobilization as well as mobilization activities to the placement sites. Includes inspection of magazine placement and grounding of Magazines. Inspections were acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

None.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

National Park Service visited the magazine sites and placed the magazines using NPS forklifts/personnel.



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7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 2

Number of subcontractor personnel attending = 0

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

Fencing of Magazines.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.



Contractor's Authorized Representative Signature and Date

11/28/17



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 11/29/17
REPORT NO.: 15

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Preparation for Intrusive investigation of water areas of MRS 1 and 3

LOCATION OF THE WORK: MRS 1 and 3.

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

John Monk – UXO Safety QC/ 8 hours
Jeff Smith – Technician / 8 hours

Personnel/Position/Hours Onsite

No personnel onsite. Refer to EOTI daily report (attached) for EOTI

USACE Oversight –

David King - not present
Todd Steelman - not present

1b. WORK PERFORMED TODAY:

Fencing of Magazines and inspection of magazines by electrician. EA met up with EOTI (offsite) at a local marina to inspect the EOTI boat and equipment and check certifications of personnel and equipment. Inspection of diving equipment and boat which were not used. Reviewed certifications for equipment with EOTI.

1c. EQUIPMENT USED:

Truck, trailer, fencing, small hand tools for grounding of magazines and setting up fencing.

2. TYPE AND RESULTS OF INSPECTION:

Preparatory phase inspection of diving personnel (certs and training), diving equipment, and boat. Equipment and personnel deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

Grounding test by certified electrician. MRS 3 Magazine passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.



Assateague Island Daily Report 11/29/2017

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

Electrician Roy Case visited the site to check grounding for magazines. EOTI team visited MRS 1 and 3 to observe conditions. Visitors included Moleski, Jeffrey –SUXOS/Dive Sup, Glikman, Alex - Tech 3/Diver, Heinrich, Frank - Tech 2/Diver, and Early, David Tech 2/Diver. Mike O'Neill Project Manager visited the site.

7. HEALTH and SAFETY: (*Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.*)

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 3

Number of subcontractor personnel attending = 0

8. WASTE MATERIAL: (*Include quantities of materials*)

None.

9. TOMORROW'S EXPECTATIONS:

Complete grounding check by the electrician in MRS 1. Inspection by Elbert A. Caraballo USACE Ordnance Explosive Safety Specialist. EOTI will begin diving.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.


Contractor's Authorized Representative Signature and Date 11/29/17



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/FS

Project #: C03MD093001/3

Report #: 3

Date: 11/29/17

Weather Conditions:

Clear and cold 40-68 degrees; winds: less than 10mph

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1		Uhaul	1	12
Scuba Equipment	Various				
Rental truck	1	8			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	10			
Glikman, Alex	Tech 3/Diver	10			
Heinrich, Frank	Tech 2/Diver	10			
Early, David	Tech 2/Diver	10			
Monk, John	QC/Safety	10			

Exposure Data

Previous Hours	84	Hours Today	52	Hours to Date	136
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Required		# Anomalies Reaq Today		# Anomalies Reaq to Date	
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

See QC Daily Report D-11 if applicable

QA Inspections / Results:

None.

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Other comments, additional information, and / or lessons learned:

Work performed today. Indicate location and include equipment used.

Site visit to MRS 1 and MRS 3 on Assateague Island to include Magazine areas. Also met with PM Mike O'Neill. Visual concept of back bay diving areas. Team acquired further equipment and conducted dive station prep. Dive Team met with and conducted an on-site brief with the boat captain of the Boat Surveyor. SUXOS continued to prep for USACE dive inspection on 30 November 2017.

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Date: 11/29/17

Work hours:

USACE:

Safety (Name): John Monk

Brush Clearance (Name):

Quality Control (QC – Name): John Monk

Surveyor (Name):

OPERATIONS

SUXOS (Name) Jeff Moleski

Team Operations

Team 1 (Name): Alex Glikman, Frank Heinrich, Dave Early (site survey of operations areas and dive station set up on dive boat.

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:

Grids Surveyed

Grids Cleared

Grids QC'ed

Grids QA'ed

Total Number of Digs

Number of MEC

Pounds of MD

Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 11/30/17

REPORT NO.: 16

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 1 and 3

LOCATION OF THE WORK: MRS 1.

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

John Monk/UXOSSO/QCS(See EOTI form)

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Frank Heinrich – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Tender and Diver in training/ (See EOTI form)
Jeremiah Kogan (Kogon Marine) – boat operator/10
Stephen Whitelock (Kogon Marine) – boat operator/10

USACE Oversight –

Todd Steelman - present

1b. WORK PERFORMED TODAY:

Inspection of magazine in MRS 1 by the electrician. EA met up with EOTI at the Marina adjacent to Sunset Marina. USACE inspected EOTI boat (Kogon Marine) and equipment and checked certifications of personnel and equipment. EA performed GPS check at Sunset Marina (Survey point is a screw in deck at slip F13 with coordinates of (UTM 18N meters WGS: 4242286.91N and 490900.32E).Began Diving in MRS 1. Refer to EOTI daily (attached) for details.

1c. EQUIPMENT USED:

Diving equipment and boats, hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Initial and follow on inspection of Mobilization activities. Mobilization activities were deemed acceptable. Elbert A. Caraballo USACE Ordnance Explosive Safety Specialist inspected EOTI diving equipment and certs.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

Grounding test by certified electrician for MRS 1 magazine. GPS function test - passed. All metal detectors function test (EOTI) - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

Elbert A. Caraballo USACE Ordnance Explosive Safety Specialist noted medical cert needed to specify acceptable to dive. Received additional paperwork and USACE approved. Also noted that Tender David Early needed additional paperwork to be considered as a diver. EOTI to complete paperwork and submit it to USACE.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.



Assateague Island Daily Report 11/30/2017

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

Electrician Roy Case. Mike O'Neill EA Project Manager.

7. HEALTH and SAFETY: (*Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.*)

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 3

Number of subcontractor personnel attending = 7

8. WASTE MATERIAL: (*Include quantities of materials*)

None.

9. TOMORROW'S EXPECTATIONS:

EOTI will continue diving.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

Jeff Moleski

11/30/17

Contractor's Authorized Representative Signature and Date



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/FS

Project #: C03MD093001/3

Report #: 4

Date: 11/30/17

Weather Conditions: Clear and cold 45-55 degrees; winds: less than 10mph

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1		Uhaul	1	12
Scuba Equipment	Various	6			
Rental truck	1	2			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	11			
Glikman, Alex	Tech 3/Diver	10			
Heinrich, Frank	Tech 2/Diver	10			
Early, David	Tech 2/Diver	10			
Monk, John (EA)	QC/Safety	10			
Conor O'Hara	GIS Technician	10			

Exposure Data

Previous Hours	134	Hours Today	61	Hours to Date	195
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Required	0	# Anomalies Reaq Today	5	# Anomalies Reaq to Date	5
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

See separate QC forms

QA Inspections / Results:

USACE OESS inspected diving crew. Approved to dive.

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Dave Early need to complete his 02, CPR, First Aid, hands on portion.

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Large dive boat made placing reac marks difficult. A smaller skiff will be used to acquire marks until a small marking boat can be located.

Other comments, additional information, and / or lessons learned:

Work performed today. Indicate location and include equipment used.

Dive team plus EA representatives met with the USACE representative to conduct a Dive Team Inspection. Dive team member Dave Early is allowed to work as a tender until he completes his required certification and the dive supervisor will be allowed to requal Dave Early in a controlled environment to get his dive quals up and completed. Team moved to MRS 01 Back Bay and conducted dive ops on BB06, BB10, BB09, BB08, BB07. Team walked to shallower waters to conduct reac on BB10-BB07.

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Date: 11/30/17

Work hours:

USACE:

Safety (Name): John Monk

Brush Clearance (Name):

Quality Control (QC – Name): John Monk

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski Supervised the Dive team inspection, dive supervisor on MRS01 Back Bay

Team Operations

Team 1 (Name): Alex Glikman, Frank Heinrich, Dave Early. Conducted reacquisition of anomalies BB10-BB07. (No Mec/MD found) NMRD on BB07 (Copenhagen can) BB10 (Crab pot)

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors: Elbert Caraballo USACE OESS

Totals to date:

Grids Surveyed
Grids Cleared
Grids QC'ed
Grids QA'ed

Total Number of Digs
Number of MEC
Pounds of MD
Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 12/01/17

REPORT NO.: 17

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 1 and 3

LOCATION OF THE WORK: MRS 1.

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

John Monk/UXOSSO/QCS (See EOTI form)
Connor O'Hara GIS technician (See EOTI form)

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Frank Heinrich – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Tender and Diver in training/ (See EOTI form)
Stephen Whitlock – Kogon Marine (boat operator)/10

USACE Oversight –
Todd Steelman - present

1b. WORK PERFORMED TODAY:

Diving on anomalies in MRS 1 back bay area.

1c. EQUIPMENT USED:

Diving equipment and boats, hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Follow on inspection of dive activities by UXOSSO/QCS. Dive activities deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

GPS function test (EA) - passed. All metal detectors function test (EOTI) - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 12/01/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 2

Number of subcontractor personnel attending = 4

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

EOTI will continue diving on anomalies.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.


Jeff Moleski

12/01/17

Contractor's Authorized Representative Signature and Date



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/F

Project #: C03MD093001/3

Report #: 5 Date: 12/01/17

Weather Conditions: Clear and cold 43-56 degrees; winds: less than 15-20mph

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1	20	Uhhaul	1	12
Scuba Equipment	Various	8			
Rental truck	1	2			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	11			
Glikman, Alex	Tech 3/Diver	10			
Heinrich, Frank	Tech 2/Diver	10			
Early, David	Tech 2/Diver	10			
Monk, John (EA)	QC/Safety	10			
Conor Ohara		10			

Exposure Data

Previous Hours	195	Hours Today	61	Hours to Date	256
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Reaquired	5	# Anomalies Reaq Today	7	# Anomalies Reaq to Date	12
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

See separate QC forms

QA Inspections / Results:

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Dave Early will complete his 02, CPR, First Aid, hands on portion on 2 Dec 2017

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Large dive boat can not get the divers to the remaining marks at MRS 01 Back Bay. The large dive boat can be used to dive MRS 01 Ocean side on Monday. To safely and accurately finish the Back Bay a 20ft Zodiac with a 20hp engine will suffice.

Other comments, additional information, and / or lessons learned:

Work performed today. Indicate location and include equipment used.

Dove the following marks on MRS 01 Back Bay: BB05 Aluminum can (NMRD), BB04 Aluminum Can (NMRD) BB3 (NC) (diver followed Work Plan procedures) BB02/01 (NC) (diver followed Work Plan procedures), BB06 Aluminum can x 2 (diver followed Work Plan procedures), BB06 mark was also reverified for accuracy., BB14, 24in braided cable 3/8 inch thick (NMRD), BB13, 24 inch square x 3/8in thick rebar crab pot end. (NMRD)

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Date: 12/01/17

Work hours:

USACE:

Safety (Name): John Monk

Brush Clearance (Name):

Quality Control (QC – Name): John Monk

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski: Diving supervisor and SUXOS for MRS 01

Team Operations

Team 1 (Name): Alex Glikman, Frank Heinrich, Dave Early. BB06,05,04,03,02,01,13,14

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:

Grids Surveyed

Grids Cleared

Grids QC'ed

Grids QA'ed

Total Number of Digs

Number of MEC

Pounds of MD

Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 12/04/17
REPORT NO.: 18

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 1 and 3

LOCATION OF THE WORK: MRS 1.

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

John Monk/UXOSSO/QCS (See EOTI form)
Connor O'Hara GIS technician/10 hours

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Frank Heinrich – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Tender and Diver in training/ (See EOTI form)
Stephen Whitelock – Kogon Marine (boat operator)/10

USACE Oversight –
Todd Steelman - present

1b. WORK PERFORMED TODAY:

Diving on anomalies in MRS 1 ocean area. Refer to EOTI daily (attached) for details.

1c. EQUIPMENT USED:

Diving equipment and boats, hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Follow on inspection of dive activities by UXOSSO/QCS. Dive activities deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

GPS function test (EA) - passed. All metal detectors function test (EOTI) - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 12/04/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 2

Number of subcontractor personnel attending = 5

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

EOTI will continue diving on anomalies.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

Jeff Moleski SUXOS/DIVE SUP

12/04/17

Contractor's Authorized Representative Signature and Date



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/FS

Project #: C03MD093001/3

Report #: 6 Date: 12/04/17

Weather Conditions: Clear and cold 33-51 degrees; winds: less than 7mph

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1	30	Uhaul	1	12
Scuba Equipment	Various	24			
Rental truck	1	2			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	11			
Glikman, Alex	Tech 3/Diver	10			
Heinrich, Frank	Tech 2/Diver	10			
Early, David	Tech 2/Diver	10			
Monk, John (EA)	QC/Safety	10			

Exposure Data

Previous Hours	236	Hours Today	51	Hours to Date	287
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Reaquired	5	# Anomalies Reaq Today	5	# Anomalies Reaq to Date	17
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

QA Inspections / Results:

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Dave Early completed his CPR/First Aid and O2 Provider. Dave Early completed his quals dives.

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Dive team will change out the Fisher X1280 for a Whites Surf PI Dual field metal detector. Step one to change current attack mode on requiring anomalies. Step two will be to ensure that we are on the right location when the mark is dropped.

Other comments, additional information, and / or lessons learned: Using the RTK on a vessel at sea to drop a mark sub meter is not an advisable method. Request that a Trimble GEOX7 or other be used to require marks at sea from a smaller vessel, apart from the dive platform. Water temp is 51 degrees and it is having an effect on the divers as well.

Work performed today. Indicate location and include equipment used.

Dives were conducted on MRS01 Ocean side. OC66, OC65, NC on both of those marks. Team moved to a higher MV reading on OC77 and OC76. NC on both of those marks. Diver conducted circle search and dive procedures on all marks dove today IAW the WP. Team pulled and redropped marks on several locations and redove those marks. Requalified Dave Early as a UXO diver. Tomorrows plan is to dive the Back Bay marks from the land and use a ML3 metal detector and re-check MRS)1 BB 07,08,09,12,17, and 15 if tides allow.

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Jeff Moleski SUXOS/ Dive Sup Date: 12/04/17

Work hours:

USACE:

Safety (Name): John Monk

Brush Clearance (Name):

Quality Control (OC – Name): John Monk

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski: Diving supervisor and SUXOS for MRS 01

Team Operations

Team 1 (Name): Alex Glikman, Frank Heinrich, Dave Early. OC 65,66,76,77 (requalified Dave Early as a UXO diver)

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:

Grids Surveyed

Grids Cleared

Grids QC'ed

Grids QA'ed

Total Number of Digs

Number of MEC

Pounds of MD

Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 12/05/17

REPORT NO.: 19

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 1 and 3

LOCATION OF THE WORK: MRS 1.

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

John Monk/UXOSSO/QCS (See EOTI form)
Connor O'Hara GIS technician/10 hours

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Frank Heinrich – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Tender and Diver in training/ (See EOTI form)

USACE Oversight –
Todd Steelman - present

1b. WORK PERFORMED TODAY:

Diving on anomalies in MRS 1 back bay area. Refer to EOTI daily (attached) for details.

1c. EQUIPMENT USED:

Diving equipment and boats, hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Follow on inspection of dive activities by UXOSO/QCS. Dive activities deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

GPS function test (EA) - passed. All metal detectors function test (EOTI) ML3 Magnetometer - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 12/05/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 2

Number of subcontractor personnel attending = 4

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

EOTI will continue diving on anomalies.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct, and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

Jeff Moleski SUXOS/DIVE SUP

12/05/17

Contractor's Authorized Representative Signature and Date



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/FS

Project #: C03MD093001/3

Report #: 7

Date: 12/05/17

Weather Conditions:

Clear and cold 45-59 degrees; winds: 10-20mph

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1	30	Uhhaul	1	14
Scuba Equipment	Various	24			
Rental truck	1	20			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	11			
Glikman, Alex	Tech 3/Diver	10			
Heinrich, Frank	Tech 2/Diver	10			
Early, David	Tech 2/Diver	10			
Monk, John (EA)	QC/Safety	10			

Exposure Data

Previous Hours	287	Hours Today	51	Hours to Date	338
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Reaquired	17	# Anomalies Reaq Today	4	# Anomalies Reaq to Date	21
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

QA Inspections / Results:

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Other comments, additional information, and / or lessons learned:

Work performed today. Indicate location and include equipment used.

Received an ML3 metal detector, team walked in from the beach and checked anomalies, BB7,08,09,12,17,15,16. No MEC or MD was encountered on reinvestigation. BB07 Same as reported, BB08 Item deeper than 3ft, BB09 Rust clump broke apart upon investigation, BB12 NC, BB17 NMRD 12" Scrap metal solid pipe, BB15 2in x 4 in wire mesh, BB16 NMRD 24"x24" rebar crabpot end, We were not able to reverify or dig on the following marks due to water depth BB01, BB02, BB03, BB04, BB05, BB11. Dive team aquired a closer certified air source to jam SCUBA and Bail Out Bottles. Tomorrow: We are planning on diving/walking shallow contacts in MRS03 Back Bay.

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Jeff Moleski SUXOS/ Dive Sup Date:

12/05/17

Work hours:

USACE:

Todd Steelman

Safety (Name): John Monk

Brush Clearance (Name):

Quality Control (QC – Name): John Monk

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski: Diving supervisor and SUXOS for MRS 01

Team Operations

Team 1 (Name): Alex Glikman, Frank Heinrich, Dave Early: Intrusive operations in MRS01 Back Bay, BB7,08,09,12,17,15,16

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:

Grids Surveyed

Grids Cleared

Grids QC'ed

Grids QA'ed

Total Number of Digs

Number of MEC

Pounds of MD

Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 12/06/17

REPORT NO.: 20

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006

EA Engineering, Science, and Technology, Inc., PBC (EA)

EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 1 and 3

LOCATION OF THE WORK: MRS 1 and MRS 3

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

John Monk/UXOSSO/QCS (See EOTI form)
Connor O'Hara GIS technician (See EOTI form)

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Frank Heinrich – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Tender and Diver in training/ (See EOTI form)

USACE Oversight –
Todd Steelman - present

1b. WORK PERFORMED TODAY:

Diving on anomalies in MRS 1 back bay area and MRS 3 back bay, Refer to EOTI daily (attached) for details.

1c. EQUIPMENT USED:

Diving equipment and boats, hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Follow on inspection of dive activities by UXOSSO/QCS. Dive activities deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

GPS function test (EA) - passed. All metal detectors function test (EOTI) ML3 magnetometer - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 12/06/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 2

Number of subcontractor personnel attending = 5

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

EOTI will continue diving on anomalies.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.


Jeff Moleski

12/06/17

Contractor's Authorized Representative Signature and Date



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/F

Project #: C03MD093001/3

Report #: 8

Date: 12/06/17

Weather Conditions:

Clear and cold 45-48 degrees; winds: 7-13mph

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1	50	Uhaul	1	13
Scuba Equipment	Various	36			
Rental truck	1	3			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	11			
Glikman, Alex	Tech 3/Diver	10			
Heinrich, Frank	Tech 2/Diver	10			
Early, David	Tech 2/Diver	10			
Monk, John (EA)	QC/Safety	10			
Conor Ohara	GIS Technician	10			

Exposure Data

Previous Hours	378	Hours Today	61	Hours to Date	439
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Reaquired	17	# Anomalies Reaq Today	7	# Anomalies Reaq to Date	24
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

See separate QC reports

QA Inspections / Results:

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Other comments, additional information, and / or lessons learned:

Work performed today. Indicate location and include equipment used.

Dive team dove MRS01 Back Bay anomalies BB11, reverified BB05,04,03,02,01 (see attached dig sheets). MRS01 Back Bay complete. Dive team moved to MRS03 Back Bay, but had to regroup and reaqure the anomalies from shore as the water was to shallow to get the dive boat close enough. Team reaquired MRS03 BB14, BB15, BB16, BB17, BB18, BB13. No MEC or MD found during today's efforts, just NMRD/SM

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Jeff Moleski SUXOS/ Dive Sup Date:

12/06/17

Work hours:

USACE:

Todd Steelman

Safety (Name): John Monk

Brush Clearance (Name):

Quality Control (QC – Name): John Monk

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski: Diving supervisor and SUXOS for MRS 01/MRS03

Team Operations

Team 1 (Name): Alex Glikman, Frank Heinrich, Dave Early: Intrusive operations in MRS01 Back Bay, BB11,05,04,03,02,01 MRS03 BB14,15,16,17,18,13

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:

Grids Surveyed

Grids Cleared

Grids QC'ed

Grids QA'ed

Total Number of Digs

Number of MEC

Pounds of MD

Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 12/07/17

REPORT NO.: 21

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 1 and 3

LOCATION OF THE WORK: MRS 1 and MRS 3

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

John Monk/UXOSSO/QCS (See EOTI form)
Connor O'Hara GIS technician (See EOTI form)

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Frank Heinrich – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Tender and Diver in training/ (See EOTI form)
Steve Whitelock Kogon Marine and Salvage (boat capt)

USACE Oversight –
Todd Steelman - present

1b. WORK PERFORMED TODAY:

Diving on anomalies in MRS 3 ocean area.

1c. EQUIPMENT USED:

Diving equipment and boats, hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Follow on inspection of dive activities by UXOSO/QCS. Dive activities deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

GPS function test (EA) - passed. All metal detectors function test (EOTI) - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 12/07/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 2

Number of subcontractor personnel attending = 5

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

EOTI will continue diving on anomalies.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

Jeff Moleski

Contractor's Authorized Representative Signature and Date

12/07/17



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/FES

Project #: C03MD093001/3

Report #: 9

Date: 12/07/17

Weather Conditions:

Clear and cold 45-48 degrees; winds: 7-13mph

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1	60	Uhaul	1	13
Scuba Equipment	Various	44			
Rental truck	1	25			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	11			
Glikman, Alex	Tech 3/Diver	10			
Heinrich, Frank	Tech 2/Diver	10			
Early, David	Tech 2/Diver	10			
Monk, John (EA)	QC/Safety	10			
Conor Ohara	GIS Technician	10			

Exposure Data

Previous Hours	439	Hours Today	61	Hours to Date	500
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Reaquired	24	# Anomalies Reaq Today	8	# Anomalies Reaq to Date	32
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

See separate QC reports

QA Inspections / Results:

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Other comments, additional information, and / or lessons learned:

Work performed today. Indicate location and include equipment used.

Conducted static in air testing with new Whites metal detector. Dove MRS03 Ocean, O1,2,3,4,5,6,7,8. No MEC or MD located during investigation. O-1,2,3 NC item was deeper than 3 feet in collapsing sand. O-4 (NMRD), O-5 item was deeper than 3 feet in collapsing sand, O-6 (NMRD), O-7, O-8 item was deeper than 3 feet in collapsing sand. Strong bottom surge in MRS03 filled in the dig areas faster than can be dug by hand. Tomorrow: Team will continue efforts to finish MRS03 O-9 and then move to MRS01 and dive remaining contacts,

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Jeff Moleski SUXOS/ Dive Sup Date:

12/07/17

Work hours:

USACE:

Todd Steelman

Safety (Name): John Monk

Brush Clearance (Name):

Quality Control (QC – Name): John Monk

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski: Diving supervisor and SUXOS for MRS 01/MRS03

Team Operations

Team 1 (Name): Alex Glikman, Frank Heinrich, Dave Early: Intrusive operations in MRS03 Ocean O-1,2,3,4,5,6,7,8

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:

Grids Surveyed

Grids Cleared

Grids QC'ed

Grids QA'ed

Total Number of Digs

Number of MEC

Pounds of MD

Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 12/08/17

REPORT NO.: 22

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 1 and 3

LOCATION OF THE WORK: MRS 1 and MRS 3

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

John Monk/UXOSSO/QCS (See EOTI form)
Connor O'Hara GIS technician (See EOTI form)

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Frank Heinrich – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Tender and Diver in training/ (See EOTI form)
Steve Whitelock Kogon Marine and Salvage (boat capt)

USACE Oversight –
Todd Steelman - present

1b. WORK PERFORMED TODAY:

Diving on anomalies in MRS 3 and MRS 1 ocean area.

1c. EQUIPMENT USED:

Diving equipment and boats, hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Follow on inspection of dive activities by UXOSO/QCS. Dive activities deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

GPS function test (EA) - passed. All metal detectors function test (EOTI) - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 12/08/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 2

Number of subcontractor personnel attending = 5

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

EOTI will continue diving on anomalies.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.


Jeff Moleski

12/08/17

Contractor's Authorized Representative Signature and Date



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/F

Project #: C03MD093001/3

Report #: 10

Date: 12/08/17

Weather Conditions: overcast and cold, 32-4degrees; winds: 7-13mph, snow and rain. Water temp 50degrees.

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1	70	Uhhaul	1	15
Scuba Equipment	Various	52			
Rental truck	1	29			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	11			
Glikman, Alex	Tech 3/Diver	10			
Heinrich, Frank	Tech 2/Diver	10			
Early, David	Tech 2/Diver	10			
Monk, John (EA)	QC/Safety	10			
Conor Ohara	GIS Technician	10			

Exposure Data

Previous Hours	500	Hours Today	61	Hours to Date	561
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Reaquired	32	# Anomalies Reaq Today	9	# Anomalies Reaq to Date	37
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

See separate QC reports

QA Inspections / Results:

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Other comments, additional information, and / or lessons learned:

Work performed today. Indicate location and include equipment used.

MRS03 O-9 (NC), MRS03 ocean side is complete. Team moved to MRS01 and redove previous marks OC77,76,65,66. Team then dove new marks; OC-68,69,80, 81. See dig sheet for comments. Due to weather, team will not work 12/10/17 but will see if weather conditions allow team to investigate MRS03 back bay on 12/11/17. Whites all metal detectors were used today with a 28 inch in air static test detection.

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Jeff Moleski SUXOS/ Dive Sup Date:

12/08/17

Work hours:

USACE:

Todd Steelman

Safety (Name): John Monk

Brush Clearance (Name):

Quality Control (OC – Name): John Monk

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski: Diving supervisor and SUXOS for MRS 01/MRS03

Team Operations

Team 1 (Name): Alex Glikman, Frank Heinrich, Dave Early: Intrusive operations in MRS03 Ocean O-9, MRS01 OC77,76,65,66,68,69,80,81. Whites Surf Pro Metal detector (SER:725032300940CB SER:7250323010EODF

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:

Grids Surveyed

Grids Cleared

Grids QC'ed

Grids QA'ed

Total Number of Digs

Number of MEC

Pounds of MD

Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 12/10/17

REPORT NO.: 23

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 3

LOCATION OF THE WORK: MRS 3

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

John Monk/UXOSSO/QCS (See EOTI form)

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Frank Heinrich – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Diver/ (See EOTI form)

USACE Oversight –
Todd Steelman - present

1b. WORK PERFORMED TODAY:

Investigating water anomalies in MRS 3 back bay

1c. EQUIPMENT USED:

Hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Follow on inspection of dive activities by UXOSSO/QCS. Dive activities deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

GPS function test (EA) - passed. All metal detectors function test (EOTI) - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 12/10/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 1

Number of subcontractor personnel attending = 4

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

EOTI will continue diving on anomalies.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.


Jeff Moleski

12/10/17

Contractor's Authorized Representative Signature and Date



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/F

Project #: C03MD093001/3

Report #: 11

Date: 12/10/17

Weather Conditions:

overcast and cold, 32-40degrees; winds: 6-10mph, clear. Water temp 50degrees.

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1	70	Uhaul	1	15
Scuba Equipment	Various	52			
Rental truck	1	31			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	11			
Glikman, Alex	Tech 3/Diver	10			
Heinrich, Frank	Tech 2/Diver	10			
Early, David	Tech 2/Diver	10			
Monk, John (EA)	QC/Safety	10			

Exposure Data

Previous Hours	561	Hours Today	51	Hours to Date	612
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Reaquired	37	# Anomalies Reaq Today	8	# Anomalies Reaq to Date	45
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

See separate QC reports

QA Inspections / Results:

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Winds from the west are keeping the tidal change in the back bay area from changing.

Other comments, additional information, and / or lessons learned:

Work performed today. Indicate location and include equipment used.

Team attempted to walk to MRS 3 BB11, water was too deep, shifted gears and dug on BB20,21,19,22,24,31,1,2. All of those contacts the team could from land. No MD or MEC was encountered today. Tomorrow the team will continue dive ops at MRS 1.

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Jeff Moleski SUXOS/ Dive Sup Date:

12/10/17

Work hours:

USACE:

Todd Steelman

Safety (Name): John Monk

Brush Clearance (Name):

Quality Control (QC – Name): John Monk

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski: Diving supervisor and SUXOS for MRS 01/MRS03

Team Operations

Team 1 (Name): Alex Glikman, Frank Heinrich, Dave Early: Intrusive operations in MRS03
BB20,21,19,22,24,31,1,2. Whites Surf Pro Metal detector (SER:725032300940CB
SER:7250323010EODF

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:

Grids Surveyed

Grids Cleared

Grids QC'ed

Grids QA'ed

Total Number of Digs

Number of MEC

Pounds of MD

Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 12/11/17

REPORT NO.: 24

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 1

LOCATION OF THE WORK: MRS 1

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

John Monk/UXOSSO/QCS (See EOTI form)
Conor O'Hara GIS technician

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Frank Heinrich – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Diver/ (See EOTI form)
Steve Whitelock Kogon Marine (See EOTI form)

USACE Oversight –
Todd Steelman - present

1b. WORK PERFORMED TODAY:

Investigating water anomalies in MRS 1 Ocean side

1c. EQUIPMENT USED:

Hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Follow on inspection of dive activities by UXOSSO/QCS. Dive activities deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

GPS function test (EA) - passed. All metal detectors function test (EOTI) - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 12/11/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 2

Number of subcontractor personnel attending = 5

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

EOTI will continue diving on anomalies.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.


Jeff Moleski

12/11/17

Contractor's Authorized Representative Signature and Date



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/FES

Project #: C03MD093001/3

Report #: 12

Date: 12/11/17

Weather Conditions:

Clear, cold, 34-40degrees; winds: 6 mph, clear. Water temp 47 degrees.

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1	80	Uhaul	1	17
Scuba Equipment	Various	52			
Rental truck	1	33			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	11			
Glikman, Alex	Tech 3/Diver	10			
Heinrich, Frank	Tech 2/Diver	10			
Early, David	Tech 2/Diver	10			
Monk, John (EA)	QC/Safety	10			
O'hara, Conor	GIS tech	10			
Steve Whitelock	Boat Capt	10			

Exposure Data

Previous Hours	612	Hours Today	71	Hours to Date	683
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Reaquired	45	# Anomalies Reaq Today	11	# Anomalies Reaq to Date	56
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

See separate QC reports

QA Inspections / Results:

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Other comments, additional information, and / or lessons learned:

Work performed today. Indicate location and include equipment used.

The team conducted morning safety brief, dive supervisors brief and operations brief. Dive Team dove in MRS01 today on contacts: O-35,29,30,10,9,8,7,6,28,27,26. No MEC or MD was found today during our investigations. See dig log for further comments. Tomorrow: due to forecasted high wind and small craft warning for 12/12 and 12/13 no work will be performed on the water. Whites Surf Pro and the RTK were used today along with diver equipment.

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Jeff Moleski SUXOS/ Dive Sup Date:

12/11/17

Work hours:

USACE:

Todd Steelman

Safety (Name): John Monk

Brush Clearance (Name):

Quality Control (QC – Name): John Monk

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski: Diving supervisor and SUXOS for MRS 01/MRS03

Team Operations

Team 1 (Name): Alex Glikman, Frank Heinrich, Dave Early: Intrusive operations in MRS01, O-35,29,30,10,9,8,7,6,28,27,26. Whites Surf Pro Metal detector (SER:725032300940CB SER:7250323010EODF

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:

Grids Surveyed

Grids Cleared

Grids QC'ed

Grids QA'ed

Total Number of Digs

Number of MEC

Pounds of MD

Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 12/15/17

REPORT NO.: 25

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 1

LOCATION OF THE WORK: MRS 1

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

John Monk/UXOSSO/QCS (See EOTI form)
Conor O'Hara GIS technician (See EOTI form)

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Frank Heinrich – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Diver/ (See EOTI form)
Steve Whitelock Kogon Marine (See EOTI form)

USACE Oversight –
Todd Steelman - present

1b. WORK PERFORMED TODAY:

Investigating water anomalies in MRS 1 Ocean side

1c. EQUIPMENT USED:

Hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Follow on inspection of dive activities by UXOSSO/QCS. Dive activities deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

GPS function test (EA) - passed. All metal detectors function test (EOTI) - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 12/15/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 2

Number of subcontractor personnel attending = 5

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

EOTI will continue diving on anomalies.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

Jeff Moleski

12/15/17

Contractor's Authorized Representative Signature and Date



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/FU

Project #: C03MD093001/3

Report #: 16 Date: 12/15/17

Weather Conditions: Overcast, cold 30-37 degrees. Winds 7-16mph. Water temp 35-46 degrees.

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1	90	Uhhaul	1	19
Scuba Equipment	Various	61			
Rental truck	1	35			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	12			
Glikman, Alex	Tech 3/Diver	11			
Heinrich, Frank	Tech 2/Diver	11			
Early, David	Tech 2/Diver	11			
Monk, John (EA)	QC/Safety	12			
O'hara, Conor	GIS tech	11			
Steve Whitelock	Boat Capt	11			

Exposure Data

Previous Hours	694	Hours Today	79	Hours to Date	773
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Reaquired	56	# Anomalies Reaq Today	10	# Anomalies Reaq to Date	66
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

See separate QC reports

QA Inspections / Results:

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Other comments, additional information, and / or lessons learned:

Work performed today. Indicate location and include equipment used.

Team conducted morning safety brief, dive supervisors brief and operations brief. Team conducted reaquisition on shallow water marks in MRS 01 in the morning until low tide and then moved to deeper water due to the strong bottom surge. Marks O-1,2,3,4,5, (10FSW) 31 (30FSW), O-86,85,83 (15FSW), 84((30FSW) (2xMD/MDAS) located on O-84, see dig sheet. Tomorrow: Team will relocated to MRS03 back bay and dive remaining marks. Whites handheld (725032300940CB and 7250323010EODF) were used today.

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Jeff Moleski SUXOS/ Dive Sup Date: 12/15/17

Work hours:

USACE:

Todd Steelman

Safety (Name): John Monk

Brush Clearance (Name):

Quality Control (OC – Name): John Monk

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski: Diving supervisor and SUXOS for MRS 01/MRS03

Team Operations

Team 1 (Name): Alex Glikman, Frank Heinrich, Dave Early: Marks O-1,2,3,4,5,31, 86,85,83,84

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:

Grids Surveyed

Grids Cleared

Grids QC'ed

Grids QA'ed

Total Number of Digs

Number of MEC

Pounds of MD

Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 12/16/17

REPORT NO.: 26

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 3

LOCATION OF THE WORK: MRS 3

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

John Monk/UXOSSO/QCS (See EOTI form)
Conor O'Hara GIS technician

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Frank Heinrich – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Diver/ (See EOTI form)

USACE Oversight –
Todd Steelman - present

1b. WORK PERFORMED TODAY:

Investigating water anomalies in MRS 3 back bay

1c. EQUIPMENT USED:

Hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Follow on inspection of dive activities by UXOSSO/QCS. Dive activities deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

GPS function test (EA) - passed. All metal detectors function test (EOTI) - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 12/16/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 2

Number of subcontractor personnel attending = 4

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

EOTI will continue diving on anomalies.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

Jeff Moleski

12/16/17

Contractor's Authorized Representative Signature and Date



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/FU

Project #: C03MD093001/3

Report #: 17

Date: 12/16/17

Weather Conditions:

Overcast, cold 30-41 degrees. Winds 7mph. Water temp 35-46 degrees.

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1	90	Uhhaul	1	19
Scuba Equipment	Various	66			
Rental truck	1	41			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	11			
Glikman, Alex	Tech 3/Diver	10			
Heinrich, Frank	Tech 2/Diver	10			
Early, David	Tech 2/Diver	10			
Monk, John (EA)	QC/Safety	11			
O'hara, Conor	GIS tech	10			
Steve Whitelock	Boat Capt				

Exposure Data

Previous Hours	773	Hours Today	62	Hours to Date	835
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Reaquired	66	# Anomalies Reaq Today	7	# Anomalies Reaq to Date	73
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

See separate QC reports

QA Inspections / Results:

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Other comments, additional information, and / or lessons learned:

Work performed today. Indicate location and include equipment used.

Team conducted morning safety brief, dive supervisors brief and operations brief. Team conducted reaquisition on shallow water marks in MRS 03, BB-3,4,5,6,7,8,23 Whites handheld (725032300940CB and 7250323010EODF) were used today. No MD or MEC found today. Tomorrow: continue reaquisition in MRS03 back bay.

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Jeff Moleski SUXOS/ Dive Sup Date:

12/16/17

Work hours:

USACE:

Todd Steelman

Safety (Name): John Monk

Brush Clearance (Name):

Quality Control (OC – Name): John Monk

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski: Diving supervisor and SUXOS for MRS 01/MRS03

Team Operations

Team 1 (Name): Alex Glikman, Frank Heinrich, Dave Early: MRS03, BB-3,4,5,6,7,8,23

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:

Grids Surveyed

Grids Cleared

Grids QC'ed

Grids QA'ed

Total Number of Digs

Number of MEC

Pounds of MD

Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 12/17/17

REPORT NO.: 27

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 3

LOCATION OF THE WORK: MRS 3

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

John Monk/UXOSSO/QCS (See EOTI form)
Conor O'Hara GIS technician

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Frank Heinrich – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Diver/ (See EOTI form)

USACE Oversight –

Todd Steelman - present

1b. WORK PERFORMED TODAY:

Investigating water anomalies in MRS 3 back bay. MRS 3 is complete.

1c. EQUIPMENT USED:

Hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Follow on inspection of dive activities by UXOSSO/QCS. Dive activities deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

GPS function test (EA) - passed. All metal detectors function test (EOTI) - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 12/17/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 2

Number of subcontractor personnel attending = 4

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

EOTI will continue diving on anomalies on MRS1

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.


Jeff Moleski

12/17/17

Contractor's Authorized Representative Signature and Date



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/FS
Project #: C03MD093001/3
Report #: 18 Date: 12/17/17

Weather Conditions: Overcast, cold 30-41 degrees. Winds 7mph. Water temp 35-46 degrees.

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1	100	Uhaul	1	19
Scuba Equipment	Various	74			
Rental truck	1	43			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	11			
Glikman, Alex	Tech 3/Diver	10			
Heinrich, Frank	Tech 2/Diver	10			
Early, David	Tech 2/Diver	10			
Monk, John (EA)	QC/Safety	11			
O'hara, Conor	GIS tech	10			
Steve Whitelock	Boat Capt				

Exposure Data

Previous Hours	835	Hours Today	62	Hours to Date	897
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Required	73	# Anomalies Reaq Today	11	# Anomalies Reaq to Date	84
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

See separate QC reports

QA Inspections / Results:

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Other comments, additional information, and / or lessons learned:

Work performed today. Indicate location and include equipment used.

Team conducted morning safety brief, dive supervisors brief and operations brief. Team conducted reaquisition on shallow water marks in MRS 03, BB-9,10,11,12,28,27,26,25,29,30,32. Whites handheld (725032300940CB and 7250323010EODF) were used today. No MD or MEC found today. MRS 03 is COMPLETED, all marks have been investigated. Tomorrow: continue reaquisition in MRS01 ocean.

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Jeff Moleski SUXOS/ Dive Sup Date: 12/17/17

Work hours:

USACE:
Todd Steelman

Safety (Name): John Monk

Brush Clearance (Name):

Quality Control (QC – Name): John Monk

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski: Diving supervisor and SUXOS for MRS 01/MRS03

Team Operations

Team 1 (Name): Alex Glikman, Frank Heinrich, Dave Early: MRS03, BB-9,10,11,12,28,27,26,25,29,30,32

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:	
Grids Surveyed	Total Number of Digs
Grids Cleared	Number of MEC
Grids QC'ed	Pounds of MD
Grids QA'ed	Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 12/18/17

REPORT NO.: 28

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006

EA Engineering, Science, and Technology, Inc., PBC (EA)

EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 1

LOCATION OF THE WORK: MRS 1

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

John Monk/UXOSSO/QCS (See EOTI form)
Conor O'Hara GIS technician

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Frank Heinrich – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Diver/ (See EOTI form)
Steve Whitelock Boat Capt (See EOTI form)

USACE Oversight –

Todd Steelman - present

1b. WORK PERFORMED TODAY:

Investigating water anomalies in MRS 1 ocean.

1c. EQUIPMENT USED:

Hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Follow on inspection of dive activities by UXOSSO/QCS. Dive activities deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

GPS function test (EA) - passed. All metal detectors function test (EOTI) - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 12/18/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 2

Number of subcontractor personnel attending = 5

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

EOTI will continue diving on anomalies on MRS1

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

Jeff Moleski

12/18/17

Contractor's Authorized Representative Signature and Date



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/F

Project #: C03MD093001/3

Report #: 19

Date: 12/18/17

Weather Conditions:

Sunny, cold 30-48 degrees. Winds 7mph. Water temp 42 degrees.

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1	110	Uhaul	1	19
Scuba Equipment	Various	84			
Rental truck	1	45			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	12			
Glikman, Alex	Tech 3/Diver	11			
Heinrich, Frank	Tech 2/Diver	11			
Early, David	Tech 2/Diver	11			
Monk, John (EA)	QC/Safety	11			
O'hara, Conor	GIS tech	10			
Steve Whitelock	Boat Capt	10			

Exposure Data

Previous Hours	897	Hours Today	76	Hours to Date	973
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Reaquired	84	# Anomalies Reaq Today	13	# Anomalies Reaq to Date	97
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

See separate QC reports

QA Inspections / Results:

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Other comments, additional information, and / or lessons learned:

Work performed today. Indicate location and include equipment used.

Team conducted morning safety brief, dive supervisors brief and operations brief. Team conducted reaquisitions dives on marks in MRS01, O-64,63,62,61,60,59,58,57,56,55,54,53,52. Six 2.25 Sub Caliber Aircraft Rockets (SCAR) (fired/expended) were located. (See dig sheet). Whites handheld (725032300940CB and 7250323010EODF) were used today. Tomorrow: continue reaquisition in MRS01 ocean.

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Jeff Moleski SUXOS/ Dive Sup Date:

12/18/17

Work hours:

USACE:

Todd Steelman

Safety (Name): John Monk

Brush Clearance (Name):

Quality Control (QC – Name): John Monk

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski: Diving supervisor and SUXOS for MRS 01

Team Operations

Team 1 (Name): Alex Glikman, Frank Heinrich, Dave Early: MRS01, O-64,63,62,61,60,59,58,57,56,55,54,53,52.

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:

Grids Surveyed

Grids Cleared

Grids QC'ed

Grids QA'ed

Total Number of Digs

Number of MEC

Pounds of MD

Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 12/19/17

REPORT NO.: 29

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 1

LOCATION OF THE WORK: MRS 1

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

John Monk/UXOSSO/QCS (See EOTI form)
Conor O'Hara GIS technician

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Frank Heinrich – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Diver/ (See EOTI form)
Steve Whitelock Boat Capt (See EOTI form)

USACE Oversight –
Todd Steelman - present

1b. WORK PERFORMED TODAY:

Investigating water anomalies in MRS 1 ocean.

1c. EQUIPMENT USED:

Hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Follow on inspection of dive activities by UXOSSO/QCS. Dive activities deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

GPS function test (EA) - passed. All metal detectors function test (EOTI) - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 12/19/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 2

Number of subcontractor personnel attending = 5

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

EOTI will continue diving on anomalies on MRS1

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.

Jeff Moleski

Contractor's Authorized Representative Signature and Date

12/19/17



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/FS

Project #: C03MD093001/3

Report #: 20

Date: 12/19/17

Weather Conditions:

Sunny, cold 33-51 degrees. Winds 7mph. Water temp 39 degrees.

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1	120	Uhaul	1	19
Scuba Equipment	Various	94			
Rental truck	1	47			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	11			
Glikman, Alex	Tech 3/Diver	10			
Heinrich, Frank	Tech 2/Diver	10			
Early, David	Tech 2/Diver	10			
Monk, John (EA)	QC/Safety	11			
O'hara, Conor	GIS tech	10			
Steve Whitelock	Boat Capt	10			

Exposure Data

Previous Hours	973	Hours Today	72	Hours to Date	1045
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Reaquired	97	# Anomalies Reaq Today	13	# Anomalies Reaq to Date	110
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

See separate QC reports

QA Inspections / Results:

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Other comments, additional information, and / or lessons learned:

Work performed today. Indicate location and include equipment used.

Team conducted morning safety brief, dive supervisors brief and operations brief. Team conducted reaquisitions dives on marks in MRS01, O-51,50,49,48,47,46,45,82,79,78,75,74,73. Two 2.25 Sub Caliber Aircraft Rockets (SCAR) (fired/expended) were located along with various parts and pieces of the SCAR. (See dig sheet). Whites handheld (725032300940CB and 7250323010EODF) were used today. Tomorrow: continue reaquisition in MRS01 ocean.

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Jeff Moleski SUXOS/ Dive Sup Date:

12/19/17

Work hours:

USACE:

Todd Steelman

Safety (Name): John Monk

Brush Clearance (Name):

Quality Control (QC – Name): John Monk

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski: Diving supervisor and SUXOS for MRS 01

Team Operations

Team 1 (Name): Alex Glikman, Frank Heinrich, Dave Early: MRS01, O-51,50,49,48,47,46,45,82,79,78,75,74,73

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:

Grids Surveyed

Grids Cleared

Grids QC'ed

Grids QA'ed

Total Number of Digs

Number of MEC

Pounds of MD

Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 12/20/17

REPORT NO.: 30

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006

EA Engineering, Science, and Technology, Inc., PBC (EA)

EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 1

LOCATION OF THE WORK: MRS 1

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

John Monk/UXOSO/QCS (See EOTI form)
Conor O'Hara GIS technician

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Frank Heinrich – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Diver/ (See EOTI form)
Steve Whitelock Boat Capt (See EOTI form)

USACE Oversight –

Todd Steelman - present

1b. WORK PERFORMED TODAY:

Investigating water anomalies in MRS 1 ocean.

1c. EQUIPMENT USED:

Hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Follow on inspection of dive activities by UXOSO/QCS. Dive activities deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

GPS function test (EA) - passed. All metal detectors function test (EOTI) - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 12/20/2017

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 2

Number of subcontractor personnel attending = 5

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

EOTI and EA will demob from site until after the holidays.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.


Jeff Moleski

12/20/17

Contractor's Authorized Representative Signature and Date



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/FS

Project #: C03MD093001/3

Report #: 21

Date: 12/20/17

Weather Conditions: Sunny, cold 33-46 degrees. Winds 7-14mph. Water temp 35 degrees.

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1	120	Uhaul	1	19
Scuba Equipment	Various	102			
Rental truck	1	49			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	11			
Glikman, Alex	Tech 3/Diver	10			
Heinrich, Frank	Tech 2/Diver	10			
Early, David	Tech 2/Diver	10			
Monk, John (EA)	QC/Safety	11			
O'hara, Conor	GIS tech	10			
Steve Whitelock	Boat Capt	10			

Exposure Data

Previous Hours	1045	Hours Today	72	Hours to Date	1117
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Required	113	# Anomalies Reaq Today	10	# Anomalies Reaq to Date	123
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

See separate QC reports

QA Inspections / Results:

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Other comments, additional information, and / or lessons learned:

Work performed today. Indicate location and include equipment used.

Team conducted morning safety brief, dive supervisors brief and operations brief. Team conducted reaquitions dives on marks in MRS01, O-44,43,42,41,40,21,20,19,18,17. No MD or MEC found today. (See dig sheet). Whites handheld (725032300940CB and 7250323010EODF) were used today. Tomorrow: Demob from Assateague Island.

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Jeff Moleski SUXOS/ Dive Sup Date:

12/20/17

Work hours:

USACE:
Todd Steelman

Safety (Name): John Monk

Brush Clearance (Name):

Quality Control (QC – Name): John Monk

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski: Diving supervisor and SUXOS for MRS 01

Team Operations

Team 1 (Name): Alex Glikman, Frank Heinrich, Dave Early: MRS01, O-44,43,42,41,40,21,20,19,18,17

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:	
Grids Surveyed	Total Number of Digs
Grids Cleared	Number of MEC
Grids QC'ed	Pounds of MD
Grids QA'ed	Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 01/24/18

REPORT NO.: 31

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 1

LOCATION OF THE WORK: MRS 1

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Personnel/Position/Hours Onsite

Conor O'Hara GIS technician

USACE Oversight –

Subcontractor – EOTI

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Jameson Thompson – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Diver/ (See EOTI form)
Don Koch- Safety/QC (See EOTI form)
Steve Whitelock Boat Capt (See EOTI form)

1b. WORK PERFORMED TODAY:

Investigating water anomalies in MRS 1 ocean.

1c. EQUIPMENT USED:

Hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Follow on inspection of dive activities by UXOSO/QCS. Dive activities deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

GPS function test (EA) - passed. All metal detectors function test (EOTI) - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 1/24/2018

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 1

Number of subcontractor personnel attending = 6

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

Continue dive operations in MRS-01.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.


Jeff Moleski

Contractor's Authorized Representative Signature and Date

01/24/18



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/FS

Project #: C03MD093001/3

Report #: 25

Date: 01/24/18

Weather Conditions: Clear, Cold, Winds: 15 gusts 20mph, water temp 35

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1	10	Uhaul	1	5
Scuba Equipment	Various	10			
Rental truck	1	16			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	11.5			
Glikman, Alex	Tech 3/Diver	10.5			
Thompson, Jameson	Tech 2/Diver	10.5			
Early, David	Tech 2/Diver	10.5			
Koch, Don	QC/Safety	10.5			
O'hara, Conor	GIS tech	10			
Steve Whitelock	Boat Capt	10			

Exposure Data

Previous Hours	1237	Hours Today	74	Hours to Date	1311
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Required	123	# Anomalies Reaq Today	9	# Anomalies Reaq to Date	132
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

See separate QC reports

QA Inspections / Results:

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Other comments, additional information, and / or lessons learned: High winds and cold water are slowing operation down.

Work performed today. Indicate location and include equipment used.

Continued diving operations in MRS -01 Ocean O 32,33,34,36,38,39,23,24 all those contacts were No Contacts (NC), diver conducted initial 10 foot circle search and then an additional 10 foot circle search 20ft total. MRS O1 O-37 NMRD see dig sheet. Tomorrow operation: continue dive ops in MRS-01. Conducted instrument checks at the ITS. See the QC reports.

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Jeff Moleski SUXOS/ Dive Sup Date:

01/24/18

Work hours:

USACE:

Safety (Name): Don Koch

Brush Clearance (Name):

Quality Control (QC – Name): Don Koch

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski: Diving supervisor and SUXOS MRS-01

Team Operations

Team 1 (Name): Alex Glikman, Jameson Thompson, Dave Early MRS-01 Ocean O-32,33,34,36,37,38,39,23,24

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:

Grids Surveyed

Grids Cleared

Grids QC'ed

Grids QA'ed

Total Number of Digs

Number of MEC

Pounds of MD

Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 01/25/18

REPORT NO.: 32

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006

EA Engineering, Science, and Technology, Inc., PBC (EA)

EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 1

LOCATION OF THE WORK: MRS 1

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Subcontractor – EOTI

Personnel/Position/Hours Onsite

Conor O'Hara GIS technician
Neal Hallowell GIS technician

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Jameson Thompson – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Diver/ (See EOTI form)
Don Koch- Safety/QC (See EOTI form)
Steve Whitelock Boat Capt (See EOTI form)

USACE Oversight –

1b. WORK PERFORMED TODAY:

Investigating water anomalies in MRS 1 ocean.

1c. EQUIPMENT USED:

Hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Follow on inspection of dive activities by UXOSO/QCS. Dive activities deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

GPS function test (EA) - passed. All metal detectors function test (EOTI) - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 01/25/2018

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 2

Number of subcontractor personnel attending = 6

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

Continue dive operations in MRS-01.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.


Jeff Moleski

Contractor's Authorized Representative Signature and Date

01/25/18



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/FS

Project #: C03MD093001/3

Report #: 26

Date: 01/25/18

Weather Conditions: Clear, Cold, Winds: 15 gusts 20mph, water temp 35

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1	20	Uhaul	1	8
Scuba Equipment	Various	20			
Rental truck	1	19			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	11			
Glikman, Alex	Tech 3/Diver	10			
Thompson, Jameson	Tech 2/Diver	10			
Early, David	Tech 2/Diver	10			
Koch, Don	QC/Safety	10			
O'hara, Conor	GIS tech	10			
Neal Hallowell	GIS tech	10			
Steve Whitelock	Boat Capt	10			

Exposure Data

Previous Hours	1311	Hours Today	81	Hours to Date	1392
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Required	132	# Anomalies Reaq Today	9	# Anomalies Reaq to Date	141
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

See separate QC reports

QA Inspections / Results:

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Other comments, additional information, and / or lessons learned: High winds and cold water are slowing operation down.

Work performed today. Indicate location and include equipment used.

Continued diving operations in MRS 01 Ocean Side on marks O-87,70,71,11,12,13,14,15,16. No MEC or MDAS was located during today's diving evolution. See dig sheet for results. Tomorrow operation: continue dive ops in MRS-01. Conducted instrument checks at the ITS. See the QC reports.

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Jeff Moleski SUXOS/ Dive Sup Date:

01/25/18

Work hours:

USACE:

Safety (Name): Don Koch

Brush Clearance (Name):

Quality Control (QC – Name): Don Koch

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski: Diving supervisor and SUXOS MRS-01

Team Operations

Team 1 (Name): Alex Glikman, Jameson Thompson, Dave Early MRS-01 Ocean O-87,70,71,11,12,13,14,15,16

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:

Grids Surveyed

Grids Cleared

Grids QC'ed

Grids QA'ed

Total Number of Digs

Number of MEC

Pounds of MD

Pounds of RD



**DAILY REPORT (D-15) –
Assateague Island Remedial Investigation**

DATE: 01/26/18

REPORT NO.: 33

Note: This form is to be completed in lieu of a SUXOS Daily Report when the SUXOS is not onsite.

CONTRACT NUMBER AND NAME OF CONTRACTOR:

Contract #: W912DR-13-D-0018/DO 0006
EA Engineering, Science, and Technology, Inc., PBC (EA)
EA Project No: 62732.06

DESCRIPTION OF WORK: Intrusive investigation of water areas of MRS 1

LOCATION OF THE WORK: MRS 1

1a. CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY:

Contractor - EA Engineering Science and Technology, Inc., PBC (EA)

Personnel/Position/Hours Onsite

Neal Hallowell GIS technician

USACE Oversight –

Subcontractor – EOTI

Personnel/Position/Hours Onsite

Jeffrey Moleski – SUXOS/Dive Sup/(See EOTI form)
Alex Glikman – Tech 3/Diver/ (See EOTI form)
Jameson Thompson – Tech 2/Diver/ (See EOTI form)
David Early – Tech 2/Diver/ (See EOTI form)
Don Koch- Safety/QC (See EOTI form)
Steve Whitelock Boat Capt (See EOTI form)

1b. WORK PERFORMED TODAY:

Investigating water anomalies in MRS 1 ocean.

1c. EQUIPMENT USED:

Hand tools for digging and all metal detectors.

2. TYPE AND RESULTS OF INSPECTION:

Follow on inspection of dive activities by UXOSO/QCS. Dive activities deemed acceptable.

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS (*i.e. field testing, calibration testing etc.*):

GPS function test (EA) - passed. All metal detectors function test (EOTI) - passed.

4. VERBAL INSTRUCTIONS RECEIVED (*List any instructions given by Government personnel on deficiencies, Additional testing required, etc., with action to be taken*):

None.

5. REMARKS (*Cover any conflicts or changes in plans, specifications, or instructions: changes to surveying protocols, survey areas, or field findings, acceptability of incoming equipment; progress of work, delays, causes, and extent thereof; days of no work with reasons for same*):

None.

6. VISITORS TO THE SITE (*List the name of all official visitors to the site and who they represent*):

None.



Assateague Island Daily Report 1/26/2018

7. HEALTH and SAFETY: *(Include levels of protection, activities completed, and all infractions of the accident prevention plan; or instructions from Government QA personnel. Describe corrective actions taken.)*

Safety meeting held today? ☒ Yes, ☐ No (If Yes, state the subject and report number of personnel in attendance)

Safety meeting held today. Discussed Activity Hazard Analysis (AHA) for magazine setup and grounding to include, general AHA, and Large Hand tools AHAs. EOTI Dive Supervisor discussed diving. Discussed logistics of operations and main safety concerns, contact info, etc.

Number of Contractor personnel attending = 1

Number of subcontractor personnel attending = 6

8. WASTE MATERIAL: *(Include quantities of materials)*

None.

9. TOMORROW'S EXPECTATIONS:

Continue dive operations in MRS-01.

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed, and tests conducted during this reporting period were in compliance with the contract except as noted above.


Jeff Moleski

Contractor's Authorized Representative Signature and Date

01/26/18



Daily Report

Assateague Island RI/ FUDS

Explosive Ordnance Technologies, Inc. (EOTI)

Project Location: Assateague Island, MD F.U.D.S RI/FS

Project #: C03MD093001/3

Report #: 27

Date: 01/26/18

Weather Conditions: Clear, Cold, Winds: 5mph, water temp 33

Major Equipment Items on Site

ITEM	Quantity	Hrs Used	ITEM	Quantity	Hrs Used
Boat	1	30	Uhaul	1	11
Scuba Equipment	Various	30			
Rental truck	1	21			

Personnel on Site

Personnel on Site

Name	Position	Hrs (today)	Name	Position	Hrs (today)
Moleski, Jeffrey	SUXOS/Dive Sup	11			
Glikman, Alex	Tech 3/Diver	10			
Thompson, Jameson	Tech 2/Diver	10			
Early, David	Tech 2/Diver	10			
Koch, Don	QC/Safety	10			
Neal Hallowell	GIS tech	10			
Steve Whitelock	Boat Capt	10			

Exposure Data

Previous Hours	1392	Hours Today	71	Hours to Date	1463
Previous Accidents		Accidents Today		Accidents to Date	
Prev. Lost Work Days		Lost Workdays Today		Lost Work Days to Date	

Ordnance Data

Previous UXO Found		# UXO Today		# UXO to Date	
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Note: See UXO Log for description / disposition of ordnance items.

Anomaly Clearance Data

Prev. Anomalies Required	141	# Anomalies Reaq Today	9	# Anomalies Reaq to Date	150
Prev. Digs Completed		Digs Completed Today		Digs Completed to Date	

QC Inspections / Results:

See separate QC reports

QA Inspections / Results:

Verbal Instructions Received or Given: (Instructions received from client or given by EOTI and corresponding action taken.)

Changed Conditions/Delays/Conflicts Encountered: (List conditions which have hindered ID removal or disposal of UXO.)

Other comments, additional information, and / or lessons learned:

Work performed today. Indicate location and include equipment used.

Continued diving operations in MRS 01 Ocean Side on marks O-92,91,90,89,88,25,22,72,67. No MEC was located during today's diving evolution. MRS0-1 O-72 2.25in S.C.A.R. Rocket Head, (MDAS), item was secured inside MRS-01 magazine. See dig sheet for results. Tomorrow operation: DEMOB from site. Keys to magazine have been turned over to EA personnel.

Contractor's Verification: The above report is complete and correct. All equipment used and work performed during this reporting period are in compliance with the plans and specifications except as noted above.

Original Signed

On site Representative -

Jeff Moleski SUXOS/ Dive Sup Date:

01/26/18

Work hours:

USACE:

Safety (Name): Don Koch

Brush Clearance (Name):

Quality Control (QC – Name): Don Koch

Surveyor (Name): Connor Ohara

OPERATIONS

SUXOS (Name) Jeff Moleski: Diving supervisor and SUXOS MRS-01

Team Operations

Team 1 (Name): Alex Glikman, Jameson Thompson, Dave Early MRS-01 Ocean O-92,91,90,89,88,25,22,72,67

Team 2 (Name):

Team 3 (Name):

TOTAL DIGS TODAY:

Team 1: Completed Grids:

Number of Digs:

Team 2: Completed Grids:

Number of Digs:

Team 3: Completed Grids:

Number of Digs:

Site Visitors:

Totals to date:

Grids Surveyed

Grids Cleared

Grids QC'ed

Grids QA'ed

Total Number of Digs

Number of MEC

Pounds of MD

Pounds of RD

Report Date: 3/5/2018

Project No: 6273206

Report No: 34



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT Assateague Island FUDS RI Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Mostly Sunny and windy.	45	28	68	0.00

GOVERNMENT PERSONNEL (Name/Organization):

Julie Kaiser

SITE VISITORS (Name/Organization):

None

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	9.0	5, 6, 7, 8, 9, 10, 11, 12 and 13	Site walk transects to see what extent the vegetation will need to be cleared and approval of NPS personnel.
Ron Morgan	1	UXOQCS/SO / EA	9.0	5, 6, 7, 8, 9, 10, 11, 12 and 13	Site walk transects to see what extent the vegetation will need to be cleared and approval of NPS personnel.
Steve Yankay	1	Brush Crew / EA	9.0	5, 6, 7, 8, 9, 10, 11, 12 and 13	Site walk transects to see what extent the vegetation will need to be cleared and approval of NPS personnel.
Conor O'Hara	1	Brush Crew/GPS / EA	8.0	5, 6, 7, 8, 9, 10, 11, 12 and 13	Site walk transects to see what extent the vegetation will need to be cleared and approval of NPS personnel.
Mike O'Neill	1	EA PM / EA	8.0	5, 6, 7, 8, 9, 10, 11, 12 and 13	Site walk transects to see what extent the vegetation will need to be cleared and approval of NPS personnel.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

Report Date: 3/5/2018

Project No: 6273206

Report No: 34



OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	John Monk	334126	3.0	Yes
GEO 7x	Conor O'Hara	WH0130	7.0	Yes

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Report Date: 3/5/2018

Project No: 6273206

Report No: 34



Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting and H&S Brief was performed prior to work starting and site walk. Site familiarization for UXOQCS/SO, and Brush cutting personnel. Inspect Magazine area in MRS 1 with QC/SO. Kickoff meeting at NPS office with Mike O'Neill EA PM, Julie Kaiser USACE Baltimore PM, UXOQCS/SO Ron Morgan, SUXOS John Monk, Steven Yankay, Conor O'Hara, and four NPS personnel. Site walk of transects 5, 6, 7, 8, 9, 10, 11, 12 and 13 in MRS 1 with Johnathon Chase, NPS personnel, to see the extent of brush cutting we can perform without impacting the vegetation. Located a possible section of a 2.25 inch rocket near NPS maintenance area in woods close to transect line 13, it was placed in the magazine until further inspection is completed to determine if it is munitions debris or scrap metal.

QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

Inspected Magazine Area in MRS 1 to ensure non-tampering and safety compliance.

Summary of Deficiencies

None detected.

Corrective Actions

None at this time.

Reinspection Results

None at this time.

Additional Notes

May have to adjust work plan re vegetation clearance due to inaccessible Transects.

Report Date: 3/5/2018

Project No: 6273206

Report No: 34



SAFETY INSPECTIONS AND RESULTS:

Inspections

Hard hats and Safety vests, muck boots and adequate clothing.

Summary of Deficiencies

Not all personnel had hard hats or safety vests. These personnel were monitored closely and not allowed in dense vegetation areas. No cutting was performed.

Corrective Actions

EA will have additional hard hats and safety vests on stand-by for administrative visitors entering dense brush areas.

Reinspection Results

Pass

Additional Notes

First day. No intrusive operations performed.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/5/2018 8:52:59 PM

SUXOS

Site Manager

Report Date: 3/6/2018

Project No: 6273206

Report No: 35



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Partly Cloudy then becoming cloudy through the day.	47	33	90	0.00

GOVERNMENT PERSONNEL (Name/Organization):

Julie Kaiser, Todd Steelman

SITE VISITORS (Name/Organization):

None

Report Date: 3/6/2018

Project No: 6273206

Report No: 35



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	11.0	5, 6, 7 and 8	Cut vegetation area to wetlands on both north and south side of transects 5, 6 and 8. Started transect 8.
Ron Morgan	1	UXOQCS/SO / EA	11.0	5, 6, 7 and 8	Cut vegetation area to wetlands on both north and south side of transects 5, 6 and 8. Started transect 8.
Steve Yankay	1	Brush Crew / EA	10.0	5, 6, 7 and 8	Cut vegetation area to wetlands on both north and south side of transects 5, 6 and 8. Started transect 8.
Conor O'Hara	1	Brush Crew/GPS / EA	10.0	5, 6, 7 and 8	Cut vegetation area to wetlands on both north and south side of transects 5, 6 and 8. Started transect 8.
Mike O'Neill	1	EA PM / EA	7.0	5, 6, 7 and 8	Cut vegetation on transects 5 and 6.
Steve Hodges	1	Towed Array operator / Zapata	9.0		Establish IVS and test towed array on IVS.
Emery Mueller	1	Towed Array operator / Zapata	9.0		Establish IVS and test towed array on IVS.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	334126	3.0	Yes
GEO 7x	Conor O'Hara	WH0130	7.0	Yes
EM-61 Towed Array	Steve Hodges		1.0	Yes

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Report Date: 3/6/2018

Project No: 6273206

Report No: 35



Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found.

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting, H&S brief was performed prior to start of work. Zapata personnel arrived on site, discussed EM-61 Operations. Located area approved by NPS personnel for the geophysics Instrument Verification Strip (IVS), cleared and setup IVS in MRS 1. Brush cut transects 5, 6, 7 were brush cut to wetland areas on both north and south section of heavy vegetation areas and started cutting on the southern wooded section of 8. Setup and run towed array over IVS.

Report Date: 3/6/2018

Project No: 6273206

Report No: 35



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

Zapata UTV inspected and passed. EM61 Towed Array inspected and passed.

Summary of Deficiencies

EM61 IVS, Transects 5,6, and 7 were cleared of brush to facilitate EM61 insertion. Transect 8 was started. Zapata identified three possible areas for IVS location in MRS 1. Those areas were swept and one area was found to be suitable for IVS. Area was cleared and Zapata was observed setting up the Towed Array. Once set-up Zapata was able to sweep the IVS location and determined there were no anomalies present and so were able to emplace their seeds. Zapata took numerous photos and GPS coordinates and will forward their report to EA Engineering. I also observed brush cutting in Transects 5, 6, and 7 to ensure the team was holding as close as possible to Transect line.

Corrective Actions

None at this time. Work plan may have to be adjusted once the EM61 begins in earnest.

Reinspection Results

N/A

Additional Notes

We have a storm front moving in tonight through early Thursday. Vigilance will need to be maintained to ensure QC is not suffering due to inclement weather.

Report Date: 3/6/2018

Project No: 6273206

Report No: 35



SAFETY INSPECTIONS AND RESULTS:

Inspections

Morning Safety Brief delivered at 0800. List of attendees is in hard copy on file. Items covered were administrative, slips, trips and falls, UTV usage, equipment and hand tools, medical onsite and evac. PPE was stressed, as well as working in teams and all personnel acting as safety officers. Personnel split into two groups with Zapata working beach area in MRS 1 and EA personnel working Transects 5,6,7 and 8 in MRS 1. I moved between the two groups to monitor safety as necessary.

Summary of Deficiencies

None inspected or observed.

Corrective Actions

N/A

Reinspection Results

N/A

Additional Notes

Cold wintry weather incoming tonight. All personnel will need to be monitored to ensure adequate rain gear, winter gear and dry clothing are available. The SUXOS and UXOSOQCS will determine on site if work should be suspended due to weather. Zapata personnel stated they will not be affected by the weather.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/6/2018 6:41:19 PM

SUXOS

Site Manager

Report Date: 3/7/2018

Project No: 6273206

Report No: 36



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Cloudy, windy and became partly cloudy and colder by 12 pm.	48	33	100	0.23

GOVERNMENT PERSONNEL (Name/Organization):

Brian Todd Steelman - OEES

SITE VISITORS (Name/Organization):

None

Report Date: 3/7/2018

Project No: 6273206

Report No: 36



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	10.5		Cut vegetation area to wetlands on both north and south side of transects 8, 9 and to the south of 10.
Ron Morgan	1	UXOQCS/SO / EA	10.5		Cut vegetation area to wetlands on both north and south side of transects 8, 9 and to the south of 10.
Steve Yankay	1	Brush Crew / EA	9.5	Transects 8, 9 and 10.	Cut vegetation area to wetlands on both north and south side of transects 8, 9 and to the south of 10.
Conor O'Hara	1	Brush Crew/GPS / EA	9.5	Transects 8, 9 and 10	Cut vegetation area to wetlands on both north and south side of transects 8, 9 and to the south of 10.
Mike McGuire		EA Geophysicist / EA	9.5		Observed Zapata personnel setup and operate towed array and setup and test man towed array. Observed and inspected transects previously and currently cut.
Steve Hodges	1	Towed Array operator / Zapata	9.5	Beach from transects	Setup, test towed array on IVS. Operated towed array on beach front area.
Emery Mueller	1	Towed Array operator / Zapata	9.5	IVS	Setup, test towed array on IVS. Setup and test man towed array on IVS.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	334126	3.0	No
GEO 7x	Coner O'Hara	WH0130	8.5	No
EM-61 Towed Array	Steve Hodges		8.0	No
EM-61 Man Towed Array	Emery Mueller		3.0	No

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Report Date: 3/7/2018

Project No: 6273206

Report No: 36



Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Health and Safety brief conducted in the morning. Zapata personnel setup, tested and operated towed array on beach area from drift fence to water line as much as possible given the conditions (High surf). Discussed with Zapata personnel, Mike McGuire (EA Geophysicist) and UXOQCS/SO on how to proceed for collecting data for the beach. Setup and tested Man Towed Array on IVS for operations tomorrow on sand dune area of beach. Brush cutting continued on transects 8, 9 and 10. Completed brush cutting to the north and south until reaching the marsh areas on both sides of transects 8 and 9. Partially completed brush cutting on transect 10 to the south until reaching the marsh area. Towed array was completed from drift fence to waters edge from site south boundary to site north boundary. Assisted UXOQCS/SO in placing seed item for towed array sweeping at coordinates N 42285.36, E 486737.09 and placing site boundary flagging to mark both north and south boundary edges on the beach.

Report Date: 3/7/2018

Project No: 6273206

Report No: 36



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0800: Both Mike McGuire (EA Geophysicist) and myself met with Steve Hodges and Emory Mueller (Zapata Team) and discussed areas to be swept utilizing UTV Towed Array verses Man Towed Array on the beach area of MRS1. At 1000 Mike and I emplaced Seed EA001 at Coordinates 4228519.36N and 486737.09E per Work Plan. The UTV Towed Array was utilized in linear form from the drift fence to the surf's edge, and meandered around the dunes area up to the brush line. It should have had no issue finding the seed. Tomorrow Zapata will use the Man Towed Array in and around the dunes and thick brush areas from the beach up to the parking lot.

Additionally, I also inspected the brush clearing team as often as possible. They were doing a fine job and making what I felt was great progress through some truly awful terrain, while maintaining as close as possible to transect Lines.

Summary of Deficiencies

Zapata informed me this morning that their review of the IVS data showed two rather significant anomalies within ten (10) feet of their IVS path. I swept the areas in question and found two items- a 3 inch nail and over four feet of 1/4 inch steel cable. I removed as much of the cable as possible, but could not remove it all. However, the remainder is over 10 feet from the end of the IVS path at a depth of four feet. I will check with Zapata tomorrow to determine if that is sufficient. If it is not sufficient the IVS will need to be relocated.

Corrective Actions

None.

Reinspection Results

N/A

Additional Notes

None.

Report Date: 3/7/2018

Project No: 6273206

Report No: 36



SAFETY INSPECTIONS AND RESULTS:

Inspections

Daily Safety Brief given at 0730. Items covered: UTV use, tools and equipment, emergency procedures, slips, trips and falls, wind, rain and cold, PPE.

During brush clearing operations the National Park Service Ranger assisting stepped into a deep puddle with inadequate wading boots. As a result he soaked his trousers and socks. As the temperature had dropped and the wind had picked up I grew concerned and informed him he would need to change into dry clothing and acquire higher waders. He did so.

Performed vehicle inspections on 7 on-site vehicles.

Summary of Deficiencies

No deficiencies noted.

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

Personnel will need steel-shank reinforced footwear while working in marshy areas. Due to the nature of the brush clearing I encountered several cut-off shrubs below waterline that are impossible to see and could very easily puncture inadequate footwear. Steel-shanked footwear may be problematic for the Zapata team carrying the Man-Portable Array. I will discuss this with them in the morning.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/7/2018 6:00:59 PM

SUXOS

Site Manager

Report Date: 3/8/2018

Project No: 6273206

Report No: 37



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Partly cloudy, windy and chilly	44	30	46	0.00

GOVERNMENT PERSONNEL (Name/Organization):

USACE-Baltimore District OESS Brian Todd Stealman and Geophysicist David King

SITE VISITORS (Name/Organization):

None

Continued on next page

Report Date: 3/8/2018

Project No: 6273206

Report No: 37



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	11.0		Cut vegetation area to wetlands on both north and south side of transects 8, 9 and to the south of 10.
Ron Morgan	1	UXOQCS/SO / EA	11.0		Cut vegetation area to wetlands on both north and south side of transects 8, 9 and to the south of 10.
Steve Yankay	1	Brush Crew / EA	10.0	3, 4 and 10	Cut vegetation area to wetlands on both north and south side of transects 8, 9 and to the south of 10.
Conor O'Hara	1	Brush Crew/GPS / EA	10.0	3, 4 and 10	Cut vegetation area to wetlands on both north and south side of transects 8, 9 and to the south of 10.
Mike McGuire	1	EA Geophysicist / EA	10.0		Observed Zapata personnel setup and operate towed array and setup and test man towed array. Observed and inspected transects previously and currently being cut.
Steve Hodges	1	Towed Array operator / Zapata	10.0	Completed all of Beach area in MRS 1	Setup, tested towed array on IVS. Operated towed array on beach (front area).
Emery Mueller	1	Towed Array operator / Zapata	10.0	Completed all of sand dune area in MRS 1	Setup, tested towed array on IVS. Setup, tested man towed array on IVS

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	334126	3.0	Yes
GEO 7x	Coner O'Hara	WH0130	8.5	Yes
EM-61 Towed Array	Steve Hodges		8.0	Yes
EM-61 Man towed array	Emery Mueller		8.0	Yes

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Report Date: 3/8/2018

Project No: 6273206

Report No: 37



Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Health and Safety brief was performed prior to starting work. Setup UTV towed array and man towed array and tested both on IVS. Performed towed array on beach area from high tide to as close to low tide as possible and completed all accessible beach transects for beach area in MRS 1. Performed man towed array in sand dune areas and completed all accessible areas in the dunes. Tomorrow Zapata personnel will focus on all wooded area transects to try and complete those with the exception of the marsh area to let the high water levels drop for easier accessibility. Brush cutting on transects 3, 4 and 10 was completed in the marsh areas on the north and south sides of the transects. Brush cutting will start on transect 11 tomorrow morning. NPS personnel Johnathan Chase, UXOQCS/SO Ron Morgan and myself drove down to MRS 3 to inspect the magazine and wooded area of MRS 3. The Magazine will need to be leveled due to high water scouring around the bottom of the magazine and causing it to lean to the western side. Discussed with Jonathan Chase getting the NPS all-terrain forklift vehicle to come down and assist with re-leveling the magazine. Two seed items were placed, one on beach area for UTV towed array and one in the sand dune area for the man towed array operations. GPS coordinates are noted on the QC Report.

Report Date: 3/8/2018

Project No: 6273206

Report No: 37



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

Continued coordination with Zapata to ensure placement of ISO Seeds. At 1015, SUXOS, NPS Representative Jonathan Chase and I moved to MRS3 to inspect Ammunition Magazine. The magazine is listing between 10-25 degrees due to erosion from Nor'easter which blew through the island 10 days ago. We will have to have NPS assist with their rough terrain forklift to upright the magazine and replace the sand underneath. The ground cable is still in place and secure. We egressed back to the beach area to observe EM61 action and then inspected the brush clearing efforts. At 1300 I, along with SUXOS and the QC Geophysicist (Mike McGuire), emplaced MRS1 Seed EA002 at Coordinates 4228684.51N by 486814.75E at a depth of 12 inches, East to West attitude. At 1300 I, along with SUXOS and Mike McGuire, emplaced MRS1 Seed EA003 at Coordinates 4229013.46N by 486862.52E at a depth of 10 inches, East to West attitude. Zapata continued with UTV Towed Array on the ocean side of drift fence in conjunction with Man-Towed Array working the dunes area on parking side of the drift fence. I ensured that protected vegetation was not being trampled during the data collection process. At 1415 I moved to area of Transect 4 to monitor brush clearing. There was nothing further to report for the remainder of the day.

Summary of Deficiencies

None to report.

Corrective Actions

N/A

Reinspection Results

N/A

Additional Notes

None.

Report Date: 3/8/2018

Project No: 6273206

Report No: 37



SAFETY INSPECTIONS AND RESULTS:

Inspections

0730: Morning Safety Brief Topics: UTV safety, refueling practices, PPE, equipment and tools usage, weather, injury reporting, emergency medical SOP, administrative (driving, accidents, parking).

For remainder of day safety was monitored while engaged in QC duties. Thus far everyone appears cognizant of proper safety practices.

0830-1000 Vehicle Inspections. Hard Copies to follow.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

Tomorrow the brush clearing team will work extensively in marsh areas. Brush clearing team will be closely monitored to ensure adequate PPE (waders vice muck boots, use of safety rope) is being worn and no unnecessary risks are taken. If water is too deep for both safety and QC purposes work will stop and issues will be noted accordingly.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/8/2018 6:39:30 PM

SUXOS

Site Manager

Report Date: 3/9/2018

Project No: 6273206

Report No: 38



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT Assateague Island FUDS RI Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Clear, cold and windy - 10 knots with gusts to 40	42	31	56	0.00

GOVERNMENT PERSONNEL (Name/Organization):

USACE-Baltimore District Brian Todd Stealman and Geophysicist David King

SITE VISITORS (Name/Organization):

None

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	8.5		
Ron Morgan	1	UXOQCS/SO / EA	11.0		
Steve Yankay	1	Brush Crew / EA	8.5	9-13 to the north in the marsh.	Cut vegetation areas of marsh on the northern part of transects 9-13.
Conor O'Hara	1	Brush Crew/GPS / EA	8.5	9-13 to the north in the marsh.	Cut vegetation areas of marsh on the northern part of transects 9-13.
Mike McGuire	1	EA Geophysicist / EA	10.0		Observed Zapata personnel setup, test and operate man towed array on marsh area in MRS 1.
Steve Hodges	1	Towed Array operator / Zapata	10.0	5-10 to in the northern area of the marsh.	Setup, tested man towed array on IVS. Operated man towed array on transects 5-10 in marsh area of MRS 1.
Emery Mueller	1	Towed Array operator / Zapata	10.0	5-10 to in the northern area of the marsh.	Setup, tested man towed array on IVS. Operated man towed array on transects 5-10 in marsh area of MRS 1.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

Report Date: 3/9/2018

Project No: 6273206

Report No: 38



OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	334126	3.0	Yes
GEO 7x	Coner O'Hara	WH0130	8.5	Yes
EM-61 Man towed array	Emery Mueller		8.0	Yes

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Continued brush cutting on transects 9 thru 13 to the north in the marsh and wooded areas of MRS 1. Zapata had issues with the EM-61 man portable array performing the geophysical survey in the wooded areas so, they shifted to setup the man towed array and perform geophysical survey of the marsh portion of transects 5-10 in MRS 1. QC placed a seed item in the northern marsh area of MRS 1 for the daily geophysical survey and recorded the GPS coordinates for the location. Zapata personnel reported that the issues with the EM-61 man portable array for the wooded areas has been solved and the unit is operational.

Report Date: 3/9/2018

Project No: 6273206

Report No: 38



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

Zapata had planned to start gathering data in wooded areas of Transects 5-12 today, but had to modify their work plan due to unforeseen issues with proprietary software related to Man Portable Array. Therefore they decided to use Man Towed Array in the marsh portion of Transects 5-10. This was completed without incident at 1600 hours.

The brush clearance team completed clearing the northern marsh and wooded areas of Transects 9-13. Mike McGuire has decided that there needs to be additional data collected between Transect 15 and the beach area at the far north end. We will make this change when work resumes next week.

Mike McGuire and I emplaced Seed MRS 1 EA 004 at Coordinates 42228966.01N by 486244.72E at a depth of 12 inches and attitude of East-West. The seed was emplaced in Transect 9.

Brush clearing efforts were inspected and the team was cutting below 6 inches to a width of 1 meter and clearing and overhead of 7 feet. This meets the needs of the EM61 Towed Array.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

None

Additional Notes

Inclement weather is expected for Monday, but work will convene at 0700. I anticipate MRS1 being complete by NLT Wednesday.

Report Date: 3/9/2018

Project No: 6273206

Report No: 38



SAFETY INSPECTIONS AND RESULTS:

Inspections

Weather: Clear and cold. Temperature high was 42 degrees, low was 31 degrees. Winds out of the west at 10 knots, gusting to 40.

This morning's Safety Brief included additional guidance that waders be worn due to both brush clearing and EM61 teams would be working exclusively in marsh areas. With recent storms bringing high water I felt the additional precaution was necessary. Sufficient breaks were taken as well as lunch. Hydration was stressed.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

A tailgate safety brief was held at the end of the work day due to the upcoming weekend. Safe driving practices were stressed and the dangers of distracted driving.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/11/2018 9:03:09 PM

SUXOS

Site Manager

Report Date: 3/12/2018

Project No: 6273206

Report No: 39



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Partly cloudy to start off then became cloudy and rainy. 80% chance of rain.	44	32	93	0.05

GOVERNMENT PERSONNEL (Name/Organization):

None

SITE VISITORS (Name/Organization):

None

Report Date: 3/12/2018

Project No: 6273206

Report No: 39



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	11.0		
Ron Morgan	1	UXOQCS/SO / EA	11.0		Placed two seed items on transect in MRS 1. QC/SO activities.
Steve Yankay	1	Brush Crew / EA	11.0	11, 12 and 15b	Cut vegetation areas of woods on the northern transects of 11, 12 and 15b.
Conor O'Hara	1	Brush Crew/GPS / EA	11.0	11, 12 and 15b	Cut vegetation areas of woods on the northern transects of 11, 12 and 15b.
Mike McGuire	1	EA Geophysicist / EA	10.0		Observed Zapata personnel setup, test and operate man towed array on marsh area in MRS 1.
Steve Hodges	1	Towed Array operator / Zapata	10.0	Marsh area of MRS 1	Setup, tested man towed array on IVS. Operated man towed array on transects in marsh area of MRS 1.
Patrick Propst	1	Towed Array operator / Zapata	10.0	Marsh area of MRS 1	Setup, tested man towed array on IVS. Operated man towed array on transects in marsh area of MRS 1.
Terri Farmer	1	Man-portable array operator / Zapata	10.0		Worked on setup of man-portable array.
Emery Mueller	1	Man-portable array operator / Zapata	10.0		Worked on setup of man-portable array.
Neil Hollowell	1	Brush Crew / EA	11.0	11, 12 and 15b	Cut vegetation areas of woods on the northern transects of 11, 12 and 15b.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	334126	3.0	Yes
GEO 7x	Coner O'Hara	WH0130	8.5	Yes
EM-61 Man towed array	Patrick Probst		8.0	Yes

Report Date: 3/12/2018

Project No: 6273206

Report No: 39



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting and safety brief. Zapata setup/test man towed array to complete the marsh areas and started setup of the man-portable (skirt) array. Zapata personnel report they are missing a cable for the man-portable array, should be delivered by noon tomorrow. Brush crew completed transect 11 and new transect 15b on the eastern edge of the vegetated area of the beach area and parking lot area. Brush crew continued cutting pathway on transect 12 heading south. Zapata personnel completed all marsh areas and all of the dune areas of MRS 1.

Report Date: 3/12/2018

Project No: 6273206

Report No: 39



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0815 move to Transect 10 marsh area. Mike McGuire and I emplaced Seed MRS1 EA 005 in wooded area of Transect 8 at Coordinates 4228722.98m N by 486175.98m E at a depth of 11 inches and North-South orientation, and emplaced Seed MRS1 EA006 in marsh area at Coordinates 4229147.95m N by 486491.76m E at a depth of 16 inches and East-West orientation. At 1300 hours Conor O'Hara (EA) and I embarked to On Shore Vehicle area and moved to MRS 3 in order to mark the boundaries of MRS 3 beach area and fan area. At 1345 vehicle lost traction on or about midpoint between gate and Green Run Campground. NPS helped extract vehicle with minimum effort. However, due to lateness of afternoon the trip to MRS3 was postponed until 13 March.

Inspected brush clearing team and reaffirmed clearance at 6 inches and below, by 1 meter wide and 2 meters tall.

Summary of Deficiencies

Stuck vehicle exhibited no deficiencies. It was a combination of an inexperienced off-road driver and shifting sands due to extreme winds. Prior to next excursion all drivers will receive remedial training on beach driving from National Park Service representative.

Corrective Actions

Remedial Driver Training in on-beach training.

Reinspection Results

None

Additional Notes

Zapata ended operations early today due to not having a modem cable for the man-portable (skirt) array. They completed all of the marsh and dune areas of MRS1. They will hopefully attain the correct cable by noon 13 March and begin wooded areas shortly thereafter.

Report Date: 3/12/2018

Project No: 6273206

Report No: 39



SAFETY INSPECTIONS AND RESULTS:

Inspections

0700 Safety Brief. Due to Daylight Savings Time we are starting a half-hour earlier and going four 11-hour days and one 6-hour day. Because of the darkness of the hour I requested Zapata put streamers on the tailgate cables of their trailer for better visibility. Weather today is expected to deteriorate throughout the day. National Weather Service is calling for rain showers late this afternoon and snow this evening through early tomorrow morning. As we had three new personnel this morning I re-emphasized all safety and administrative (i.e., NPS requirements) information. New personnel are: Patrick Propst and Terry Farmer (Zapata) and Neil Hollowell (EA).

Conor O'Hara (EA) and I moved to MRS 3 to set beach boundaries but did not reach area due to getting stuck in sand. After 2 hours of work we were able to extricate vehicle without incident or injury. All safety precautions were observed. Moved to New Transect Area 15b to observe brush cutting. Teams were observing proper safety requirements.

Conor O'Hara reported allergic reaction to neoprene waders. We are working to secure a pair of non-neoprene waders to replace those.

Summary of Deficiencies

Allergic Reaction to neoprene. He was able to control it with Benedryl. I will continue to monitor.

Corrective Actions

Non-neoprene waders.

Reinspection Results

N/A

Additional Notes

Rain moved in about 1600 hours and rained steadily throughout the remainder of the afternoon. Temperature dropped and wind picked up. Rain appeared to have zero effect on brush clearing teams or DGM teams.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/12/2018 5:55:32 PM

SUXOS

Site Manager

Report Date: 3/13/2018

Project No: 6273206

Report No: 40



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Cloudy and windy with gust to 30mph	44	36	43	0.00

GOVERNMENT PERSONNEL (Name/Organization):

None

SITE VISITORS (Name/Organization):

None

Report Date: 3/13/2018

Project No: 6273206

Report No: 40



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	11.0		
Ron Morgan	1 and 3	UXOQCS/SO / EA	11.0		Placed two seed items on transect in MRS 1. QC/SO activities.
Steve Yankay	1	Brush Crew / EA	11.0	Transect 12	Cut vegetation area of transect 12 .
Conor O'Hara	1 and 3	Brush Crew/GPS / EA	11.0	Transect 12	Cut vegetation area of transect 12 .
Mike McGuire	1	EA Geophysicist / EA	9.0	Transect 12	Observed Zapata personnel setup, test and operate man-portable array on wooded transects in MRS 1.
Steve Hodges	1	Towed Array operator / Zapata	9.0	MRS 1	Setup, tested man towed array on IVS. Operated man towed array on transects in marsh area of MRS 1.
Patrick Propst	1	Towed Array operator / Zapata	9.0	MRS 1	Setup, tested man towed array on IVS. Operated man towed array on transects in marsh area of MRS 1.
Terri Farmer	1	Man-portable array operator / Zapata	9.0	Transects 3-10 in MRS 1	Worked on setup of man-portable array.
Emery Mueller	1	Man-portable array operator / Zapata	9.0	Transects 3-10 in MRS 1	Worked on setup of man-portable array.
Neil Hollowell	1	Brush Crew / EA	11.0	Transect 12	Cut vegetation area of transect 12 .
John Hayes	1	Brush Crew / EA	11.0	Transect 12	Cut vegetation area of transect 12 .

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
 UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	334126	3.0	Yes
GEO 7x	Coner O'Hara	WH0130	8.5	Yes
EM-61 Man-portable array	Terry Farmer		8.0	Yes

Report Date: 3/13/2018

Project No: 6273206

Report No: 40



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Health and Safety brief was performed in the morning. Zapata personnel setup and ran the man-portable (skirt) array on the IVS at the start of the survey of the wooded areas in MRS 1 and completed transects 3-10. Brush crew completed transect 12. QC/SO and Coner O'Hara helped setup IVS in MRS 3 and placed flagging on northern beach boundary, northern range fan boundary and southern most boundary of MRS 3 on beach area.

Report Date: 3/13/2018

Project No: 6273206

Report No: 40



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0700- Zapata indicated the cable needed for the Man-Portable Array will not arrive today. However, they will be able to use the equipment in areas with clear overhead sight lines without loss of data signal.

0950 Conor O'Hara and I moved to MRS 3 to locate and mark beach boundaries and Island Survey Markers and to locate and sweep/clear a suitable location for the DGM IVS. We found two survey markers and three possible locations for the IVS. I swept and cleared all three, but finally decided to locate the IVS at Coordinates 4214806.17 N by 482046.37 E. The location was marked with pin flags and the coordinates were provided to the DGM team for their inspection and approval.

At 1400 I moved to provide oversight of the Brush Cutting Team. Four EA personnel are performing this task along with Park Ranger Jonathan Chase. The brush cutting is meeting with approval from myself as QC and with the DGM Team (Zapata). DGM Team left site at 1600.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

DGM Team (Zapata) will move to MRS 3 on 14 March to inspect and approve/not-approve of IVS location.

Report Date: 3/13/2018

Project No: 6273206

Report No: 40



SAFETY INSPECTIONS AND RESULTS:

Inspections

0700- Safety Brief. New Personnel: John Hayes UXO Tech II (EA). As new personnel were on-site I re-emphasized all aspects of safety as it pertains to this project and this location. I further informed the field team that I would be moving to MRS 3 for three to four hours, performing QC duties, and to report any issues to SUXOS in my absence.

Conor O'Hare informed me that he believes he contacted poison ivy late yesterday. I inspected his left arm where he came in contact. A rash is evident, but he stated that it is not bothering him and he doesn't itch. Regardless, I informed brush cutting team that no tools were to be handled without gloves, and that all tools were to be washed ASAP with soap and water per the approved Site Health and Safety Plan. Jonathan Chase (NPS) will instruct brush cutting team as to possible locations of poison ivy and will be with them as they continue to work. Most of the ivy is near Transects 11 and 12 directly behind Ranger Station.

No other issues to report.

Summary of Deficiencies

None

Corrective Actions

Wash all hand tools with warm soapy water. Wear gloves while cutting.

Reinspection Results

Pass

Additional Notes

None

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/13/2018 6:15:49 PM

SUXOS

Site Manager

Report Date: 3/14/2018

Project No: 6273206

Report No: 41



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Clear to start then partly cloudy, windy with gusts of 35mph	44	29	56	0.00

GOVERNMENT PERSONNEL (Name/Organization):

None

SITE VISITORS (Name/Organization):

None

Report Date: 3/14/2018

Project No: 6273206

Report No: 41



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	10.5		
Ron Morgan	1	UXOQCS/SO / EA	10.5		Placed two seed items on transect in MRS 1. QC/SO activities.
Steve Yankay	1	Brush Crew / EA	10.5	13, 14 and 15	Cut vegetation area of transect 13, 14 and 15.
Conor O'Hara	1	Brush Crew/GPS / EA	10.5	13, 14 and 15	Cut vegetation area of transect 13, 14 and 15.
Mike McGuire	1	EA Geophysicist / EA	2.0		Observed Zapata personnel setup, test and operate man-portable array on wooded transects in MRS 1.
Steve Hodges	1 and 3	Towed Array operator / Zapata	10.0	Beach low tide transects	Setup, tested man-portable array and RTV towed array on IVS. Operated RTV towed array on low tide transects in MRS 1.
Patrick Propst	1	Towed Array operator / Zapata	10.0	10, 11, 12 and 13.	Setup, tested man-portable array and RTV towed array on IVS. Operated man-portable array on wooded transects 10, 11, 12 and 13 in MRS 1.
Terri Farmer	1 and 3	Man-portable array operator / Zapata	10.0	10 and 11	Setup, tested man-portable array and RTV towed array on IVS. Operated RTV towed array on low tide transects in MRS 1.
Emery Mueller	1	Man-portable array operator / Zapata	10.0	10, 11, 12 and 13.	Setup, tested man-portable array and RTV towed array on IVS. Operated man-portable array on wooded transects 10, 11, 12 and 13 in MRS 1.
Neil Hollowell	1	Brush Crew / EA	10.5	13, 14 and 15	Cut vegetation area of transect 13, 14 and 15.
John Hayes	1	Brush Crew / EA	10.5	13, 14 and 15	Cut vegetation area of transect 13, 14 and 15.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
 UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	334126	3.0	Yes
GEO 7x	Coner O'Hara	WH0130	9.5	Yes
EM-61 Man-portable array	Emery Mueller		7.0	Yes
RTV Towed Array	Steve Hodges		7.0	Yes

Report Date: 3/14/2018

Project No: 6273206

Report No: 41



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief was held prior work starting. Zapata personnel setup man-portable (skirt) array and UTV towed array and tested on IVS. DGM was performed on wooded transects 10, 11, 12 and 13 in MRS 1 with man-portable array and low tide area on beach with RTV towed array. Brush crew completed all wooded transects 13, 14 and 15 in MRS 1. QC/SO placed two seed items one on the beach and one on transect 15b.

Report Date: 3/14/2018

Project No: 6273206

Report No: 41



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

No inspection, but met with Mike McGuire, Zapata Team and SUXOS to finalize plan for work today. They will work on wooded transects 13-15b. Zapata requested the boundaries for the beach sweep in the surf area of target be established. I agreed, as a seed will be placed in that area.

Emplaced Seed MRS 1 EA007 at coordinates 4229284.96 N by 486871.51 E, Depth 11", East-West Orientation.
Emplaced Seed MRS 1 EA008 at coordinates 4228911.29 N by 486951.85 E, Depth 14", East-West Orientation,
Elevation: -1.76m.

The brush cutting teams completed Transects 13-15. All cut areas have been inspected and passed.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

Brush teams will be moving to MRS 3 on 15 March. DGM team still has areas to finish in MRS1 and cannot split teams between the two MRS's due to the loss of signal from the base station.

Report Date: 3/14/2018

Project No: 6273206

Report No: 41



SAFETY INSPECTIONS AND RESULTS:

Inspections

0700 Safety Brief. Emphasized UTV operations and deep sand driving techniques in addition to normal daily safety brief. Continually moved from DGM to brush cutting teams throughout the day, inspecting for any safety violations or issues.

1430 A member of the brush team notified the National Park Service of a raccoon in their immediate area that was acting strangely. Park Service Law Enforcement subsequently shot and removed the raccoon. They do not believe it was rabid, but rather old and ill. Team did not notify Safety or SUXOS. We had to find out after we heard the shot. I did on-the-spot correction as this was unsatisfactory.

Summary of Deficiencies

Failure to notify Safety or SUXOS of concern about wild animal in their immediate vicinity.

Corrective Actions

Briefed all team members of correct reporting procedures to include wild animal safety.

Reinspection Results

N/A

Additional Notes

Will include updated wild animal reporting procedures at morning safety brief.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/14/2018 5:45:26 PM

SUXOS

Site Manager

Report Date: 3/15/2018

Project No: 6273206

Report No: 42



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Mostly cloudy and windy	50	32	38	0.00

GOVERNMENT PERSONNEL (Name/Organization):

None

SITE VISITORS (Name/Organization):

None

Report Date: 3/15/2018

Project No: 6273206

Report No: 42



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	3	SUXOS / EA	10.5		
Ron Morgan	3	UXOQCS/SO / EA	10.5		Repositioned DGM IVS in MRS 3. QC/SO activities.
Steve Yankay	3	Brush Crew / EA	10.5	7 and 8	Cut vegetation areas of transects 7 and 8.
Conor O'Hara	3	Brush Crew/GPS / EA	10.5	7 and 8	Cut vegetation areas of transects 7 and 8.
Steve Hodges	1	Man Array operator / Zapata	10.0	Marsh Transects	Setup, tested man-portable array and RTV towed array on IVS. Operated RTV towed array on low tide transects in MRS 1.
Patrick Propst	1	Man Array operator / Zapata	10.0	Marsh Transects	Setup, tested man-portable array and RTV towed array on IVS. Operated man-portable array on wooded transects 10, 11, 12 and 13 in MRS 1.
Terri Farmer	1	Man-portable array operator / Zapata	10.0	14, 15 and 15b	Setup, tested man-portable array and RTV towed array on IVS. Operated RTV towed array on low tide transects in MRS 1.
Emery Mueller	1	Man-portable array operator / Zapata	10.0	14, 15 and 15b	Setup, tested man-portable array and RTV towed array on IVS. Operated man-portable array on wooded transects 10, 11, 12 and 13 in MRS 1.
Neil Hollowell	3	Brush Crew / EA	10.5	7 and 8	Cut vegetation areas of transects 7 and 8.
John Hayes	3	Brush Crew / EA	10.5	7 and 8	Cut vegetation areas of transects 7 and 8.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
 UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	334126	3.0	Yes
GEO 7x	Coner O'Hara	WH0130	9.5	Yes
EM-61 Man-portable array	Terry Farmer		7.0	Yes
Man towed Array	Steve Hodges		7.0	Yes

Report Date: 3/15/2018

Project No: 6273206

Report No: 42



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief was held prior to work starting. Zapata setup and tested man towed and man-portable (skirt) array. DGM was performed on wooded transects 14, 15 and 15b with skirt array. The marsh area was re-surveyed with man towed array in MRS 3. Brush crew completed 75% of transect 7 and approximately 400-ft of the southern end of transect 8. Repositioned DGM IVS within MRS boundaries on the beach as instructed by NPS.

Report Date: 3/15/2018

Project No: 6273206

Report No: 42



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

Zapata indicated this morning due to hardware issues with the Man-Portable Array that they were having to re-acquire data in the marsh area in MRS 1. This would delay their movement to MRS 3. As of 1400 they had repaired the unit and re-acquired the data.

Steve Hodges (Zapata), Jonathan Chase (NPS) and I located one Survey Marker suitable for use as a Base Station for the EM 61. We also located a more suitable location for the remote IVS that meets the National Park Service's restrictions.

Tomorrow I will sweep and clear the new Remote IVS location.

Summary of Deficiencies

Zapata had no data for the marsh area in MRS 1 and had to reacquire.

Corrective Actions

None

Reinspection Results

Zapata was able to collect the data they needed after fixing the hardware issue.

Additional Notes

The Brush Clearing team has requested battery-operated hedge trimmers for MRS 3. We are working with the National Park Service to see if we can use them.

Report Date: 3/15/2018

Project No: 6273206

Report No: 42



SAFETY INSPECTIONS AND RESULTS:

Inspections

0700- Daily Safety Brief. Emphasized wild animal contact SOP due to incident yesterday. All personnel are clear as to steps to take should they encounter an animal acting abnormal.

At end of day, Brush Clearing Team requested battery-operated hedge trimmers due to unusually heavy green briar concentration (several hundred yards). National Park Service is discussing the issue and will let us know by Monday.

Team is taking rest breaks as needed and moving well. No other issues safety related to report.

Summary of Deficiencies

None

Corrective Actions

None.

Reinspection Results

N/A

Additional Notes

I concur with team's request for battery-operated hedge trimmers. Using the trimmers will reduce team's time on target and will reduce the chances of someone getting injured due to working in proximity to dead pine trees prevalent in the transects.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/15/2018 5:42:43 PM

SUXOS

Site Manager

Report Date: 3/16/2018

Project No: 6273206

Report No: 43



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Clear sky's, windy	49	33	68	0.00

GOVERNMENT PERSONNEL (Name/Organization):

None

SITE VISITORS (Name/Organization):

None

Report Date: 3/16/2018

Project No: 6273206

Report No: 43



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	3	SUXOS / EA	6.0		
Ron Morgan	3	UXOQCS/SO / EA	10.0		Repositioned DGM IVS in MRS 3. QC/SO activities.
Steve Yankay	3	Brush Crew / EA	6.0	4 and 5 in MRS 3	Cut vegetation area of transects 4 and 5 in MRS 3.
Conor O'Hara	3	Brush Crew/GPS / EA	6.0	4 and 5 in MRS 3	Cut vegetation area of transects 4 and 5 in MRS 3.
Steve Hodges	3	Man Array operator / Zapata	10.0		Setup, tested RTV towed array on IVS in MRS 3 and MRS 1. Operated RTV towed array on high tide transect in MRS 3.
Patrick Propst	3	Man Array operator / Zapata	10.0		Setup, tested RTV towed array on IVS in MRS 3 and MRS 1. Operated RTV towed array on high tide transect in MRS 3.
Terri Farmer	3	Man-portable array operator / Zapata	10.0		Setup, tested RTV towed array on IVS in MRS 3 and MRS 1. Operated RTV towed array on high tide transect in MRS 3.
Emery Mueller	3	Man-portable array operator / Zapata	10.0		Setup, tested RTV towed array on IVS in MRS 3 and MRS 1. Operated RTV towed array on high tide transect in MRS 3.
Neil Hollowell	3	Brush Crew / EA	6.0	4 and 5 in MRS 3	Cut vegetation area of transects 4 and 5 in MRS 3.
John Hayes	3	Brush Crew / EA	6.0	4 and 5 in MRS 3	Cut vegetation area of transects 4 and 5 in MRS 3.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	334126	3.0	No
GEO 7x	Coner O'Hara	WH0130	9.5	No
Man towed Array	Steve Hodges		7.0	No

Report Date: 3/16/2018

Project No: 6273206

Report No: 43



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief performed prior to the start of field activities. Zapata moved Base Station from MRS 1 and setup on survey marker in MRS 3, then located and placed remote IVS. QC/SO swept and cleared IVS location prior to Zapata setting it up and placed a seed on the beach in MRS 3 (seed number EA 009) and recorded GPS coordinates and other required information. UTV towed array made one pass down beach transect next to dunes. Zapata reset the base station in MRS 1 to run the UTV towed array for calibration on IVS in MRS 1. Brush cutting team completed the northern sections of transects 4 and 5 in MRS 3.

Report Date: 3/16/2018

Project No: 6273206

Report No: 43



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

Zapata moved Base Station to MRS 3 at 1200. We set up the Base Station on the Survey Marker in MRS 3, then located and emplaced Remote IVS. I swept and cleared the IVS location prior to Zapata setting it up. While they were setting up the IVS I moved down the beach and emplaced a Seed in MRS 3 (EA 009) at Coordinates 4214951.71 N by 482178.66 E, Elevation 0.45 m, Depth 11 inches, Orientation East-West. At 1500 UTV Towed Array made one pass down the beach transect closest to dunes. At 1530 all parties moved back to Rally Point. Zapata reset the Base Station in MRS 1 and UTV Towed Array made calibration passes over the IVS in MRS 1.

Brush cutting team cleared Transects 4 and 5 in MRS 3. DGM team may need transects re-cut in order to use a slightly wider bicycle-wheeled array in those areas. I will discuss with Zapata and SUXOS at Monday morning in-brief. EA personnel left MRS 3 at 1230.

Summary of Deficiencies

Nothing to report at this time.

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

Because Remote IVS is set up in the Onshore Vehicle driving area, field personnel will need to continually inspect to ensure validity of targets throughout operations in MRS 3.

Report Date: 3/16/2018

Project No: 6273206

Report No: 43



SAFETY INSPECTIONS AND RESULTS:

Inspections

0700 Safety Brief. Emphasized the need for hard hats in brush cutting area of MRS 3. The entire pine forest was decimated due to a Pine Beetle infestation and the transects in MRS 3 run through this extremely hazardous area with the risk of overhead timber falling with little-to-no warning. NPS Officer Jonathan Chase and I both agree that we will need to modify the emergency evacuation plan to include helicopter (Life Flight) evacuation due to extreme remoteness of MRS 3. It would take an emergency vehicle a minimum of 45 minutes to respond to the area and an additional half hour to travel to the trauma center in Salisbury once they leave the island. That is a 2 hour turnaround time in the event of a catastrophic injury. If a tree falls on someone those 2 hours could make a huge difference. Life Flight can respond in 15 minutes and then it is only a 15 minute helicopter ride to the trauma center in Salisbury.

Summary of Deficiencies

Radio communications are spotty in MRS 3 due to signals having to bounce to the repeater on the mainland and back. We will try an alternate channel on Monday that is direct (no repeater). Cell phone coverage is adequate and I have added the Emergency Dispatcher Land Line to the phone roster in the event of an emergency.

Corrective Actions

Modify Emergency Evacuation Plan to include Life Flight and Landing Zones in MRS 3. Officer Chase and I will locate two suitable Landing Zones in MRS 3 and mark them accordingly and forward that information to NPS Law Enforcement.

Reinspection Results

N/A

Additional Notes

Brush Cutting Team needs this weekend to rest and recuperate. One person has severe carpal tunnel and may seek additional treatment over the weekend. He will inform me immediately should he do so. Two others are experiencing chafing and rashes. They are utilizing over-the-counter ointments to ease symptoms. Should they need further treatment they will inform me as well. Each person feels that this weekend will give them time to recover.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/18/2018 6:52:02 PM

SUXOS

Site Manager

Report Date: 3/19/2018

Project No: 6273206

Report No: 44



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Clear to partly cloudy	50	32	86	0.00

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

Report Date: 3/19/2018

Project No: 6273206

Report No: 44



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	3	SUXOS / EA	12.0		
Ron Morgan	3	UXOQCS/SO / EA	12.0		Performed QC/SO activities and placed two seed items, one on the beach and one on transect 11 in MRS 3.
Steve Yankay	3	Brush Crew / EA	12.0	5, 6, 7, 8 and 11	Cut vegetation area of transects 5, 6, 7, 8 and 11 in MRS 3.
Conor O'Hara	3	Brush Crew/GPS / EA	12.0	5, 6, 7, 8 and 11	Cut vegetation area of transects 5, 6, 7, 8 and 11 in MRS 3.
Steve Hodges	3	Man Array operator / Zapata	11.0		Setup, tested RTV towed array on IVS in MRS 3 and MRS 1. Operated RTV towed array on high tide transect in MRS 3.
Patrick Propst	3	Man Array operator / Zapata	11.0	4, 5, 6, 7 and 11	Setup, tested RTV towed array on IVS in MRS 3 and MRS 1. Operated RTV towed array on high tide transect in MRS 3.
Terri Farmer	3	Man-portable array operator / Zapata	11.0	4, 5, 6, 7 and 11	Setup, tested RTV towed array on IVS in MRS 3 and MRS 1. Operated RTV towed array on high tide transect in MRS 3.
Emery Mueller	3	Man-portable array operator / Zapata	11.0	4, 5, 6, 7 and 11	Setup, tested RTV towed array on IVS in MRS 3 and MRS 1. Operated RTV towed array on high tide transect in MRS 3.
Neil Hollowell	3	Brush Crew / EA	12.0	5, 6, 7, 8 and 11	Cut vegetation area of transects 5, 6, 7, 8 and 11 in MRS 3.
John Hayes	3	Brush Crew / EA	12.0	5, 6, 7, 8 and 11	Cut vegetation area of transects 5, 6, 7, 8 and 11 in MRS 3.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
 UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	334126	3.0	Yes
GEO 7x	Coner O'Hara	WH0130	9.5	Yes
EM-61 RTV Towed Array	Steve Hodges		8.0	Yes
Man-portable (Skirt) Array	Terry Farmer		8.0	Yes

Report Date: 3/19/2018

Project No: 6273206

Report No: 44



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief completed prior to start of field work. DGM personnel (Zapata) setup and tested RTV towed array and man-portable (Skirt) array on IVS. RTV towed array was used to complete DGM survey of 4 transects from northern boundary of range fan to northern boundary of MRS 3. Man-portable (Skirt) was used to complete DGM survey of northern transects 4 and 5, northern end of transect 6 (from channel to northern boundary), southern end of transect 7 (from Green Run Rd to southern boundary) and transect 11 (from Valentine Rd to the southern boundary). Brush crew personnel completed transects 5, 6, 7 and 11 and cleared the southern section of transect 8 (from Green Run Rd to southern boundary). QC/SO and NPS Ranger Jonathan Chase spoke with NPS Police Chief Walt West to setup emergency life flight landing locations in MRS 3 to ensure a fast recovery time in the event of a life threatening emergency. NPS was appreciative of the effort to establish these procedures for this remedial investigation and for future needs of the National Park Service.

Report Date: 3/19/2018

Project No: 6273206

Report No: 44



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

Met with DGM Team and discussed work areas for today. Due to expected weather issues tomorrow we will work later today than normal. Moved to MRS 3 and inspected the remote IVS. Due to weekend beach traffic I was concerned it may have been disturbed. The IVS was undisturbed and the DGM Team completed calibration of both EM61 systems. The UTV-Towed Array was used on the beach transects and the Man-Portable Array completed transects 4 and 5, the north end of transect 6, south end of transect 7, and most of transect 11.

Emplaced two seeds: Seed MRS 3 EA010 at Coordinates 4215018.28N by 482020.83E, Depth 12 inches, Orientation North-South. Seed MRS 3 EA011 at Coordinates 4215086.60N by 482263.09E Depth 12 inches, Orientation East-West. These coordinates are uncorrected. We were unable to use VRS due to having no cellular signal.

Summary of Deficiencies

Inspected transects 6, 7 and 11. Brush cutting was done to standard. No deficiencies. DGM team was able to move through transects without undue difficulty.
No deficiencies noted.

Corrective Actions

We will attempt to use the hotspot for VRS with Trimble to try and get more accurate coordinates for seeding.

Reinspection Results

N/A

Additional Notes

Weather expected to turn bad over the next two days. We are working longer today to minimize lost time due to weather delays.



SAFETY INSPECTIONS AND RESULTS:

Inspections

0700- Safety Brief. Focused on modification to Site Safety Plan to include use of MEDEVAC Chopper in the event of a catastrophic injury due to falling trees or limbs. I informed each work team that they were to have one person on each team whose sole responsibility is to monitor overhead and watch for falling limbs and trees. The area is too hazardous to not have this over watch. There will be insufficient time to avoid injury without the over watch. Also, the threat of severe weather occurring over the next two days was discussed which may adversely impact working conditions and may postpone field activities until the weather passes.

At 0930 Officer Chase (NPS) and I met with Chief Ranger Walt West (NPS) to discuss the feasibility of requesting a MEDEVAC in the event of an emergency. Chief West was not present at the March 5th Kick-off meeting and had limited knowledge as to our mission, scope of work, and areas where work was to be performed. He agreed with our assessment that ambulance evacuation from MRS 3 would be inadequate due to the estimated response time. He inquired as to who within our crew had EMT experience. I said I would provide him an answer. Officer Chase mentioned the possibility of pre-staging EMTs at the site. I said the likely cost incurred was outside the RI scope and I could not commit to that expense. Chief West asked us to coordinate pre-staging log cutting equipment with Officer Kumar. I provided him a map of MRS 3 and showed him a potential site for a Landing Zone. He asked us to verify the location and provide him with coordinates and photographs. He would coordinate with Maryland State Police to have the chopper crew ascertain the feasibility of landing at the chosen site. They have already approved an alternate Landing Zone (LZ) next to the Ammunition Magazine located at Mile Marker 25.3 at MRS 3. Chief West mentioned that the NPS had been looking for a good LZ in that area and this would be an excellent opportunity to locate a permanent LZ in that area. We left the meeting feeling good about the modified plan. We hope the plan will not have to be exercised, but I feel much better knowing that we have planned for the possibility. Upon return to MRS 3 Officer Chase and I located a near-perfect LZ on Valentine Road at Coordinates 38.08434 Degrees North by 075.21100 Degrees West. We will need to do some minor brush cutting at edges of road, but LZ has vehicle access from both sides and the pad is firm enough to support heavy equipment. We provided this information to Chief West.

For the rest of the afternoon I monitored safety of the Brush Cutting and DGM Teams. No safety violations noted.

Summary of Deficiencies

The NPS will be glad to provide us with all the equipment needed in the event of an emergency with the exception of a chainsaw. We will have to provide our own.

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

I will make a call on postponing field work after reviewing the site and the weather in the morning.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/20/2018 8:56:21 AM

Report Date: 3/19/2018

Project No: 6273206

Report No: 44



SUXOS

Site Manager

Report Date: 3/20/2018

Project No: 6273206

Report No: 45



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Heavy rains and very windy, northwest winds 25 to 35 mph with gusts up to 50 mph. Extreme high tide and flooding expected. Rainfall expected to be 1- 3 inches.	43	37	100	0.15

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	2.0		Assess weather conditions.
Ron Morgan	1	UXOQCS/SO / EA	2.0		Assess weather conditions.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

No Equipment Used

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Report Date: 3/20/2018

Project No: 6273206

Report No: 45



Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Arrived on site at 0630 with QCS/SO and Jonathan Chase (NPS) to observe weather conditions. At sunrise around 0700 observed high winds and driving rain. After discussions QCS/SO, Jonathan Chase (NPS) and myself about the conditions of the beach area, especially at MRS 3, and the NPS had concerns for safety. Todays activities are canceled for the day. We will resume activities tomorrow at 0700 to determine if site weather conditions have improved. Expected weather for tomorrow is snow and wind and may be favorable for all field activities.

Report Date: 3/20/2018

Project No: 6273206

Report No: 45



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

Arrived at 0630 with SUXOS. Officer Chase (NPS) was present. We moved to On Shore Vehicle (OSV) entrance to observe the weather impacts on the beach. The weather conditions are not amenable for field activities. Made the call to cancel work for today. Conditions are expected to improve tomorrow, so we will meet at 0700 at the Rally Point in the morning.

Summary of Deficiencies

N/A

Corrective Actions

N/A

Reinspection Results

N/A

Additional Notes

No work was performed today. We will try again tomorrow.

Report Date: 3/20/2018

Project No: 6273206

Report No: 45



SAFETY INSPECTIONS AND RESULTS:

Inspections

0630- Arrived on-site with the SUXOS. Met with Park Ranger Chase (NPS) and observed weather conditions from beach near the On Shore Vehicle (OSV) access area. Wind is continuous at 20-30 knots and gusting up to 50 knots with driving rain. Tide is surging and possibility that OSV will close before the end of day. These conditions will be too dangerous while working in the dead forest and the DGM crew will be unable to keep their electronics dry; therefore, I made the call to postpone work for today. The SUXOS and I agreed we should meet at Rally Point at 0700 Wednesday morning to try again. Expecting snow and wind, but conditions could prove favorable.

Summary of Deficiencies

Weather conditions make it unsafe to work.

Corrective Actions

Wait for tomorrow.

Reinspection Results

N/A

Additional Notes

No work today.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/20/2018 9:21:15 AM

SUXOS

Site Manager

Report Date: 3/21/2018

Project No: 6273206

Report No: 46



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT Assateague Island FUDS RI Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Severe weather Rain, high winds and extreme high tides. Snow expected by late afternoon.	39	31	100	0.48

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	6.0		
Ron Morgan	3	UXOQCS/SO / EA	6.0		Investigated access and conditions in MRS 3.
Steve Yankay	1	Brush Crew / EA	4.0		Standby
Conor O'Hara	1	Brush Crew/GPS / EA	4.0		Standby
Steve Hodges	3	Man Array operator / Zapata	4.0		Inspected and relocated equipment to higher elevation.
Patrick Propst	1	Man Array operator / Zapata	4.0		Standby
Terri Farmer	1	Man-portable array operator / Zapata	4.0		Standby
Emery Mueller	3	Man-portable array operator / Zapata	4.0		Inspected and relocated equipment to higher elevation.
Neil Hollowell	1	Brush Crew / EA	4.0		Standby
John Hayes	1	Brush Crew / EA	4.0		Standby

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

Report Date: 3/21/2018

Project No: 6273206

Report No: 46



OPERATING EQUIPMENT DATA (Not Hand Tools):

No Equipment Used

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief performed prior to field activities. Assigned UXOQCS/SO, two Zapata personnel and NPS Ranger Jonathan Chase to inspect conditions at MRS 3 so they can ascertain feasibility of working today and relocate equipment to a higher elevation. UXOQCS/SO reported the beach tidal surge had reduced the drivable area to one lane all the way down to MRS 3. The tide is expected to be at its highest point around 1022-hrs. The on shore vehicle (OSV) access was closed shortly after personnel arrived back to the access gate around 0930. No work activities will be performed today due to inclement weather.

Report Date: 3/21/2018

Project No: 6273206

Report No: 46



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

Traveled to MRS 3 to ascertain feasibility of working today. During transit to MRS 3 the beach tidal surge had reduced the drivable area to one lane with the tide still not at its highest point (1022 hours). At high tide and with a predicted 9-foot surge the OSV will become impassable. We inspected DGM equipment that was pre-staged on Valentine Road. The equipment was moved to a higher elevation and away from any dead trees that could fall and damage it. Then we proceeded back to Rally Point. Due to high winds and the tidal surge, no work today will be performed today.

Summary of Deficiencies

No work performed.

Corrective Actions

No work performed.

Reinspection Results

None

Additional Notes

Weather conditions permitting, work will resume tomorrow.

Report Date: 3/21/2018

Project No: 6273206

Report No: 46



SAFETY INSPECTIONS AND RESULTS:

Inspections

0700 Safety Brief- Focused on dangerous wind and tidal conditions. 4 personnel (NPS, UXOQCS/SO, DGM personnel) will move down-range to inspect DGM equipment and ascertain feasibility of working in MRS 3.

0730-0930 Movement to MRS 3. The beach is treacherous. Wind and tide are threatening. Once we reached remote IVS location, the beach only had one passable lane which was narrowing fast. We made a rapid entry into the wooded area to retrieve DGM equipment and relocate to higher, safer ground. Once completed we retreated back to Rally Point. On Shore Vehicle Access was closed by NPS shortly after we exited the beach. I briefed the SUXOS that we would be unable to work today due to dangerous conditions which were only expected to deteriorate further throughout the day.

At 1000 SUXOS, UXOQCS/SO, and NPS Ranger Chase met with Chief Ranger West to update him on our proposed MEDEVAC SOP 21. I discussed a draft copy of SOP 21 with him, which he was very comfortable with and walking through the details of the SOP alleviated his concerns as to our safety in the dead forest. We further learned that high tide is not expected until 1230 hours tomorrow and the On Shore Vehicle access will not likely be opened until after high tide has occurred. SUXOS and I will be on-site tomorrow during the high tide event to determine if it will be feasible to work tomorrow afternoon.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

We will schedule a normal work day on Saturday to help off-set the loss of time this week.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/21/2018 3:59:53 PM

SUXOS

Site Manager

Report Date: 3/22/2018

Project No: 6273206

Report No: 47



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Partly cloudy and windy	47	32	61	0.23

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk		SUXOS / EA	3.0		Assess weather conditions and on shore vehicle (OSV) access.
Ron Morgan		UXOQCS/SO / EA	3.0		Assess weather conditions and on shore vehicle (OSV) access.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

No Equipment Used

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Report Date: 3/22/2018

Project No: 6273206

Report No: 47



Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Today's activities were canceled due to high tidal surge on the on shore vehicle (OSV) access area. Evaluated the conditions of the beach and OSV access area with UXOQCS/SO and NPS Ranger Jonathan Chase. Discussed the final locations of landing zones (LZ) with Jonathan Chase and UXOQCS/SO and received the LZ coordinates for plotting onto map for inclusion as attachment to the Draft SOP 21. OSV access area re-opened at 1412 hours per National Park Service. Work will resume at normal work hours tomorrow.

Report Date: 3/22/2018

Project No: 6273206

Report No: 47



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

No work was performed today due to weather conditions. Arrived onsite at 1000 and met with NPS Officer Chase. Monitored and assessed conditions, finalized locations of Landing Zones (LZs) and provided LZ coordinates to Conor O'Hare for plotting onto map for inclusion as attachment to Draft SOP 21. OSV Access re-opened at 1412 hours per National Park Service.

Summary of Deficiencies

N/A

Corrective Actions

N/A

Reinspection Results

N/A

Additional Notes

We will need to assess damage to Remote Instrument Verification Strip (IVS) upon return to MRS 3 tomorrow. We are anticipating having to recreate the IVS.

Report Date: 3/22/2018

Project No: 6273206

Report No: 47



SAFETY INSPECTIONS AND RESULTS:

Inspections

No work performed today due to weather conditions. Met with NPS and continued to monitor conditions. On Shore Vehicle access opened at 1412 hours. Normal work will resume on 23 March at 0700.

Summary of Deficiencies

N/A

Corrective Actions

N/A

Reinspection Results

N/A

Additional Notes

N/A

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/22/2018 3:15:45 PM

SUXOS

Site Manager

Report Date: 3/23/2018

Project No: 6273206

Report No: 48



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Mostly Sunny, winds out of the NNW at 15 mph	49	29	51	0.00

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

Report Date: 3/23/2018

Project No: 6273206

Report No: 48



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	3	SUXOS / EA	12.0		Supervised and monitored all activities.
Ron Morgan	3	UXOQCS/SO / EA	12.0		Verified MRS 3 IVS is still present. Observed DGM and brush cutting activities in MRS 3. Placed two seed items for DGM operations, one on the beach and one in the dune area.
Steve Yankay	3	Brush Crew / EA	12.0	6, 7, 8, 9 and 10	Brush cut transects 5, 6, 7, 8, 9, and 10 in MRS 3.
Conor O'Hara	3	Brush Crew/GPS / EA	12.0	6, 7, 8, 9 and 10	Brush cut transects 5, 6, 7, 8, 9, and 10 in MRS 3.
Steve Hodges	3	Man Array operator / Zapata	10.0	Beach transects	Setup, tested and operated RTV towed array on beach transects in MRS 3.
Patrick Propst	3	Man Array operator / Zapata	10.0	Beach and Dune transects	Setup, tested and operated Man-towed array on Dune transects in MRS 3.
Terri Farmer	3	Man-portable array operator / Zapata	10.0	Dune area transect	Setup, tested and operated Man-towed array on Dune transects in MRS 3.
Emery Mueller	3	Man-portable array operator / Zapata	10.0	Dune area transect	Setup, tested and operated Man-towed array on Dune transects in MRS 3.
Neil Hollowell	3	Brush Crew / EA	12.0	6, 7, 8, 9 and 10	Brush cut transects 5, 6, 7, 8, 9, and 10 in MRS 3.
John Hayes	3	Brush Crew / EA	12.0	6, 7, 8, 9 and 10	Brush cut transects 5, 6, 7, 8, 9, and 10 in MRS 3.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
 UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	334126	3.0	Yes
GEO 7x	Coner O'Hara	WH0130	10.0	Yes
Man Towed Array	Terry Farmer		8.5	Yes
RTV Towed Array	Steve Hodges		8.5	Yes

Report Date: 3/23/2018

Project No: 6273206

Report No: 48



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning Meeting/Health & Safety Brief was performed prior to start of daily field activities. Safety was stressed for Air MEDEVAC procedures for all personnel. Briefed the brush cutting team leader to stay south of Green Run Road and out of the dead forested areas due to safety reasons. The brush crew completed the farthest south small sections of transects 6, 7 and 8 in MRS 3. The brush crew also completed the southern sections of transects 9 and 10 in MRS 3 (Green Run Rd. to the southern most boundary). DGM crew (Zapata) inspected the condition of the IVS with the UXOQCS/SO and verified it was still in good condition after the severe weather conditions. The DGM crew setup and tested the RTV towed array and the man-towed array on the IVS. The RTV towed array personnel completed the northern section of beach transects (from northern range fan boundary section to farthest northern boundary) to the water line and will complete the remaining low water area in the northern section of beach transects when the tide is low tomorrow. The DGM man-towed array personnel completed the accessible portions of the dune area (southern boundary to northern range fan boundary).

Report Date: 3/23/2018

Project No: 6273206

Report No: 48



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0700 Safety Brief.

0730 movement to MRS 3. In coordination with Zapata I re-swept and located the ISO's in the IVS. There was initial concern based on the high tidal surge of the past three days that the IVS could have to be replaced. However, all items were still present with only an additional one to one-and-a-half inches of sand on top. Zapata was able to re-calibrate and continue on. At 0930 I emplaced Seed MRS 3 EA 012 at Coordinates 4213598.42N by 481399.18E, Depth 11 inches, Orientation East-West. I further inspected the progress of the Brush-Cutting team working on the southern end of Transects 8, 9 and 10. The teams should be able to finish the brush cutting in MRS 3 no later than Monday conditions permitting. At 1400 I emplaced Seed MRS 3 EA013 at coordinates 4216851.86N by 483148.74E, Depth 14 inches, Orientation North-South, Elevation 1.18 meters. Both seed coordinates are corrected via VRS.

For the rest of the afternoon I continued to provide oversight of the DGM and Brush Cutting teams. There is a small section of Transect 10 on the far southern end, nearest the boundary, that has proven to be impassable. There will be no data collected within this 200-yard strip. However, there should be plenty of data collected within the dunes area that this should prove to be insignificant.

Summary of Deficiencies

200-yard strip of Transect 10 is impassable.

Corrective Actions

None

Reinspection Results

None

Additional Notes

None

Report Date: 3/23/2018

Project No: 6273206

Report No: 48



SAFETY INSPECTIONS AND RESULTS:

Inspections

0700 Safety Brief focused on new Air MEDEVAC procedures. I asked the SUXOS to provide a Brush Cutting Team to clear the new Landing Zone of high brush or other debris that could cause Foreign Object Damage. There was a question and answer period where the team members all had a chance to clarify or amplify any concerns they had with the Draft SOP 21. At the conclusion all hands were very comfortable with calling for emergency evacuation via air or ground ambulance. I also focused on the danger from rain-soaked dead trees in the dead forest. These trees would be more dangerous than normal until they had more time to dry out. The SUXOS said he would focus on areas outside the forest today.

At 0730 we prepared and then moved to MRS 3. Over the last three days the storm and tidal surge had uncovered several timbers and an entire concrete foundation within the work zone. Tomorrow's safety brief will focus on these dangerous items which could cause severe vehicle damage and/or personnel injury. The brush cutting team was able to work outside of the dead forest today and instead focused on Transects 7, 8, 9 and 10 on the southern end of the Range Fan from Green Run Campground to the Southern End of the MRS 3 boundary.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

The Brush Clearing team will working in the dead forest again tomorrow, but should be able to finish up. I will monitor closely.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/23/2018 9:18:25 PM

SUXOS

Site Manager

Report Date: 3/24/2018

Project No: 6273206

Report No: 49



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Clear then changing to partly cloudy, winds out of the SSE at 10 with gusts to 15.	50	32	65	0.00

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

Report Date: 3/24/2018

Project No: 6273206

Report No: 49



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	3	SUXOS / EA	11.0		Supervised and monitored all activities in MRS 3.
Ron Morgan	3	UXOQCS/SO / EA	12.0		Observed DGM and Brush Cutting activities in MRS 3. Placed one seed item for DGM operations on the beach.
Steve Yankay	3	Brush Crew / EA	10.0	9, 10 and 12	Brush cut Transects 9 and 10 from Green Run Rd to the Northern boundary and completed all of Transect 12 from south to northern boundary in MRS 3.
Steve Hodges	3	Man Array operator / Zapata	10.0	DGM Survey Beach	Setup, tested and operated RTV towed array on beach transects in MRS 3.
Terri Farmer	3	Man-portable array operator / Zapata	10.0	DGM Survey Beach	Setup, tested and operated RTV towed array on beach transects in MRS 3.
Neil Hollowell	3	Brush Crew / EA	10.0	9, 10 and 12	Brush cut Transects 9 and 10 from Green Run Rd to the Northern boundary and completed all of Transect 12 from south to northern boundary of MRS 3.
John Hayes	3	Brush Crew / EA	10.0	9, 10 and 12	Brush cut Transects 9 and 10 from Green Run Rd to the Northern boundary and completed all of Transect 12 from south to northern boundary of MRS 3.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	John Hayes	334126	3.0	Yes
GEO 7x	Steve Yankay	WH0130	10.0	Yes
RTV Towed Array	Steve Hodges		8.5	Yes

Report Date: 3/24/2018

Project No: 6273206

Report No: 49



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief performed prior to start of field activities in MRS 3. Brush crew completed Transects 9 and 10 by clearing the remaining the northern section (from Green Run Rd to the northern boundary). They also completed the full length of Transect 12 (southern to northern boundary). The only remaining transect that requires brush removal is Transect 8 from Green Run Rd to the northern boundary of MRS 3. DGM personnel (Zapata) completed all beach transects with the exception of the low tide area for MRS 3.

Report Date: 3/24/2018

Project No: 6273206

Report No: 49



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0630 Safety Brief

0700 Moved to MRS 3. 0800 Emplaced Seed MRS 3 EA 014 at Corrected Coordinates 4214247.64 N by 481803.21 E, Depth 13 inches, Orientation East-West, Elevation 1.79 meters.

0930-1130 Observed brush cutting crew to ensure compliance with QAPP. No deficiencies noted.

At 1135 Zapata arrived at MRS 3. I observed them set up the Base Station on the Survey Marker and set up/calibrate the EM61 on the UTV-Towed Array. For remainder of day I monitored the DGM team.

1830-1915 movement to Rally Point.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

None

Additional Notes

The tide should be at low on Tuesday or Wednesday evening. When it is at it's lowest point the DGM team will run the UTV-Towed Array along the surf's edge.

Report Date: 3/24/2018

Project No: 6273206

Report No: 49



SAFETY INSPECTIONS AND RESULTS:

Inspections

0630 Safety Brief. Three points of emphasis: 1) Sub-surface obstructions in beach are a hazard to driving. Personnel need to remain vigilant and keep to the posted speed (25mph). 2) Be on the look out for anomalies washing up or recently uncovered due to tides. If anomalies are spotted stop and call SUXOS or UXOQCS/SO and remain on-scene until one or the other arrives. 3) While working in Dead Forest remain vigilant, wear proper PPE, and have one team member as act as over-watch. Take no breaks in or around tree line. Remainder of day I monitored safety conditions. No issues to report.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/24/2018 5:53:04 PM

SUXOS

Site Manager

Report Date: 3/26/2018

Project No: 6273206

Report No: 50



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Cloudy and windy	42	32	80	0.03

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

Report Date: 3/26/2018

Project No: 6273206

Report No: 50



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	3	SUXOS / EA	10.0		Supervised and monitored all activities.
Ron Morgan	3	UXOQCS/SO / EA	10.0		Verified MRS 3 DGM IVS is still present. Observed DGM and Brush Cutting activities in MRS 3. Placed two seed items for DGM operations, one on the beach and one in the dune area.
Steve Yankay	3	Brush Crew / EA	10.0	Transect 8 in MRS 3.	Completed transect 8 northern section from Green Run Rd to the northern boundary.
Conor O'Hara	3	Brush Crew/GPS / EA	10.0	Transect 8 in MRS 3.	Completed transect 8 northern section from Green Run Rd to the northern boundary.
Steve Hodges	3	Man Array operator / Zapata	10.0	Transects on Beach in MRS 3	Setup, tested and operated RTV towed array on beach transects in MRS 3.
Patrick Propst	3	Man Array operator / Zapata	10.0	Transects 12, 8 and 9.	Setup, tested and operated Man-portable array on transects 12, 8 and 9 in MRS 3.
Terri Farmer	3	Man-portable array operator / Zapata	10.0	Transects 12, 8 and 9.	Setup, tested and operated Man-portable array on transects 12, 8 and 9 in MRS 3.
Emery Mueller	3	Man-portable array operator / Zapata	10.0	Transects 12, 8 and 9.	Setup, tested and operated Man-portable array on transects 12, 8 and 9 in MRS 3.
Neil Hollowell	3	Brush Crew / EA	10.0	Transect 8 in MRS 3.	Completed transect 8 Northern section from Green Run Rd to the northern boundary.
John Hayes	3	Brush Crew / EA	10.0	Transect 8 in MRS 3.	Completed transect 8 Northern section from Green Run Rd to the northern boundary.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	334126	3.0	Yes
GEO 7x	Coner O'Hara	WH0130	10.0	Yes
Man-portable Array	Terry Farmer		8.5	Yes
RTV Towed Array	Steve Hodges		8.5	Yes

Report Date: 3/26/2018

Project No: 6273206

Report No: 50



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief was performed prior to starting field activities. Brush clearing crew completed final section of transect 8 (green Run Rd to northern boundary). Zapata DGM personnel setup and tested UTV towed array and man-portable (skirt) array. UTV DGM was performed on remaining beach transect to waters edge. Man-portable (skirt) DGM was performed on all of transect 12 and final section of 11 to the northern boundary. Man-portable (skirt) DGM was all performed on the majority of transects 8 and 9 from north to south until water prohibited progress. All transects in MRS 3 have been brush cut to allow DGM survey. Tomorrow DGM surveys will continue in the wooded transects and at low tide on the remaining beach transects.

Report Date: 3/26/2018

Project No: 6273206

Report No: 50



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0630 Safety Brief

0615-0730 Movement to MRS 3.

Zapata assembled two arrays: Man-Portable and UTV-Towed. I observed them assembling the Base Station and then calibrating both arrays. No seeds were emplaced today. The UTV-Array had very little area to cover, mostly waiting on tide to go out. However, it didn't regress far enough so they will attempt DGM of the surf area tomorrow at low tide (1228 hours).

There was an existing seed in the area of the Man-portable array that was not collected from last Monday which was collected today. The Brush clearing team finished Transect 8 today. Inspection found it met SOP requirements.

Summary of Deficiencies

None

Corrective Actions

N/A

Reinspection Results

N/A

Additional Notes

Low tide tomorrow will hopefully prove sufficient area to complete the beach survey. I will emplace a seed should there be adequate area to do so.

Report Date: 3/26/2018

Project No: 6273206

Report No: 50



SAFETY INSPECTIONS AND RESULTS:

Inspections

0630 Safety Brief focused on sub-surface hazards while driving, over-watch in dead forest, driving posted speed limits, and MEDEVAC procedures.

No safety issues.

Summary of Deficiencies

None

Corrective Actions

N/A

Reinspection Results

N/A

Additional Notes

The Brush Clearing Team completed current brush clearing requirements, so tomorrow will be just the DGM Team.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/26/2018 7:56:17 PM

SUXOS

Site Manager

Report Date: 3/27/2018

Project No: 6273206

Report No: 51



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Partly Cloudy	45	28	87	0.00

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

EA Program Manager Vince Williams

Report Date: 3/27/2018

Project No: 6273206

Report No: 51



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	3	SUXOS / EA	10.0		Supervised and monitored all activities.
Ron Morgan	3	UXOQCS/SO / EA	10.0		Verified GPS data for previous seeds placed. Place three new seed items for DGM operations in MRS 3.
Steve Yankay	3	Brush Crew / EA	10.0		GPSed new seeds and reacquired seeds previously placed in MRS 3.
Steve Hodges	3	UTV Towed Array operator / Zapata	10.0	Low Tide Beach Transects	Setup, tested and operated UTV towed array on low tide beach transects in MRS 3.
Patrick Propst	3	Skirt DGM operator / Zapata	10.0	5, 6, 7, 8 and 9	Setup, tested and operated Man-portable array on transects 5, 6, 7, 8 and 9 in MRS 3.
Terri Farmer	3	Skirt DGM operator / Zapata	10.0	5, 6, 7, 8 and 9	Setup, tested and operated Man-portable array on transects 5, 6, 7, 8 and 9 in MRS 3.
Emery Mueller	3	Skirt DGM operator / Zapata	10.0	5, 6, 7, 8 and 9	Setup, tested and operated Man-portable array on transects 5, 6, 7, 8 and 9 in MRS 3.
John Hayes	3	Brush Crew / EA	10.0	5, 6, 7, 8 and 9	Escort DGM personnel during survey of wooded transects and spotter for safety.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	334126	3.0	Yes
GEO 7x	Steve Yankay	WH0130	8.0	Yes
Man-portable Array	Terry Farmer		8.5	Yes
UTV Towed Array	Steve Hodges		8.5	Yes

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Report Date: 3/27/2018

Project No: 6273206

Report No: 51



Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning Meeting/ Health & Safety brief was performed prior to personnel starting field activities. All brush clearing activities were completed yesterday. Zapata setup, tested UTV towed array and EM-61 in skirt mode on IVS in MRS 3. DGM UTV towed array survey was completed on all low tidal areas of the beach transects (from northern boundary to southern boundary). EM-61 Skirt mode DGM was completed on transects 5, 6, 7, 8 and 9 to finish the transects. UXOQCS/SO placed 3 seed items for DGM survey areas. Tomorrow DGM surveys will be conducted to complete data gaps in the dune area within range fan boundaries of MRS 3 and the southern most sections of transects 4 and 5 in the marsh that were not yet completed.

Report Date: 3/27/2018

Project No: 6273206

Report No: 51



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0700 Safety Brief

Moved to MRS 3 and observed set up of Base Station in MRS 3 and calibration of two EM61's (UTV and Skirt). Emplaced three seeds: 1) Seed MRS 3 EA 015 at Corrected Coordinates 4214964.79m N by 481653.15m E, Depth 10 inches, Orientation East-West, Elevation 0.75m; 2) Seed MRS 3 EA 016 at Corrected Coordinates 4214728.07m N by 482103.84m E, Depth 8 inches, Orientation North-South, Elevation 0.26m; 3) Seed MRS 3 EA 017 at Corrected Coordinates 4215016.48m N by 482141.71m E, Depth 10 inches, Orientation East-West, Elevation 4.37m.

Also reacquired 3 uncorrected seeds in MRS 3: 1) Seed MRS 3 EA 009 Corrected Coordinates 4214950.40m N by 482179.01m E, Elevation 2.47m; 2) Seed MRS 3 EA 010 at Corrected Coordinates 4215017.16m N by 48021.15m E at Elevation 1.40m; 3) Seed MRS 3 EA 017 at Corrected Coordinates 4215084.79m E by 482263.86m E at Elevation 1.68m.

Observed re-calibration of both EM61's and the break down of the Base Station.

Summary of Deficiencies

None

Corrective Actions

N/A

Reinspection Results

None

Additional Notes

Due to data gaps the DGM Team have to perform additional survey in the dunes area tomorrow at direction of the QC Geophysicist.

Report Date: 3/27/2018

Project No: 6273206

Report No: 51



SAFETY INSPECTIONS AND RESULTS:

Inspections

0700 Safety Brief reviewed the procedures for over-watch in the dead forest area, beach driving, sub-surface hazards, and monitoring vehicle transmission temperatures.

For remainder of day I monitored team safety along with performing QC duties. No safety issues noted. All personnel worked safely and returned to Rally Point.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

We will return to MRS 3 tomorrow to perform additional survey in dunes area but will not be working in Dead Forest.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/27/2018 6:38:41 PM

SUXOS

Site Manager

Report Date: 3/28/2018

Project No: 6273206

Report No: 52



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT Assateague Island FUDS RI Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Cloudy with periods of light rain.	48	42	90	0.01

GOVERNMENT PERSONNEL (Name/Organization):

NPS Jonathan Chase

SITE VISITORS (Name/Organization):

None

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	3	SUXOS / EA	10.0		Supervised and monitored all activities.
Ron Morgan	3	UXOQCS/SO / EA	10.0		UXOQCS/SO provided oversight during operations in MRS 3. Observed DGM operations in MRS 3.
Steve Yankay	3	RTK Operator / EA	10.0		Picked up equipment for next weeks activities from EA Warehouse.
Steve Hodges	3	Skirt DGM operator / Zapata	10.0	Transects 4 and 5	Setup, tested, and operated Skirt mode array on the southern most sections of Transects 4 and 5 in MRS 3.
Patrick Propst	3	Man-towed DGM operator / Zapata	10.0	Dune area	Setup, tested, and operated Man-towed array on transects in the dune area in MRS 3.
Terri Farmer	3	Skirt DGM operator / Zapata	10.0	Transects 4 and 5	Setup, tested, and operated Skirt mode array on southern most sections of Transects 4 and 5 in MRS 3.
Emery Mueller	3	Man-towed DGM operator / Zapata	10.0	Dune area	Setup, tested, and operated Man-towed array on transects in the dune area in MRS 3.
John Hayes	3	UXO Escort / EA	10.0		Escorted DGM personnel during survey of transects 4 and 5 in MRS 3.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

Report Date: 3/28/2018

Project No: 6273206

Report No: 52



OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	334126	3.0	Yes
Man-Towed Array	Emery Mueller		8.5	Yes
Skirt DGM Array	Terry Farmer		8.5	Yes

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found
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Report Date: 3/28/2018

Project No: 6273206

Report No: 52



Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Briefed Zapata on where we need them to collect additional DGM data plus the area they missed on the southern peninsula of MRS 3 containing Transects 4 and 5. Zapata split into two teams: Team 1 used the Man-Towed Array and collected additional data in the dunes area to fill in data gaps in MRS 3 Range Fan area. Team 2 used the Man-portable Array, hiked to the southern peninsula, and using a meandering method covered the entirety of the peninsula getting good coverage. Both teams completed data collection, recalibrated their arrays, then broke down the base station and removed all of their gear from MRS 3. We left the IVS in place until we are sure it will not be needed. It will be relatively easy to remove or it could be used for the remote IVS for intrusive investigation.

Report Date: 3/28/2018

Project No: 6273206

Report No: 52



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0700 Safety Brief

0730 Movement to MRS 3. Observed Zapata set up the Base Station and calibrate two EM61 Mk2 set-ups utilizing IVS: Man-Portable and Man-Towed. Scouted route to Southern Peninsula in order to access Transects 4 and 5. Found a good clear trail for access and reported it to Zapata. Observed DGM team in southern peninsula to ensure they were able to collect adequate data. Ensured the other DGM team covered blind seed while collecting data in dunes area. At this time the DGM should be complete. Awaiting final report from QC Geophysicist and USACE.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

Tomorrow I will re-acquire blind seeds in MRS 1 using VRS in order to collect coordinates with better accuracy.

Report Date: 3/28/2018

Project No: 6273206

Report No: 52



SAFETY INSPECTIONS AND RESULTS:

Inspections

0700 Safety Brief - Skeletal crew due to completion of brush cutting. Focused on beach driving, sub-surface hazards, PPE, and watching for overhead hazards.

Scouted safe route to southern peninsula for access to Transects 4 and 5. Since the DGM crew was able to run two teams and I had additional personnel, I had dedicated safety observers for each team. All operations were completed successfully and safely. Movement to and from MRS3 was completed without incident.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/28/2018 6:08:25 PM

SUXOS

Site Manager

Report Date: 3/29/2018

Project No: 6273206

Report No: 53



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT Assateague Island FUDS RI Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Partly Cloudy and minimal wind.	70	46	64	0.00

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	5.0		Supervised and monitored all activities.
Ron Morgan	1	UXOQCS/SO / EA	8.0		UXOQCS/SO oversight during operations in MRS 1. Observed RTK QC checks and operations in MRS 1. Performed intrusive activities on previously placed seed items to obtain coordinates using RTK in MRS 1.
Steve Yankay	1	RTK Operator / EA	8.0		Performed setup and QC for RTK. Operated RTK to collect data for previously placed seed items for DGM operations.
John Hayes	1	UXO Escort / EA	5.0		Escorted RTK operator to known survey points within MRS 1. Performed intrusive activities to locate seed items in MRS 1.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

Report Date: 3/29/2018

Project No: 6273206

Report No: 53



OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	334126	7.0	Yes
RTK R10	Steve Yankay	WH0338	7.0	Yes

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief was performed prior to starting field activities. Today's activities were for preparation of intrusive activities for next week. Zapata personnel broke down all DGM equipment and loaded into their trailer for demobilization tomorrow. Setup RTK GPS equipment on known benchmark points to QC the equipment operation. Navigated to previously placed seed items for DGM to reacquire with more accurate (RTK) precision. Stored all equipment for the following weeks activities.

Report Date: 3/29/2018

Project No: 6273206

Report No: 53



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0700 Safety Brief

Today there was no work performed by the DGM or brush cutting teams. Instead I spent the day doing re-acquire of all Blind Seeds in MRS1. Originally these seeds were emplaced using Trimble without either VRS or RTK so coordinates were uncorrected meaning that navigation to the seed would have been off by 4-5 meters. Using the RTK the coordinates now have 1 inch accuracy. The Seed IDs and new coordinates are as follows:

1. Seed MRS 1 EA 001a: 4228517.707m N by 486737.770m E, Depth 11", Orientation North-South, Elevation 2.943m
2. Seed MRS 1 EA 002a: 4228683.246m N by 486815.144m E, Depth 8", Orientation East-West, Elevation 3.124m
3. Seed MRS 1 EA 003a: 4228721.396m N by 486176.840m E, Depth 12", Orientation East-West, Elevation 0.802m
4. Seed MRS 1 EA 004a: 4228964.456m N by 486245.209m E, Depth 14", Orientation North-South, Elevation 0.042m
5. Seed MRS 1 EA 005: Not found. Was planted in surf's edge at low tide and is no longer there.
6. Seed MRS 1 EA 006a: 4229143.328m N by 486492.504m E, Depth 14", Orientation East-West, Elevation -0.186m
7. Seed MRS 1 EA 007a: 4229283.871m N by 486871.972m E, Depth 10", Orientation East-West, Elevation 0.58m
8. Seed MRS 1 EA 008: Not Found. It was planted in surf's edge at low tide and is no longer there.

Due to uncorrected coordinates these seeds required rudimentary navigation and mag and dig to locate.

Summary of Deficiencies

Deflection difference between 7x and RTK: approximately 1.5m N by 0.38m E which makes it between 4' to 4 1/2' difference between corrected and uncorrected coordinates.

Corrective Actions

Use RTK for re-acquire.

Reinspection Results

None

Additional Notes

No work tomorrow.

Report Date: 3/29/2018

Project No: 6273206

Report No: 53



SAFETY INSPECTIONS AND RESULTS:

Inspections

0700 Safety Brief. No brush cutting or DGM work was performed today so safety briefing focused on speed limits, wildlife and tourist avoidance. One crew would be working on blind seed re-acquire so proper footwear, slips, trips and falls were covered. Workday ended at 1500 with no accidents or injuries.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

No work on Friday, 30 March.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

3/30/2018 9:48:13 AM

SUXOS

Site Manager

Report Date: 4/2/2018

Project No: 6273206

Report No: 54



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Cloudy, windy (17mph out of the NNE) Rain.	52	39	100	0.04

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

(Continued on next page)

Report Date: 4/2/2018

Project No: 6273206

Report No: 54



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	11.0		Supervised and monitored all activities.
Ron Morgan	1	UXOQCS/SO / EA	11.0		UXOQCS/SO Site orientation, WP/APP/SSHP/AHA review. QC inspection during RTK setup and shut down and observed intrusive activities in MRS 1.
Steve Yankay	1	RTK Operator / EA	11.0		RTK Operator Reacquisition of anomalies in MRS 1.
Trent Harvin	1	UXOT III/Team Leader / EA	11.0	3, 4, 5, 6, 7 and 8	UXO Team Leader managed team during intrusive activities in MRS 1.
John Hayes	1	UXOT II / EA	11.0	3, 4, 5, 6, 7 and 8	Setup IVS and tested Schonstedts on IVS. Started Intrusive Activities in MRS 1.
Dane McCarthy	1	UXOT II / EA	11.0	3, 4, 5, 6, 7 and 8	Setup IVS and tested Schonstedts on IVS. Started Intrusive Activities in MRS 1.
JT Huggins	1	UXOT I / EA	11.0	3, 4, 5, 6, 7 and 8	Setup IVS and tested Schonstedts on IVS. Started Intrusive Activities in MRS 1.
Jeff Day	1	UXOT I / EA	11.0	3, 4, 5, 6, 7 and 8	Setup IVS and tested Schonstedts on IVS. Started Intrusive Activities in MRS 1.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonstedt 52cx	Ron Morgan	334126	6.0	Yes
RTK R10	Steve Yankay	WH0338	7.0	Yes
Schonstedt 52cx	John Hayes	WH0213	6.0	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	6.0	Yes

Report Date: 4/2/2018

Project No: 6273206

Report No: 54



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

Status	MRS	Phase	Grid
Completed	MRS01	DGI	MRS01-003

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities

DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/Transect	# of Anoms	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1	DGI	01	MRS01-03	1	0	0	10.00	0	0	0	0
1	DGI	01	MRS01-04	7	0	0	1.30	0	0	0	0
1	DGI	01	MRS01-05	3	0	0	1.50	0	0	0	0
1	DGI	01	MRS01-06	9	0	0	5.70	0	0	0	0
1	DGI	01	MRS01-07	5	0	0	1.30	0	0	0	0
1	DGI	01	MRS01-08	6	0	0	2.30	0	0	2	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris

RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

DGI = Digital Geophysical Intrusive Investigations

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief prior to RTK reacquisition and personnel starting work. Review of WP/APP/SSH/PHA's and site familiarization (i.e., going over maps of site and driving personnel around to become familiar with location of transects and MRS boundary). Setup IVS for Schonstedt daily checks. Due to weather no anomalies in marsh area will be investigated today. The UXO Team started intrusive investigations on Transect 3, working eastward on additional transects and staying out of the marsh area. UXO Team completed 33 anomaly locations for today. No MD was identified. Everything found was non-munitions related debris (NMRD).

Report Date: 4/2/2018

Project No: 6273206

Report No: 54



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

Clearance Phase	MRS	Grid/Transect	Type	Serial Number
DGI	01	MRS01-08	QC	
DGI	01	MRS01-08	QC	EA005

DGI = Digital Geophysical Intrusive Investigations

Inspections

0630 Safety Brief

IVS established. Report under separate cover.

UXO team verified instruments prior to and at the end of the work day. Outlined and reviewed QC requirements for clearance of anomaly locations with Dig Team . Worked with the RTK operator reacquiring and flagging points for intrusive investigation. Inspected Dig Team to ensure work was being performed in accordance with the QAPP.

Summary of Deficiencies

None.

Corrective Actions

N/A

Reinspection Results

N/A

Additional Notes

Will begin performing QC of dig locations tomorrow.

Report Date: 4/2/2018

Project No: 6273206

Report No: 54



SAFETY INSPECTIONS AND RESULTS:

Inspections

0630 Safety Brief. Four new personnel: Jeff Hayes, Trent Harvin, James Huggins, and Dane McCarthy. Intrusive operations to begin so focused primarily on MEC procedures, proper PPE, and safe digging practices, as well as administrative safety items for new personnel. Confirmed that each person had read and understood the Work Plan, Activity Hazard Analyses (AHAs) and Safety SOP's. Observed Dig Team throughout the day to ensure compliance with Site Specific Health and Safety Plan.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

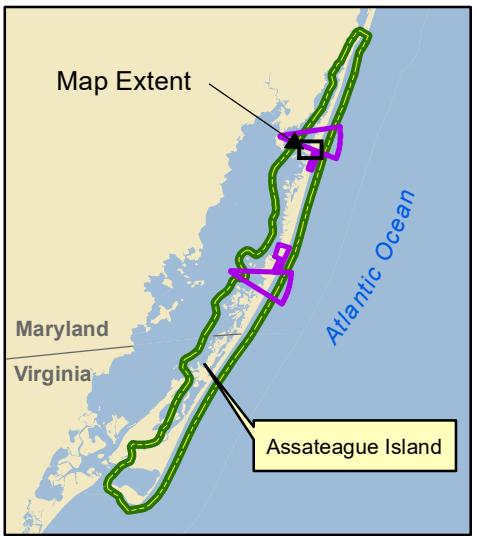
John Monk

4/2/2018 6:33:37 PM

SUXOS

Site Manager

\\lovetongis\gisdata\StateandLocal\Northeast\Maryland\Assateague\MXD\FieldFigures\ProgressMaps\April 2 2018_Progress Map_MRS01.mxd



Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- NMRD

Water Anomaly Results

- Water Anomaly-
- Water Anomaly-
- Actual Transects
- CMUA Polygon
- Approximate Location of Former Target Area (Parsons 1995)
- Possible Burial Trench Location (Parson's 1995)
- Rocket Launch

Subareas

- No Survey - Parking Lot
- Beach - Land
- Campground - Land
- Marsh - Land
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/3/2018

0 530 1,060
Feet



PROGRESS MAP
2 APRIL 2018
Remedial Investigation Area 01
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 4/3/2018

Project No: 6273206

Report No: 55



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT Assateague Island FUDS RI Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Cloudy with 30% chance of rain.	71	41	100	0.00

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	11.0		Supervised and monitored all activities in MRS 1.
Ron Morgan	1	UXOQCS/SO / EA	11.0		QC inspection performed during RTK setup and shut down. Observed intrusive activities in MRS 1.
Steve Yankay	1	RTK Operator / EA	11.0		RTK Operator reacquired anomalies in MRS 1.
Trent Harvin	1	UXOT III/Team Leader / EA	11.0	13, 14, 15 and Beach area.	UXO Team Leader managed intrusive activities in MRS 1.
John Hayes	1	UXOT II / EA	11.0	13, 14, 15 and Beach area.	Tested Schonstedts on IVS. Started intrusive activities in MRS 1.
Dane McCarthy	1	UXOT II / EA	11.0	13, 14, 15 and Beach area.	Tested Schonstedts on IVS. Started intrusive activities in MRS
JT Huggins	1	UXOT I / EA	11.0	13, 14, 15 and Beach area.	Tested Schonstedts on IVS. Started intrusive activities in MRS 1.
Jeff Day	1	UXOT I / EA	11.0	13, 14, 15 and Beach area.	Tested Schonstedts on IVS. Started intrusive activities in MRS 1.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

Report Date: 4/3/2018

Project No: 6273206

Report No: 55



OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	WH0353	7.0	No
RTK R10	Steve Yankay	WH0338	10.0	No
Schonstedt 52cx	John Hayes	WH0213	10.0	No
Schonstedt 52cx	Dane McCarthy	WH0385	10.0	No

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/ Transect	# of Anoms	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1	DGI	01	MRS01-05	1	0	0	0.50	0	0	0	0
1	DGI	01	MRS01-09	3	0	0	2.40	0	0	0	0
1	DGI	01	MRS01-10	1	0	0	0.20	0	0	0	0
1	DGI	01	MRS01-11	1	0	0	0.30	0	0	0	0
1	DGI	01	MRS01-13	3	0	0	1.00	0	0	0	0
1	DGI	01	MRS01-14	7/NC	0	20.00	1.90	0	0	0	0
1	DGI	01	MRS01-15	8	0	0.10	6.80	0	0	1	0
1	DGI	01	MRS01-B	16/NC	0	5.00	6.50	0	0	0	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found
--

Report Date: 4/3/2018

Project No: 6273206

Report No: 55



Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/ Health & Safety brief performed prior to the start of field activities. RTK team calibrated RTK on benchmark and then started reacquire activities. UXO team departed to IVS to test equipment prior to start of intrusive activities. UXO team performed intrusive activities on anomaly locations on the northern end of Transects 13, 14, 15 and 15b, then moved to anomaly locations on the beach. UXO team found two MD items on transects 13 and 14, inspected and verified to be MD by UXOQCS/SO and SUXOS and placed in magazine area. UXO team also found another MD item on a flagged location within the target area, verified as MD by UXOQCS/SO and SUXOS and placed in magazine area.

Report Date: 4/3/2018

Project No: 6273206

Report No: 55



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

Clearance Phase	MRS	Grid/Transect	Type	Serial Number
DGI	01	MRS01-15		

Inspections

0630 Safety Brief.

Observed RTK operator check RTK against established Survey Marker. Observed UXO Dig Team sweep IVS prior to start of day. At 1145 received call from UXO team that MD was found in Transect 13. SUXOS and I verified the item as MD, but not hazardous. Removed item to magazine storage area. At 1445 UXO team indicated that additional MD was located IVO dunes area. SUXOS and I responded, verified item as MD and removed to magazine storage area. For rest of day I assisted RTK operator in flagging anomalies for intrusive investigation. No additional QC items to note.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

Report Date: 4/3/2018

Project No: 6273206

Report No: 55



SAFETY INSPECTIONS AND RESULTS:

Inspections

0630 Safety Brief focused on MEC avoidance, dig safety and exclusion areas. RTK team and UXO team performed assigned duties throughout the day with no safety issues.

Three pieces of Munitions Debris (MD) were recovered by UXO team, inspected by SUXOS and UXOQCS and verified as non-hazardous, moved to magazine storage area.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

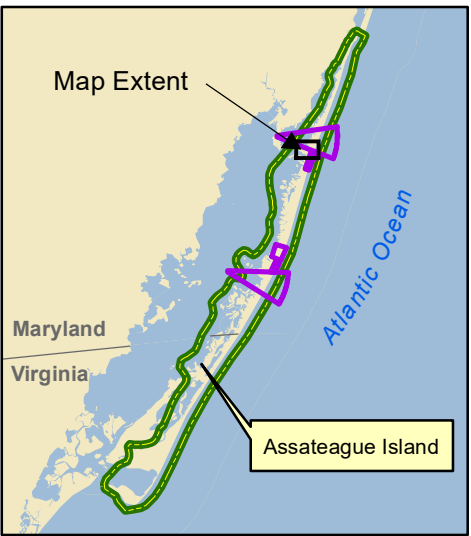
I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/3/2018 8:31:13 PM

SUXOS

Site Manager



Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- MD
- Digs Completed- Other

Water Anomaly Results

- Water Anomaly-
- Water Anomaly-
- Actual Transects
- CMUA Polygon
- Approximate Location of Former Target Area (Parsons 1995)
- Possible Burial Trench Location (Parson's 1995)
- Rocket Launch

Subareas

- No Survey - Parking Lot
- Beach - Land
- Campground - Land
- Marsh - Land
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/6/2018

0 530 1,060
Feet



PROGRESS MAP

3 APRIL 2018

Remedial Investigation Area 01

Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 4/4/2018

Project No: 6273206

Report No: 56



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Cloudy and windy 20mph SSW and 60% chance of thunderstorms.	63	36	65	0.01

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	11.0		Supervised and monitored all activities in MRS 1.
Ron Morgan	1	UXOQCS/SO / EA	11.0		Performed QC inspection during RTK setup and shut down. Observed intrusive activities and performed QC on completed anomaly locations in MRS 1.
Steve Yankay	1	RTK Operator / EA	11.0		RTK Operator Reacquired anomalies in MRS 1.
Trent Harvin	1	UXOT III/Team Leader / EA	11.0	11, 12, 13 and beach.	UXO Team Leader managed intrusive activities in MRS 1.
John Hayes	1	UXOT II / EA	11.0	11, 12, 13 and beach.	Tested Schonstedts on IVS. Started intrusive activities in MRS
Dane McCarthy	1	UXOT II / EA	11.0	11, 12, 13 and beach.	Tested Schonstedts on IVS. Started intrusive activities in MRS 1.
JT Huggins	1	UXOT I / EA	11.0	11, 12, 13 and beach.	Tested Schonstedts on IVS. Started intrusive activities in MRS 1.
Jeff Day	1	UXOT I / EA	11.0	11, 12, 13 and beach.	Tested Schonstedts on IVS. Started intrusive activities in MRS 1.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

Report Date: 4/4/2018

Project No: 6273206

Report No: 56



OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	WH0353	7.0	Yes
RTK R10	Steve Yankay	WH0338	10.0	Yes
Schonstedt 52cx	John Hayes	WH0213	10.0	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	10.0	Yes

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/ Transect	# of Anoms	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1	DGI	01	MRS01-10	4/NC	0	0	1.50	0	0	0	0
1	DGI	01	MRS01-11	6	0	0	5.70	0	0	0	0
1	DGI	01	MRS01-12	14/NC	0	8.00	7.80	0	0.10	0	0
1	DGI	01	MRS01-13	5	0	0	6.50	0	0	0	0
1	DGI	01	MRS01-B	8	0	0	5.40	0	0	0	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found
--

Report Date: 4/4/2018

Project No: 6273206

Report No: 56



Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief performed prior to start of all field activities. RTK QC check performed in the morning and at the close of the day. UXO Team performed equipment checks on IVS prior to starting intrusive activities. UXO Team completed approximately 50 anomaly locations and found two 2.25-in rockets, UXOQCS/SO and I completed MPPEH procedures on them and determined them to be empty and placed them in the Magazine area. UXOQCS performed QC procedures on completed anomaly locations from previous days intrusive activities.

Report Date: 4/4/2018

Project No: 6273206

Report No: 56



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

Clear: 08-47, 08-84, 07-42, 07-41, 05-78, 05-27, 05-26, 05-25, 04-22, 04-24, 04-21,
04-20, 04-18, 04-17, 04-16, 03-74
Verified Utility: B-152

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0630 Safety Brief. Observed Dig team sweep IVS checking the hand-held detectors. Observed RTK operator test RTK on Survey Marker. Began QC'ing anomaly digs in earnest. Pins QC'd today: 05-25, 07-41, 07-42, 08-84, 08-47, 04-19, B-152, 04-24, 08-47, 04-17, 04-22, 05-78, 04-21, 05-27, 04-18, 04-16, 04-20, 05-26, 03-74. Of those 19 I had 7 that needed re-clearing of minor items. None of them reached failure criteria of metal greater than a 20mm. These 7 holes were among the first ones dug on the project. As the dig team is progressing the clearance rate is increasing. I emphasized to the team the importance of clearing the holes of any anomaly.

Dig team found two MD in Transect 12 just north of the Ranger Station. MD items are non-hazardous and have been moved to safe storage area.

Observed the dig team and RTK operator perform end-of-day Schonstedt and RTK electronics checks.

Summary of Deficiencies

Minor items in the first few holes. Nothing that would cause a failure, and the team responded to coaching.

Corrective Actions

None

Reinspection Results

All holes QC'd have been cleared.

Additional Notes

More MD found today in Transect 12 just north of the Ranger Station. Cleared and placed in safe storage area.

Report Date: 4/4/2018

Project No: 6273206

Report No: 56



SAFETY INSPECTIONS AND RESULTS:

Inspections

0630 Safety Brief. Focused on tick avoidance due to having found a tick on my person last night. I filed a Near Miss report on the incident. The tick had not embedded itself and I have no welts or other indications of a tick bite.

0700-1400 performed QC duties. 1400-1700 observed Dig Team and RTK Team and re-emphasized checking for ticks during rest breaks. Thunderstorms appeared in area approximately 1500. I monitored lightning for the rest of the afternoon. Closet strike we had was 12 miles away. No other incidents during the day.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

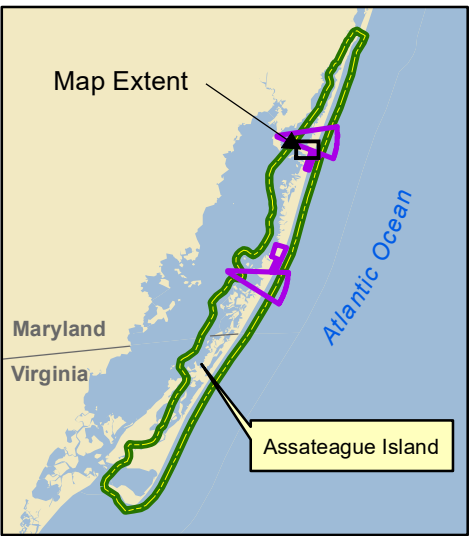
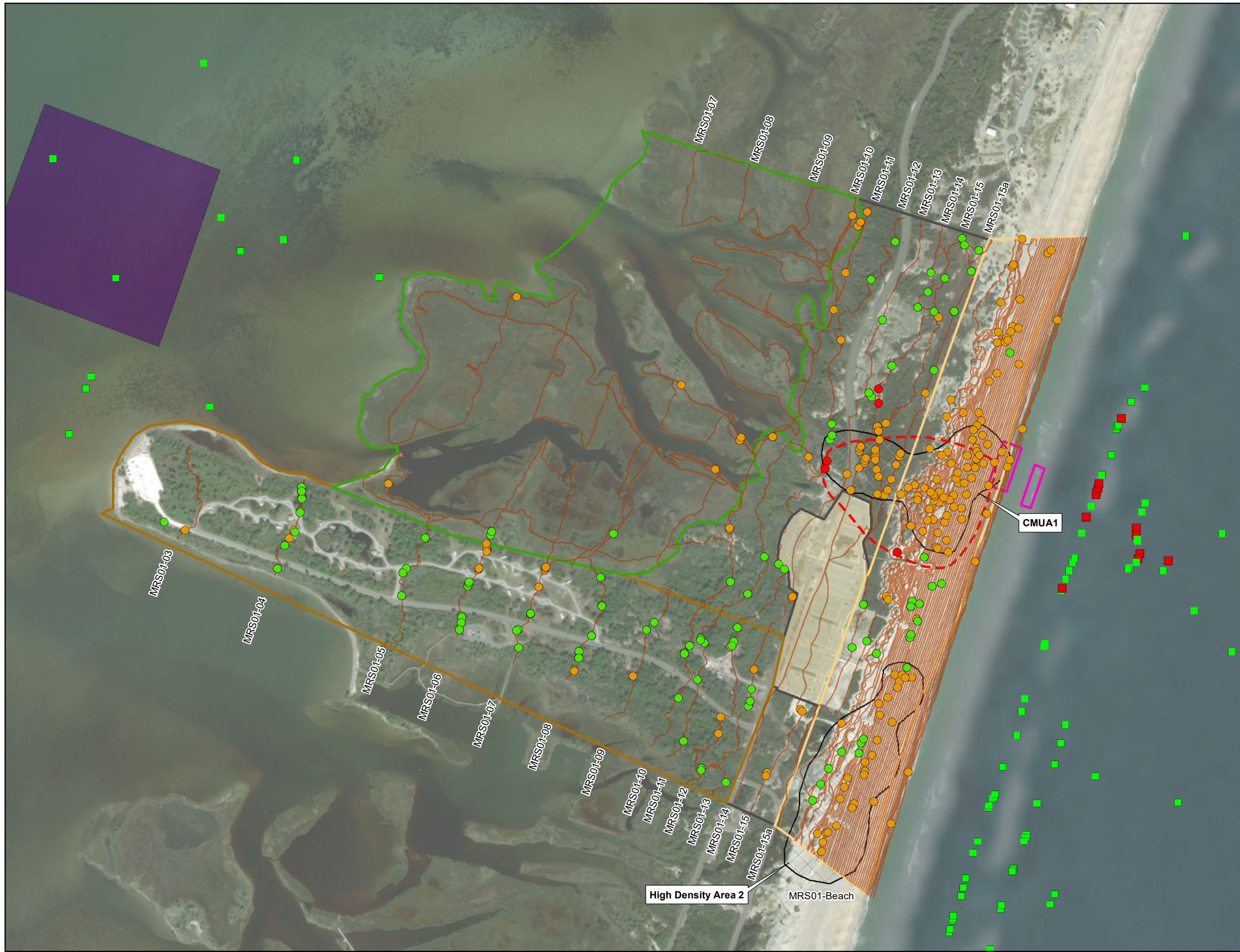
I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/4/2018 6:59:54 PM

SUXOS

Site Manager



Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- MD
- Digs Completed- Other

Water Anomaly Results

- Water Anomaly- NMRD
- Water Anomaly- MD

- Actual Transects
- CMUA Polygon
- Approximate Location of Former Target Area (Parsons 1995)
- Possible Burial Trench Location (Parson's 1995)
- Rocket Launch Area

Subareas

- No Survey - Parking Lot
- Beach - Land
- Campground - Land
- Marsh - Land
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/6/2018

0 530 1,060
Feet



PROGRESS MAP

4 APRIL 2018

Remedial Investigation Area 01

Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 4/5/2018

Project No: 6273206

Report No: 57



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Partly cloudy	50	34	38	0.00

GOVERNMENT PERSONNEL (Name/Organization):

None

SITE VISITORS (Name/Organization):

None

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	11.0		Supervised and monitored all activities in MRS 1.
Ron Morgan	1	UXOQCS/SO / EA	11.0		Performed QC inspection during RTK setup and shut down. Observed intrusive activities and performed QC on completed anomaly locations in MRS 1.
Steve Yankay	1	RTK Operator / EA	11.0		RTK Operator reacquired anomalies in MRS 1.
Trent Harvin	1	UXOT III/Team Leader / EA	11.0	Transects 4, 6, 7, 12, 15 and beach area.	UXO Team Leader managed intrusive activities in MRS 1.
John Hayes	1	UXOT II / EA	11.0	Transects 4, 6, 7, 12, 15 and beach area.	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
Dane McCarthy	1	UXOT II / EA	11.0	Transects 4, 6, 7, 12, 15 and beach area.	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
JT Huggins	1	UXOT I / EA	11.0	Transects 4, 6, 7, 12, 15 and beach area.	Tested Schonstedts on IVS. Continue intrusive activities in MRS 1.
Jeff Day	1	UXOT I / EA	11.0	Transects 4, 6, 7, 12, 15 and beach area.	Tested Schonstedts on IVS. Continue intrusive activities in MRS 1.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

Report Date: 4/5/2018

Project No: 6273206

Report No: 57



OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	WH0353	7.0	Yes
RTK R10	Steve Yankay	WH0338	10.0	Yes
Schonstedt 52cx	John Hayes	WH0213	10.0	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	10.0	Yes

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/Transect	# of Anoms	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1	DGI	01	MRS01-04	3	0	0	2.40	0	0	0	0
1	DGI	01	MRS01-06	7	0	0	3.60	0	0	0	0
1	DGI	01	MRS01-07	1	0	0	0.50	0	0	0	0
1	DGI	01	MRS01-12	1	0	0	0	0	0	0	0
1	DGI	01	MRS01-15	2	0	0	0.50	0	0	0	0
1	DGI	01	MRS01-B	25	0	0	30.00	0	0	1	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found
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Report Date: 4/5/2018

Project No: 6273206

Report No: 57



Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief performed prior to start of field activities. QC was performed on RTK prior to start of reacquisition of anomaly locations. UXO personnel tested equipment on IVS. UXO Team completed 39 anomaly locations, all NMRD, no MD found today. Following a conference call with PDT in the afternoon there will be an addition of anomaly locations to investigate camp area and the addition of two 50-ft x 50-ft grids in the high density area on southern section of beach.

Report Date: 4/5/2018

Project No: 6273206

Report No: 57



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

Clear: 08-45, 08-09, 09-49, 09-50, 10-129, 11-58, 11-59, 12-90, 13-67, 13-69, 13-86

QA = Quality Assurance QC = Quality Control

SEED Results

Clearance Phase	MRS	Grid/Transect	Type	Serial Number
DGI	01	MRS01-B		

Inspections

0630 Safety Brief. Observed RTK operator set up RTK on Survey Marker. Observed Dig Team sweep IVS prior to moving out to transects. Started to QC prior day's digs and found the iPad had not been updated so I reverted to observing dig team and RTK team. Started QC'ing holes at 1400 after iPad had received prior day's updates. Confirmed Seed recovery at Transect08-09, Seed MRS 1 EA 004. QC'd ten holes: 11-58, 13-86, 13-67, 08-09, 08-45, 09-49, 13-69, 11-59, 10-129, 09-50.

Met with Dig team at 1700 out-brief and checked log book. Team Leader has not been logging seed recoveries. I discussed this with him and made it clear that he should log everything he recovers, especially Seeds. Found the team had recovered three other seeds: two on 4/2 and one on 4/5. Seeds recovered are MRS 1 Seed EA-001 at B-156, Seed EA-005 at 08-82, and Seed EA-007 at 15-116.

Observed Dig team sweep IVS and RTK operator re-check RTK at Survey Marker for End-of-day checks.

Summary of Deficiencies

Team Leader not logging items in logbook.

Corrective Actions

Already corrected via face-to-face brief.

Reinspection Results

N/A

Additional Notes

None

Report Date: 4/5/2018

Project No: 6273206

Report No: 57



SAFETY INSPECTIONS AND RESULTS:

Inspections

0630 Safety Brief. As team would be working primarily on dunes and beach I focused on MEC avoidance and safety of civilian personnel.

Remainder of day I alternated safety and QC. I found another tick crawling on my clothes so I re-enforced tick avoidance with all personnel. They are watching each other closely. Should we have any more I will recommend repellent be used.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

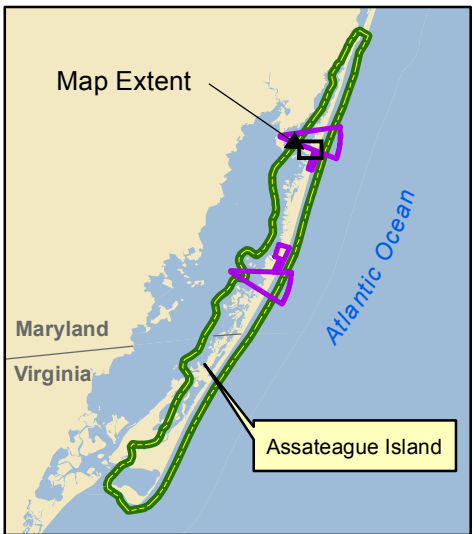
I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/5/2018 8:04:51 PM

SUXOS

Site Manager



Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- MD
- Digs Completed- Other

Water Anomaly Results

- Water Anomaly- NMRD
- Water Anomaly- MD
- Actual Transects
- ▨ CMUA Polygon
- - - Approximate Location of Former Target Area (Parsons 1995)
- ▭ Possible Burial Trench Location (Parson's 1995)
- Rocket Launch Area

Subareas

- No Survey - Parking Lot
- Beach - Land
- Campground - Land
- Marsh - Land
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/6/2018

0 530 1,060
Feet



PROGRESS MAP

5 APRIL 2018

Remedial Investigation Area 01

Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 4/6/2018

Project No: 6273206

Report No: 58



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Partly Cloudy	53	43	85	0.00

GOVERNMENT PERSONNEL (Name/Organization):

None

SITE VISITORS (Name/Organization):

None

Report Date: 4/6/2018

Project No: 6273206

Report No: 58



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	6.0		Supervised and monitored all activities in MRS 1.
Ron Morgan	1	UXOQCS/SO / EA	6.0		QC inspection performed during RTK setup and shut down. Observed intrusive activities and performed QC on completed anomaly locations in MRS 1.
Steve Yankay	1	RTK Operator / EA	6.0		RTK Operator reacquired anomalies in MRS 1.
Trent Harvin	1	UXOT III/Team Leader / EA	6.0	15 and back bay locations that were missed previously	UXO Team Leader managed intrusive activities in MRS 1.
John Hayes	1	UXOT II / EA	6.0	15 and back bay locations that were missed previously	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
Dane McCarthy	1	UXOT II / EA	6.0	15 and back bay locations that were missed previously	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
JT Huggins	1	UXOT I / EA	6.0	15 and back bay locations that were missed previously	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
Jeff Day	1	UXOT I / EA	6.0	15 and back bay locations that were missed previously	Test Schonstedts on IVS. Continued intrusive activities in MRS 1.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	WH0353	3.0	Yes
RTK R10	Steve Yankay	WH0338	4.0	Yes
Schonstedt 52cx	John Hayes	WH0213	5.0	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	5.0	Yes

Report Date: 4/6/2018

Project No: 6273206

Report No: 58



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/Transect	Dig Count	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1	DGI	01	MRS01-08	1	0	0	0.20	0	0	0	0
1	DGI	01	MRS01-12	1	0	0	0.30	0	0	0	0
1	DGI	01	MRS01-14	4	0	0	1.10	0	0	0	0
1	DGI	01	MRS01-15	10	0	43.00	0	0	0	0	0
1	DGI	01	MRS01-B	3	0	0	5.00	0	0	0	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief was performed prior to start of field work. RTK QC performed and UXO personnel checked equipment on IVS prior to start of work. UXO Team performed intrusive investigations on flagged anomalies and found 11 MPPEH items on 9 anomaly locations on transect 15 northern section. UXOQCS/SO and SUXOS inspected all items and logged all items as 2.25 mm rocket parts that were empty and classified them as MD and placed in magazine area. UXO Team completed 19 anomaly locations.

QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

Report Date: 4/6/2018

Project No: 6273206

Report No: 58



Clearance Phase	MRS	Target ID	QA/QC Status	QA/QC Comment
DGI	01	MRS01-B-186	QC	Found 1 item. Removed and re-scanned. Clear.
DGI	01	MRS01-B-187	QC	Clear
DGI	01	MRS01-B-191	QC	Clear
DGI	01	MRS01-B-192	QC	Clear
DGI	01	MRS01-B-198	QC	Clear
DGI	01	MRS01-B-202	QC	Clear
DGI	01	MRS01-B-205	QC	Clear
DGI	01	MRS01-B-206	QC	Clear
DGI	01	MRS01-B-208	QC	Clear
DGI	01	MRS01-B-212	QC	Clear
DGI	01	MRS01-B-213	QC	Clear
DGI	01	MRS01-B-215	QC	Clear

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0630 Safety Brief

Observed RTK calibration (RTK Operator) and IVS Sweep (Dig Team)

Assisted RTK Operator in anomaly reacquisition and flagging.

Dig team removed 11 items of MD from 9 locations in the northern end of Transect 15. SUXOS and I inspected items and determined no hazard and removed items to magazine storage area.

QC'ed Beach Transect flags B-213, B-215, B-202, B-212, B-198, B-208, B-192, B-186, B-205, B-191, B-187, and B-206. All flags cleared to standard.

Observed RTK calibration (RTK Operator) and IVS Sweep (Dig team) for End-of-Day check.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

Report Date: 4/6/2018

Project No: 6273206

Report No: 58



None

SAFETY INSPECTIONS AND RESULTS:

Inspections

0630 Safety Brief- Discussed the protection of personnel, tick avoidance, wind advisory, and MEC procedures. No injuries, illnesses, accidents or near misses.

Vehicle Inspection reports complete. Copies forthcoming.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

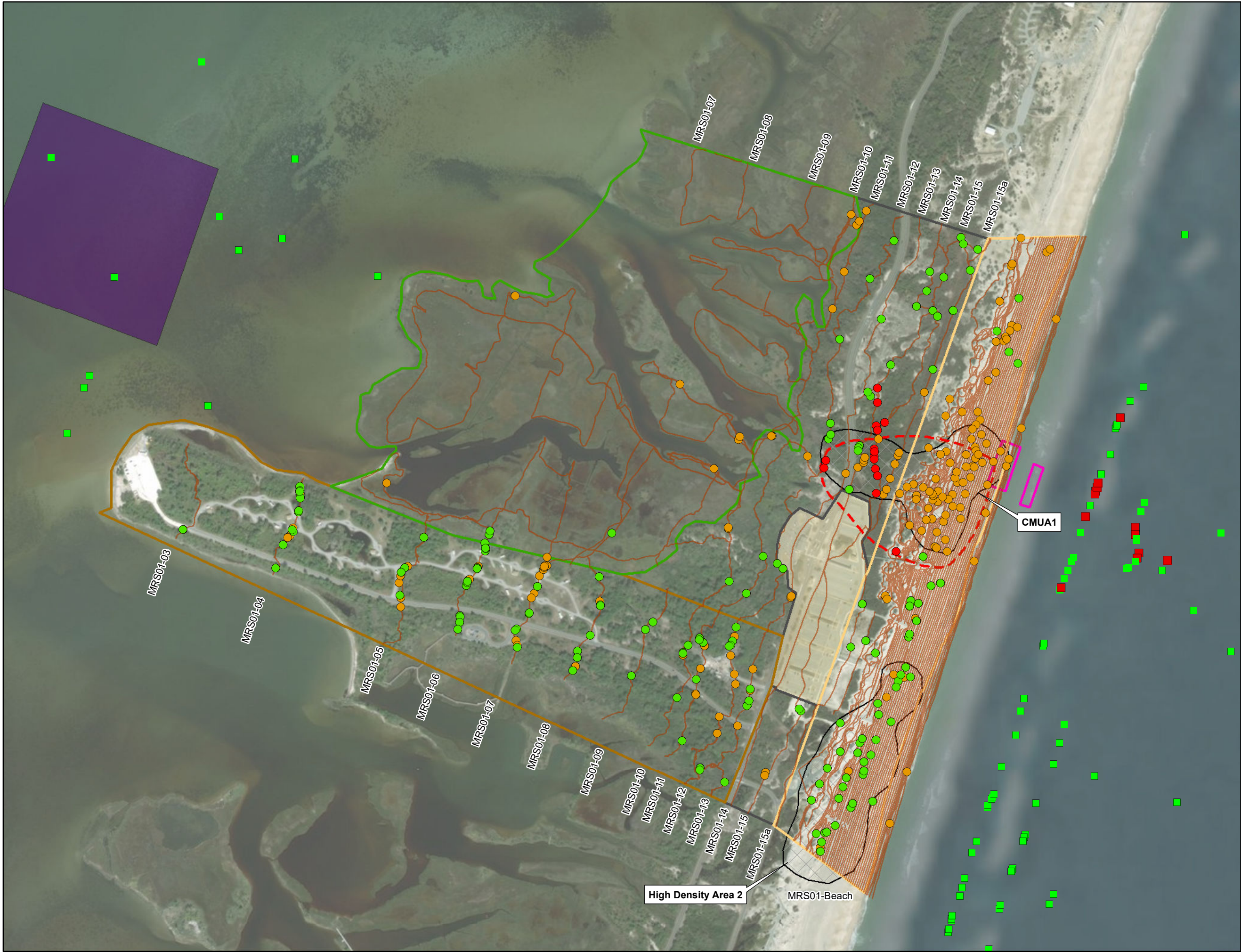
I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/6/2018 4:17:19 PM

SUXOS

Site Manager



Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- MD
- Digs Completed- Other

Water Anomaly Results

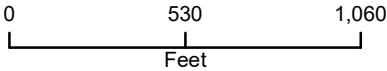
- Water Anomaly- NMRD
- Water Anomaly- MD

- Actual Transects
- CMUA Polygon
- Approximate Location of Former Target Area (Parsons 1995)
- Possible Burial Trench Location (Parson's 1995)
- Rocket Launch Area

Subareas

- No Survey - Parking Lot
- Beach - Land
- Campground - Land
- Marsh - Land
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/8/2018



PROGRESS MAP
6 APRIL 2018
Remedial Investigation Area 01
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 4/9/2018

Project No: 6273206

Report No: 59



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT Assateague Island FUDS RI Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Cloudy and windy	45	33	88	0.00

GOVERNMENT PERSONNEL (Name/Organization):

None

SITE VISITORS (Name/Organization):

None

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	11.0		Supervised and monitored all activities in MRS 1.
Ron Morgan	1	UXOQCS/SO / EA	11.0		Performed QC inspection during RTK setup and shut down. Observed intrusive activities and performed QC on completed anomaly locations in MRS 1.
Steve Yankay	1	RTK Operator / EA	11.0		RTK Operator reacquired anomalies in MRS 1.
Trent Harvin	1	UXOT III/Team Leader / EA	11.0	Marsh area, beach and transects	UXO Team Leader managed intrusive activities in MRS 1.
John Hayes	1	UXOT II / EA	11.0	Marsh area, beach and transects	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
Dane McCarthy	1	UXOT II / EA	11.0	Marsh area, beach and transects	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
JT Huggins	1	UXOT I / EA	11.0	Marsh area, beach and transects	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
Jeff Day	1	UXOT I / EA	11.0	Marsh area, beach and transects	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

Report Date: 4/9/2018

Project No: 6273206

Report No: 59



OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	WH0353	5.0	Yes
RTK R10	Steve Yankay	WH0338	8.0	Yes
Schonstedt 52cx	John Hayes	WH0213	10.0	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	10.0	Yes

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/Transect	Dig Count	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1		MRS01	06	3	0	0	0.40	0	0	0	0
1		MRS01	07	6	0	0	0.90	0	0	0	0
1		MRS01	11	2	0	0	0.50	0	0	0	0
1		MRS01	12	3	0	0	0.60	0	0	0	0
1		MRS01	13	2	0	0	0.10	0	0	0	0
1	DGI	01	MRS01-05	1	0	0	0	0	0	0	0
1	DGI	01	MRS01-07	3	0	0	0.50	0	0	0	0
1	DGI	01	MRS01-08	1	0	0	3.00	0	0	0	0
1	DGI	01	MRS01-09	3	0	0	2.10	0	0	1	0
1	DGI	01	MRS01-10	4/1 NC	0	0	2.00	0	0	0	0
1	DGI	01	MRS01-11	1	0	0	0	0	0	0	0
1	DGI	01	MRS01-13	3/1 NC	0	0	0.40	0	0	0	0
1	DGI	01	MRS01-B	9	0	0	31.50	0	0	0	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

Report Date: 4/9/2018

Project No: 6273206

Report No: 59



MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief performed prior to daily activities. Performed QC of RTK in the morning and afternoon. UXO personnel tested equipment on IVS. RTK crew started reacquiring locations for additional anomaly locations in MRS 1. UXO Team started intrusive activities in marsh area of MRS 1. UXO Team completed 41 anomaly locations for the day in MRS 1. No MPPEH or MD found on anomaly locations.

Report Date: 4/9/2018

Project No: 6273206

Report No: 59



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

Clearance Phase	MRS	Target ID	QA/QC Status	QA/QC Comment
DGI	01	MRS01-13-88	QC	Clear
DGI	01	MRS01-14-279	QC	Clear
DGI	01	MRS01-14-280	QC	Still some minor hits, but further clearing produced no MD. Clear.
DGI	01	MRS01-14-281	QC	Verified reinforced concrete culvert.
DGI	01	MRS01-15-102	QC	Clear
DGI	01	MRS01-15-103	QC	Clear
DGI	01	MRS01-15-104	QC	Clear
DGI	01	MRS01-15-272	QC	Clear
DGI	01	MRS01-15-301	QC	Clear

QA = Quality Assurance QC = Quality Control

SEED Results

Clearance Phase	MRS	Grid/Transect	Type	Serial Number
DGI	01	MRS01-09		

Inspections

0630 Safety Brief

0700- Observed RTK calibration on Survey Marker and Dig Team sweep of IVS with hand-held metal detectors.

QC'd Transects 13, 14 and 15. Points: 13-156, 13-88, 14-281, 14-279, 15-272, 15-104, 14-280, 15-301, 15-102, 15-103.

15-289 was skipped and will be swept after we receive the sump pump (Thursday).

Monitored Dig Team and determined they were performing well within scope of work as outlined in QAPP. Assisted RTK operator with flagging anomaly locations.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

Report Date: 4/9/2018

Project No: 6273206

Report No: 59



SAFETY INSPECTIONS AND RESULTS:

Inspections

0630 Safety Brief- Reviewed MEC precautions, Tick Avoidance, and Work Stoppage. Observed Dig Team and RTK operation throughout day. No incidents or injuries to report. No MD found today.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

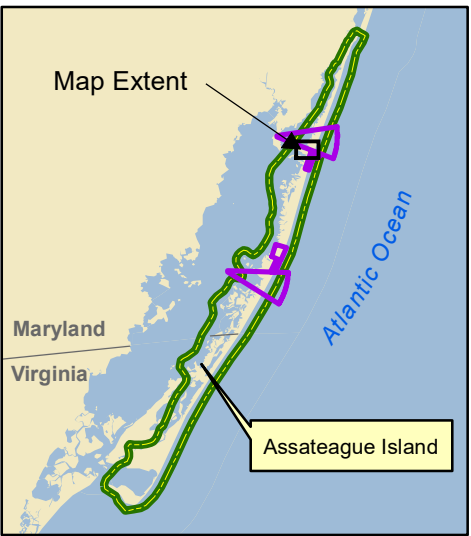
I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/9/2018 6:20:39 PM

SUXOS

Site Manager



Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- MD
- Digs Completed- Other

Water Anomaly Results

- Water Anomaly- NMRD
- Water Anomaly- MD

Actual Transects

CMUA Polygon

Approximate Location of Former Target Area (Parsons 1995)

Possible Burial Trench Location (Parson's 1995)

Rocket Launch Area

Subareas

- No Survey - Parking Lot
- Beach - Land
- Campground - Land
- Marsh - Land
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/10/2018

0 530 1,060
Feet



PROGRESS MAP

9 APRIL 2018

Remedial Investigation Area 01

Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 4/10/2018

Project No: 6273206

Report No: 60



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Partly Cloudy	49	42	61	0.09

GOVERNMENT PERSONNEL (Name/Organization):

None

SITE VISITORS (Name/Organization):

None

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	11.0		Supervised and monitored all activities in MRS 1.
Ron Morgan	1	UXOQCS/SO / EA	11.0		Performed QC inspection during RTK setup and shut down. Observed intrusive activities and performed QC on completed anomaly locations in MRS 1.
Steve Yankay	1	RTK Operator / EA	11.0		RTK Operator reacquired anomalies in MRS 1.
Trent Harvin	1	UXOT III/Team Leader / EA	11.0	Marsh and transects in MRS 1.	UXO Team Leader managed intrusive activities in MRS 1.
John Hayes	1	UXOT II / EA	11.0	Marsh and transects in MRS 1.	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
Dane McCarthy	1	UXOT II / EA	11.0	Marsh and transects in MRS 1.	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
JT Huggins	1	UXOT I / EA	11.0	Marsh and transects in MRS 1.	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
Jeff Day	1	UXOT I / EA	11.0	Marsh and transects in MRS 1.	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

Report Date: 4/10/2018

Project No: 6273206

Report No: 60



OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	WH0353	5.0	Yes
RTK R10	Steve Yankay	WH0338	8.0	Yes
Schonstedt 52cx	John Hayes	WH0213	10.0	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	10.0	Yes

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/Transect	Dig Count	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1		MRS01	04	5	0	0	1.40	0	0	0	0
1		MRS01	05	5	0	0	1.10	0	0	0	0
1		MRS01	07	2	0	0	0.70	0	0	0	0
1		MRS01	08	2	0	0	0.70	0	0	0	0
1		MRS01	10	1	0	0	1.00	0	0	0	0
1		MRS01	11	2	0	0	2.00	0	0	0	0
1		MRS01	12	1	0	0	0.10	0	0	0	0
1	DGI	01	MRS01-05	1	0	0	0.10	0	0	0	0
1	DGI	01	MRS01-10	1/1 NC	0	0	0	0	0	0	0
1	DGI	01	MRS01-11	5/1 NC	0	0	0.20	0	0	0	0
1	DGI	01	MRS01-12	3/1 NC	0	0	0.60	0	0	0	0
1	DGI	01	MRS01-13	1	0	0	0	0	0	0	0
1	DGI	01	MRS01-15	9/1 NC	0	20.00	6.20	0	0	0	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

Report Date: 4/10/2018

Project No: 6273206

Report No: 60



MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/ Health & Safety brief performed prior to start of daily field activities. RTK QC performed in morning and afternoon. UXO personnel performed equipment checks on IVS. RTK personnel mark anomalies in target area. UXO Team performed intrusive activities on marsh and transect anomalies. UXO team located 5, 2.25mm rocket parts on northern section of transect 15 in MRS 1, UXOQCS and SUXOS inspected and determined all items to be MD and placed in magazine area.

QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

Clearance Phase	MRS	Target ID	QA/QC Status	QA/QC Comment
DGI	01	MRS01-06-1	QC	Clear
DGI	01	MRS01-06-28	QC	Clear
DGI	01	MRS01-06-29	QC	Sheet metal over 4' deep. Left in place.
DGI	01	MRS01-06-30	QC	Clear
DGI	01	MRS01-06-31	QC	Clear
DGI	01	MRS01-06-32	QC	Clear
DGI	01	MRS01-06-33	QC	Found one piece of NMRD. Re-swept. Clear
DGI	01	MRS01-06-34	QC	Clear
DGI	01	MRS01-06-35	QC	Clear
DGI	01	MRS01-06-36	QC	Clear
DGI	01	MRS01-06-37	QC	Clear
DGI	01	MRS01-06-38	QC	Clear
DGI	01	MRS01-06-39	QC	Clear
DGI	01	MRS01-06-40	QC	Clear

Report Date: 4/10/2018

Project No: 6273206

Report No: 60



DGI	01	MRS01-06-79	QC	Clear
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QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0630 Safety Brief

Observed RTK Calibration at Survey Marker and IVS Sweep by Dig Team personnel.

Assisted RTK operator with setting flags on 42 points.

Qc'd the following points: 6-32, 6-79, 6-35, 6-36, 6-37, 6-34, 6-1, 6-28, 6-39, 6-40, 6-30, 6-31, 6-33, 6-29. Found two pieces of NMRD: one on 6-33 and one on 6-79. Both very small and below the threshold as outline in Table 31-1 of the WP. Dig Team turned in Seed MRS1 EA006 recovered from Transect Point09-11 on 9 April.

Observed RTK calibration and IVS Sweep for End-of-Day checks.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

Report Date: 4/10/2018

Project No: 6273206

Report No: 60



SAFETY INSPECTIONS AND RESULTS:

Inspections

0630 Safety Brief: Focused on tick avoidance, MEC precautions, work stoppage and protecting civilians. Observed dig team covertly and noticed team members scanning for insects on teammates while working in wooded areas.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

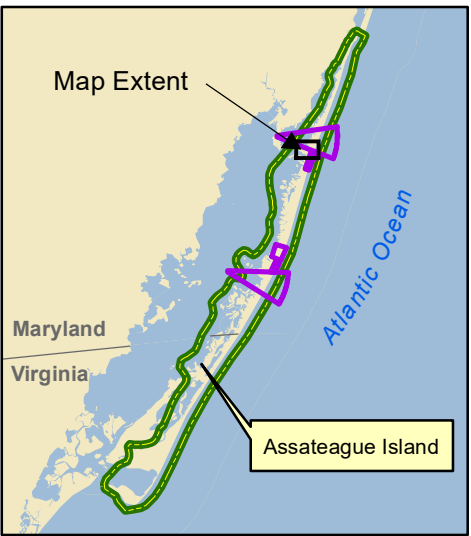
I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/10/2018 8:52:25 PM

SUXOS

Site Manager



Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- MD
- Digs Completed- Other

Water Anomaly Results

- Water Anomaly- NMRD
- Water Anomaly- MD

- Actual Transects
- CMUA Polygon
- Approximate Location of Former Target Area (Parsons 1995)
- Possible Burial Trench Location (Parson's 1995)
- Rocket Launch Area

Subareas

- No Survey - Parking Lot
- Beach - Land
- Campground - Land
- Marsh - Land
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/11/2018

0 530 1,060
Feet



PROGRESS MAP
10 APRIL 2018
Remedial Investigation Area 01
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 4/11/2018

Project No: 6273206

Report No: 61



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT Assateague Island FUDS RI Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Partly cloudy with light wind	53	29	84	0.00

GOVERNMENT PERSONNEL (Name/Organization):

None

SITE VISITORS (Name/Organization):

EA PM Mike O'Neill

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	10.5		Supervised and monitored all activities in MRS 1.
Ron Morgan	1	UXOQCS/SO / EA	10.5		Performed QC inspection during RTK setup and shut down. Observed intrusive activities and performed QC on completed anomaly locations in MRS 1.
Steve Yankay	1	RTK Operator / EA	10.5		RTK Operator reacquired anomalies in MRS 1.
Trent Harvin	1	UXOT III/Team Leader / EA	10.5	Transect 14 and beach area.	UXO Team Leader managed intrusive activities in MRS 1.
John Hayes	1	UXOT II / EA	10.5	Transect 14 and beach area.	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
Dane McCarthy	1	UXOT II / EA	10.5	Transect 14 and beach area.	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
JT Huggins	1	UXOT I / EA	10.5	Transect 14 and beach area.	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
Jeff Day	1	UXOT I / EA	10.5	Transect 14 and beach area.	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

Report Date: 4/11/2018

Project No: 6273206

Report No: 61



OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	WH0353	5.0	No
RTK R10	Steve Yankay	WH0338	8.0	No
Schonstedt 52cx	John Hayes	WH0213	10.0	No
Schonstedt 52cx	Dane McCarthy	WH0385	10.0	No

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/Transect	Dig Count	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1	DGI	01	MRS01-14	4	0	12.50	0.20	0	0	0	0
1	DGI	01	MRS01-15	1	0	0	0	0	0	0	0
1	DGI	01	MRS01-B	30/1 NC	0	12.00	52.80	0	0	2	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Report Date: 4/11/2018

Project No: 6273206

Report No: 61



Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning Meeting/Health & Safety brief was performed prior to start of daily field activities. RTK was setup and QC performed on the benchmark. UXO team personnel performed equipment check on IVS. RTK crew established grids 1 and 2 in high density area of MRS 1. RTK crew placed remainder of flags on the beach and in the target area, with the exception of low tide anomalies which will be marked next week during low tide. UXO team personnel continued intrusive activities on Transect 14 (northern section) where three 2.25 mm rocket sections were located. UXOQCS and SUXOS inspected all items and determined them to be MD and transported them to the magazine area. The UXO team continued intrusive activities on the target area and beach anomaly locations. The UXO team located two 2.25 mm rocket sections and the UXOQCS and SUXOS inspected both, found them to be MD, and placed them in the magazine area.

QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

Clearance Phase	MRS	Target ID	QA/QC Status	QA/QC Comment
DGI	01	MRS01-07-71	QC	Clear
DGI	01	MRS01-07-72	QC	Clear
DGI	01	MRS01-07-73	QC	Clear
DGI	01	MRS01-11-55	QC	Clear
DGI	01	MRS01-12-15	QC	Clear
DGI	01	MRS01-12-64	QC	Verified no contact.
DGI	01	MRS01-12-65	QC	Clear
DGI	01	MRS01-12-85	QC	Verified no contact.
DGI	01	MRS01-15-289	QC	On-site during attempt. Made the call to suspend. Hole was down four feet, pump could not adequately displace water and item was never seen. Not recoverable.
DGI	01	MRS01-15-290	QC	Found small piece of NMRD. Removed and re-swept. Clear.
	MRS01	MRS01-05-1116	QC	Clear
	MRS01	MRS01-05-1121	QC	Found more hot rocks. Reswept. Clear.
	MRS01	MRS01-05-1123	QC	Clear
	MRS01	MRS01-05-1126	QC	Concur with hot rocks. Re-swept hole found no MD.

Report Date: 4/11/2018

Project No: 6273206

Report No: 61



	MRS01	MRS01-06-1128	QC	Clear
	MRS01	MRS01-06-1129	QC	Clear
	MRS01	MRS01-06-1130	QC	Clear
	MRS01	MRS01-07-1134	QC	Clear
	MRS01	MRS01-07-1290	QC	Clear
	MRS01	MRS01-07-1293	QC	Clear
	MRS01	MRS01-11-1168	QC	Clear
	MRS01	MRS01-11-1169	QC	Clear
	MRS01	MRS01-13-1192	QC	Removed hot rocks and re-swept. Clear

QA = Quality Assurance QC = Quality Control

SEED Results

Clearance Phase	MRS	Grid/Transect	Type	Serial Number
DGI	01	MRS01-B		

Inspections

0630 Safety Brief

0700 Observed Dig Team sweep IVS for start of day detector test. Observed RTK operator calibrate RTK on Survey Marker.

0815-0930 Observed Dig Team excavate on point 15-289. Team used portable water pump and shovels to excavate down to four feet attempting to find and recover the anomaly. I was on site as both Safety Officer and QC. As Safety Officer I made the call to suspend the investigation at 4 feet due to inability to keep water and sand from hampering recovery. Item was never seen and is unrecoverable. Not safe or time effective to remove.

Team 1 contacted me about five items they recovered: three on Transect 14 and two on the beach. The SUXOS and I inspected the items, determined they were MD and safe to move, and removed them to the magazine storage area.

At 1310 Team 1 called me to the beach area to observe and make a recommendation on three points they were attempting to excavate by hand. Each point was already at 4 feet and they wanted to know if I wanted them to continue. I said no and informed them that 4 feet was their cut-off point. Immediately after I met with the SUXOS, PM and NPS representative about the issue. Since it was clearly in the target area the PM and SUXOS agreed that a mini-excavator would be the appropriate method. Since we have 8 more points in that area we will flag them and attack them next week with the mini-ex at low tide.

QC'd the following points: 05-1116, 06-1129, 15-289, 07-1293, 05-1121, 06-1128, 05-1123, 07-71, 05-1126, 15-290, 07-1290, 07-73, 07-72, 07-1134, 06-1130, 12-15, 11-1169, 11-1168, 12-85, 11-55, 12-65, 12-64.

Observed End-of-Day RTK calibration and IVS sweep.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Report Date: 4/11/2018

Project No: 6273206

Report No: 61



Additional Notes

None

SAFETY INSPECTIONS AND RESULTS:

Inspections

0630 Safety Brief- focused on Tick avoidance, work stoppage due to civilian interaction, MEC precautions and hydration due to warmer weather finally appearing.

Was on site at flag 15-289 when team attempted recovery in marsh area using portable water pump and shovels. They were able to get down to four feet safely, but could not remove enough sand and water to safely find and recover the anomaly. I halted the attempt for safety and time reasons.

No other safety concerns for the day.

Met with Team 1 on the beach at 1310. The team was in the process of excavating three points and were down to four feet and planning to go further. I called a safety halt and informed the team that they were to not go past four feet on any point. Met with the SUXOS, PM and NPS Rep about the possibility of bringing in a mini-excavator for any work requiring more than four feet. The Team will flag those points and we will attack them next week when the tide will be at its lowest and the excavator will be on site.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

No holes will be attempted by hand that go deeper than four feet.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/11/2018 7:36:26 PM

SUXOS

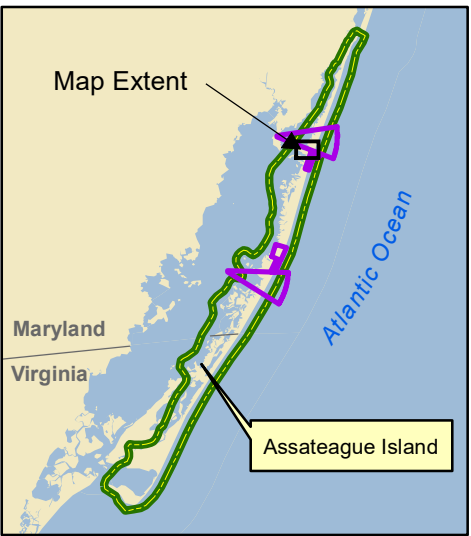
Site Manager

Report Date: 4/11/2018

Project No: 6273206

Report No: 61





Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- MD
- Digs Completed- Other

Water Anomaly Results

- Water Anomaly- NMRD
- Water Anomaly- MD

Actual Transects

CMUA Polygon

Approximate Location of Former Target Area (Parsons 1995)

Possible Burial Trench Location (Parson's 1995)

Rocket Launch Area

Subareas

- No Survey - Parking Lot
- Beach - Land
- Campground - Land
- Marsh - Land
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/12/2018

0 530 1,060
Feet



PROGRESS MAP

11 APRIL 2018

Remedial Investigation Area 01

Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 4/12/2018

Project No: 6273206

Report No: 62



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT Assateague Island FUDS RI Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Partly Cloudy and windy	66	45	83	0.00

GOVERNMENT PERSONNEL (Name/Organization):

None

SITE VISITORS (Name/Organization):

EA PM Mike O'Neill

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	11.0		Supervised and monitored all activities in MRS 1.
Ron Morgan	1	UXOQCS/SO / EA	11.0		Performed QC inspection during RTK setup and shut down. Observed intrusive activities and performed QC on completed anomaly locations in MRS 1.
Steve Yankay	3	RTK Operator / EA	11.0		Setup and performed QC of RTK in MRS 3. RTK Operator reacquired anomalies in MRS 3.
Trent Harvin	1	UXOT III/Team Leader / EA	11.0	Beach Target area in MRS 1.	UXO Team Leader managed intrusive activities in MRS 1.
John Hayes	1	UXOT II / EA	11.0	Beach Target area in MRS 1.	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
Dane McCarthy	1	UXOT II / EA	11.0	Beach Target area in MRS 1.	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
JT Huggins	1	UXOT I / EA	11.0	Beach Target area in MRS 1.	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
Jeff Day	1	UXOT I / EA	11.0	Beach Target area in MRS 1.	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

Report Date: 4/12/2018

Project No: 6273206

Report No: 62



OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	WH0353	5.0	Yes
RTK R10	Steve Yankay	WH0338	9.0	Yes
Schonstedt 52cx	John Hayes	WH0213	10.0	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	10.0	Yes

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/Transect	Dig Count	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1	DGI	01	MRS01-B	39/1 NC	0	63.00	24.60	0	0	0	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found
--

Report Date: 4/12/2018

Project No: 6273206

Report No: 62



Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief completed prior to start of field activities. RTK crew setup and performed QC tests in MRS 3. RTK crew tested the instrument on several benchmarks to test for accuracy. RTK reacquire was performed on anomaly locations in the dune area of MRS 3. UXO personnel completed equipment checks on IVS. UXO team investigated 6 northern beach locations and continued intrusive investigation of anomaly locations in the target area. UXO team located 17, 2.25 mm rocket motors. The UXOQCS and SUXOS inspected them, determined the items to be MD, and placed them in the magazine storage area.

Report Date: 4/12/2018

Project No: 6273206

Report No: 62



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0630- Safety Brief

0700 Observed IVS Sweep. RTK operator will locate multiple benchmarks and perform calibration at Survey Marker in MRS3. Dig Team performed excavation on beach transect. I inspected two dig sites that I deemed too deep to continue. Each dig site only had one single contact, so they were not likely associated with a disposal pit. As Safety Officer I called a halt to the excavations when they reached four feet of depth with no contact with the anomaly.

Dig Team recovered 17 pieces of MD which SUXOS and I inspected, verified as MD, and designated as safe to move. Items were moved to the magazine storage area.

Dig Team turned in two seeds: Seed MRS 1 EA002 recovered from point B-302 and Seed MRS 1 EA003 from point B-248.

Most of the excavations were well within the target area and were at or near three to four foot depth.

Observed RTK calibration and IVS Sweep for end-of-day checks.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

Report Date: 4/12/2018

Project No: 6273206

Report No: 62



SAFETY INSPECTIONS AND RESULTS:

Inspections

0630: Safety Brief- Focused on fire prevention, work stoppage, and safety procedures during split operations (Reacquire Team working in MRS 3). Talked about Rally Point and emergency medical procedures.

Observed Dig Team working in dunes and beach. Two excavation sites were deemed too deep to continue for health and safety reasons. I reemphazied no excavations by hand will be performed deeper than four feet.

Teams worked remainder of day with no issues or concerns.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

Tomorrow I will speak to the teams about sunscreen use. As the weather is finally warming, protection from the sun and proper hydration become key to avoiding injuries or illnesses.

CONTRACTOR'S VERIFICATION:

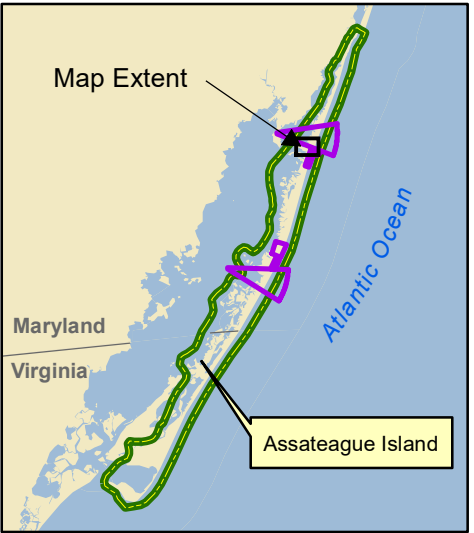
I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/12/2018 6:06:58 PM

SUXOS

Site Manager



Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- MD
- Digs Completed- Other

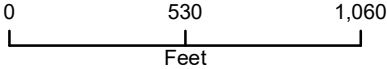
Water Anomaly Results

- Water Anomaly- NMRD
- Water Anomaly- MD
- Actual Transects
- CMUA Polygon
- Approximate Location of Former Target Area (Parsons 1995)
- Possible Burial Trench Location (Parson's 1995)
- Rocket Launch Area

Subareas

- No Survey - Parking Lot
- Beach - Land
- Campground - Land
- Marsh - Land
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/13/2018



PROGRESS MAP
12 APRIL 2018
Remedial Investigation Area 01
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 4/13/2018

Project No: 6273206

Report No: 63



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT Assateague Island FUDS RI Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Sunny and windy	72	55	98	0.00

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

USACE- Baltimore PM Julie Kaiser

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	6.5		Supervised and monitored all activities in MRS 1.
Ron Morgan	1	UXOQCS/SO / EA	6.5		Performed QC inspection during RTK setup and shut down. Observed intrusive activities and performed QC on completed grid anomaly locations in MRS 1.
Steve Yankay	1	RTK Operator / EA	6.5		Setup and performed QC of RTK in MRS 1. RTK Operator collected GPS data of anomalies in grids in MRS 1.
Trent Harvin	1	UXOT III/Team Leader / EA	6.5	Beach anomaly locations and grids.	UXO Team Leader managed intrusive activities in MRS 1.
John Hayes	1	UXOT II / EA	6.5	Beach anomaly locations and grids.	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
Dane McCarthy	1	UXOT II / EA	6.5	Beach anomaly locations and grids.	Tested Schonstedts on IVS. Continued intrusive activities in MRS
JT Huggins	1	UXOT I / EA	6.5	Beach anomaly locations and grids.	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.
Jeff Day	1	UXOT I / EA	6.5	Beach anomaly locations and grids.	Tested Schonstedts on IVS. Continued intrusive activities in MRS 1.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

Report Date: 4/13/2018

Project No: 6273206

Report No: 63



OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	WH0353	3.0	Yes
RTK R10	Steve Yankay	WH0338	4.0	Yes
Schonstedt 52cx	John Hayes	WH0213	5.0	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	5.0	Yes

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

Two 50 x 50 ft grids were mag and flagged in High Density Area 2. Grid 1 (flagged with 101 anomalies) was intrusively investigated and confirmed to have only NMRD (primarily associated with camping activities). A conference call was held at 1pm with USACE to discuss intrusive investigation of Grid 2 (flagged with 174 anomalies). Based on the the findings of Grid 1 and similiar observations from the other anomalies investigated in the area, it was determined intrusive investigation of Grid 2 was unnecessary and flags were pulled from Grid 2.

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities

DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/Transect	Dig Count	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1		MRS01	B	1	0	0	5.00	0	0	0	0
1	DGI	01	MRS01-B	4	0	12.00	0	0	0	0	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris

RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Report Date: 4/13/2018

Project No: 6273206

Report No: 63



Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief was performed prior to start of daily field activities. RTK setup and QC performed on benchmark. UXO personnel performed equipment checks on IVS. UXO personnel continued intrusive investigation on final 5 anomaly locations in the northern section of target area and located a 20-ft X 20-ft in diameter area that had a large signature on the Schonstedt magnetometer and was deeper than 4-ft. Escorted USACE PM Julie Kaiser to the location to show her the location and size of the area. UXO team completed mag and flag of two grid locations in High Density Area 2 and after all anomalies had GPS data collected with the RTK, started digging all 101 anomalies in Grid Number 1 to the south of the High Density Area 2. Grid 2 (in the northern section of High Density Area 2) had mag and flag procedures performed (174 anomalies) and GPS data collected with the RTK, then all flags were removed at the request of the NPS because the camp site area will be full of campers over the weekend. All anomaly locations in Grid Number 1 were NMRD (consisting of tent stakes and fence posts). Based on the findings of Grid 1 and following a conference call with USACE, further intrusive investigation of High Density Area 2 was deemed unnecessary.

Report Date: 4/13/2018

Project No: 6273206

Report No: 63



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0630 Safety Brief.

Observed IVS sweep and RTK calibration at start-of-day. Split into two teams with three personnel completing the Beach Transect and three personnel beginning laying out the grid pattern at Grid 1. Team Leader reported large anomalous reading at B-253. SUXOS moved to that location and confirmed an area of interest possibly being a burial pit. Spent the day working with the Dig Team on the mag and flag operation in Grids 1 and 2. RTK operator then uploaded each flag position into GPS for both grids. Met with USACE PM Julie Kaiser along with SUXOS. We moved to point B-253 to review the large anomalous area discovered by Team 1 earlier today. Due to the grids being in the Group Campground area and the campgrounds expecting to be full for the weekend, the SUXOS made the call to clear Grid 1, and due to time constraints, remove the flags from Grid 2. Team 1 cleared Grid 1 in my presence. I performed QC simultaneously on all points and found zero anomalies after the clearing procedure. Observed RTK calibration and IVS sweep at the End-of-Day.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

Report Date: 4/13/2018

Project No: 6273206

Report No: 63



SAFETY INSPECTIONS AND RESULTS:

Inspections

0630: Safety Brief- Focused on sunscreen use, hydration and work stoppage requirements. No injuries or illnesses. Mag, flag, and dig operations completed smoothly and within established safety protocols.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/13/2018 7:55:29 PM

SUXOS

Site Manager



Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- MD
- Digs Completed- Other

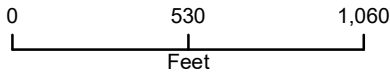
Water Anomaly Results

- Water Anomaly- NMRD
- Water Anomaly- MD
- Actual Transects
- CMUA Polygon
- Approximate Location of Former Target Area (Parsons 1995)
- Possible Burial Trench Location (Parson's 1995)
- Rocket Launch Area

Subareas

- No Survey - Parking Lot
- Beach - Land
- Campground - Land
- Marsh - Land
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/16/2018



PROGRESS MAP
13 APRIL 2018
Remedial Investigation Area 01
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 4/16/2018

Project No: 6273206

Report No: 64



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Rain/Thunderstorms, High wind SSW at 32 mph with gusts to 38 mph.	60	40	99	0.75

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	4.0		Assessed site conditions to make a determination regarding field activities.
Ron Morgan	1	UXOQCS/SO / EA	4.0		No work due to weather.
Steve Yankay	1	RTK Operator / EA	4.0		No work due to weather.
Trent Harvin	1	UXOT III/Team Leader / EA	4.0		No work due to weather.
John Hayes	1	UXOT II / EA	4.0		No work due to weather.
Dane McCarthy	1	UXOT II / EA	4.0		No work due to weather.
JT Huggins	1	UXOT I / EA	4.0		No work due to weather.
Jeff Day	1	UXOT I / EA	4.0		No work due to weather.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

Report Date: 4/16/2018

Project No: 6273206

Report No: 64



OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	WH0353	0.5	Yes
RTK R10	Steve Yankay	WH0338	0.0	No
Schonstedt 52cx	John Hayes	WH0213	0.5	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	0.5	Yes

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/ Health & Safety brief. Accessed the weather to see if it would clear up enough to continue work. Sustained winds at 32 mph with gusts to 38. Called operations off at 1030. No work activities were performed for the day.

Report Date: 4/16/2018

Project No: 6273206

Report No: 64



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0630 Safety Brief

Lightning within 4 miles, driving rain, 30 knot winds. SUXOS called halt due to weather.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

Report Date: 4/16/2018

Project No: 6273206

Report No: 64



SAFETY INSPECTIONS AND RESULTS:

Inspections

0630: Safety Brief- Lightning within 4 miles, driving rain, 30 knot winds. Not safe to work.

1030- SUXOS called halt for day due to weather.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/16/2018 3:55:39 PM

SUXOS

Site Manager

Report Date: 4/17/2018

Project No: 6273206

Report No: 65



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Mostly Cloudy and windy.	51	37	84	0.02

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

Report Date: 4/17/2018

Project No: 6273206

Report No: 65



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	3	SUXOS / EA	11.0		Supervised and monitored all activities in MRS 1.
Ron Morgan	1 and 3	UXOQCS/SO / EA	11.0		Morning safety brief, QC completed for anomaly locations in MRS 1 and MRS 3.
Steve Yankay	3	RTK Operator / EA	11.0		RTK setup and QC performed. Reacquired anomaly locations on beach and Transect 4 (northern sections of MRS 3).
Trent Harvin	3	UXOT III/Team Leader / EA	11.0	Dune and Beach	Performed intrusive investigations in dune and beach areas in MRS 3.
John Hayes	3	UXOT II / EA	11.0	Dune and Beach	Tested equipment on IVS. Started anomaly intrusive investigations in dune and beach areas in MRS 3.
Dane McCarthy	3	UXOT II / EA	11.0	Dune and Beach	Tested equipment on IVS. Started anomaly intrusive investigations in dune and beach areas in MRS 3.
JT Huggins	3	UXOT I / EA	11.0	Dune and Beach	Performed intrusive investigations in dune and beach areas in MRS 3.
Jeff Day	3	UXOT I / EA	11.0	Dune and Beach	Performed intrusive investigations in dune and beach areas in MRS 3.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonstedt 52cx	Ron Morgan	WH0353	7.0	Yes
RTK R10	Steve Yankay	WH0338	9.0	Yes
Schonstedt 52cx	John Hayes	WH0213	10.0	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	10.0	Yes

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Report Date: 4/17/2018

Project No: 6273206

Report No: 65



Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/Transect	Dig Count	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1		MRS03	MRS03-08	1	0	0	0	0	0	1	0
1		MRS03	MRS03-11	1	0	0	0	0	0	1	0
1		MRS03	MRS03-B	36/1 NC	0	0	14.50	0	0	4	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/ Health & Safety brief completed prior to start of field work. RTK was setup and QC was performed on a benchmark in MRS 3. RTK reacquire performed on all low tide anomalies and northern beach anomalies and northern section of Transect 4. UXO Team completed equipment checks on IVS. UXO Team started intrusive investigation on marked anomalies in dune area then moved to the northern section to complete marked anomalies on the beach. Mini excavator delivered to MRS 1 and staged for tomorrow's activities.

QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

Clearance Phase	MRS	Target ID	QA/QC Status	QA/QC Comment
DGI	01	MRS01-B-133	QC	Clear
DGI	01	MRS01-B-147	QC	Clear
DGI	01	MRS01-B-153	QC	Clear
DGI	01	MRS01-B-154	QC	Confirm. Left in place.
DGI	01	MRS01-B-160	QC	Removed metal fragment and re-swept. Clear.
DGI	01	MRS01-B-161	QC	Clear.
DGI	01	MRS01-B-162	QC	Clear

Report Date: 4/17/2018

Project No: 6273206

Report No: 65



DGI	01	MRS01-B-163	QC	Removed a small piece of wire and re-swept. Clear.
DGI	01	MRS01-B-219	QC	Clear
DGI	01	MRS01-B-220	QC	Clear
DGI	01	MRS01-B-221	QC	Clear
DGI	01	MRS01-B-230	QC	Clear
DGI	01	MRS01-B-232	QC	Clear
DGI	01	MRS01-B-239	QC	Clear
DGI	01	MRS01-B-285	QC	Dug up and confirmed. Left in place.
DGI	01	MRS01-B-296	QC	Clear
	MRS03	MRS03-B-112	QC	Clear
	MRS03	MRS03-B-115	QC	Clear
	MRS03	MRS03-B-116	QC	Clear
	MRS03	MRS03-B-121	QC	Concur shipwreck jetsom
	MRS03	MRS03-B-122	QC	Concur shipwreck jetsom
	MRS03	MRS03-B-181	QC	Seed MRS 3 EA 016
	MRS03	MRS03-B-4	QC	Clear
	MRS03	MRS03-B-5	QC	Clear

QA = Quality Assurance QC = Quality Control

SEED Results

Clearance Phase	MRS	Grid/Transect	Type	Serial Number
	MRS03	MRS03-08		
	MRS03	MRS03-11		
	MRS03	MRS03-B		

Inspections

0630 Safety Brief

Observed IVS sweep by Team 1 and RTK calibration on Survey Marker. QC'd the following points in MRS1: B-219, B-296, B-239, B-220, B-285, B-161, B-147, B-160, B-230, B-133, B-153, B-162, B-232, B-221, B-163, B-245, B-174, B-154, B-257. No deficiencies.

Moved to MRS 3 and QC'd the following points: B-115, B-116, B-121, B-122, B-4, B-5. No deficiencies.

Team 1 turned in 6 seeds: Seed MRS 3 EA009 (B-2), Seed MRRS 3 EA010 (B-155), Seed MRS 3 EA011 (B-119), Seed MRS 3 EA013 (B-123), Seed MRS 3 EA014 (B-173), Seed MRS 3 EA016 (B-181).

Observed RTK calibration and IVS sweep for End-of-Day checks.

Summary of Deficiencies

None

Report Date: 4/17/2018

Project No: 6273206

Report No: 65



Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

SAFETY INSPECTIONS AND RESULTS:

Inspections

0630: Safety Brief- Focused on beach driving, underground obstacles, protection of nesting wildlife, emergency evacuation procedures, PPE.

No safety incidents or violations to report.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

Mini-Excavator operator safety training to be conducted immediately following Safety Brief in the morning.

CONTRACTOR'S VERIFICATION:

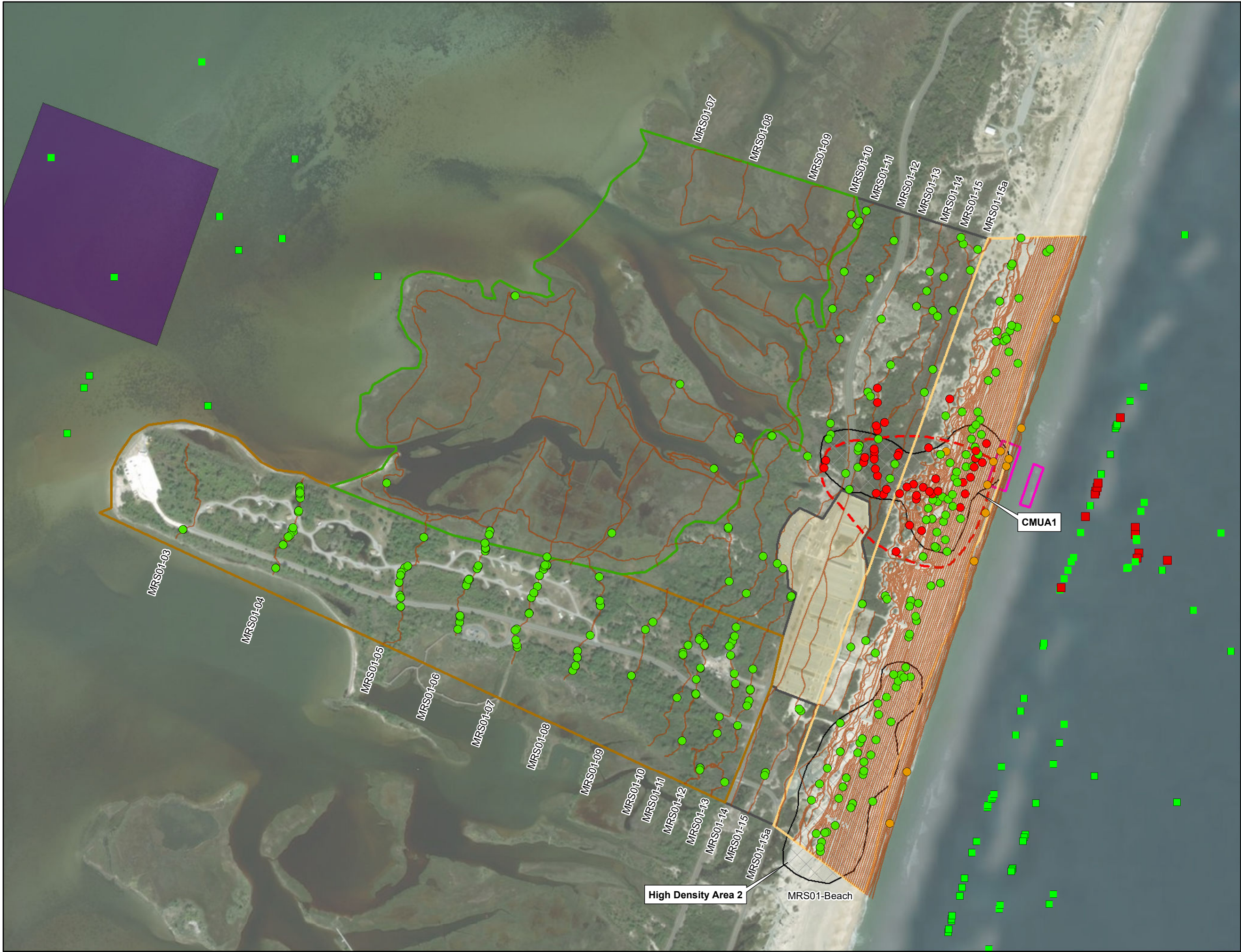
I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/17/2018 6:39:31 PM

SUXOS

Site Manager



Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- MD
- Digs Completed- Other

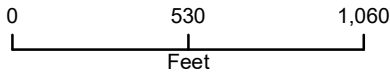
Water Anomaly Results

- Water Anomaly- NMRD
- Water Anomaly- MD
- Actual Transects
- CMUA Polygon
- Approximate Location of Former Target Area (Parsons 1995)
- Possible Burial Trench Location (Parson's 1995)
- Rocket Launch Area

Subareas

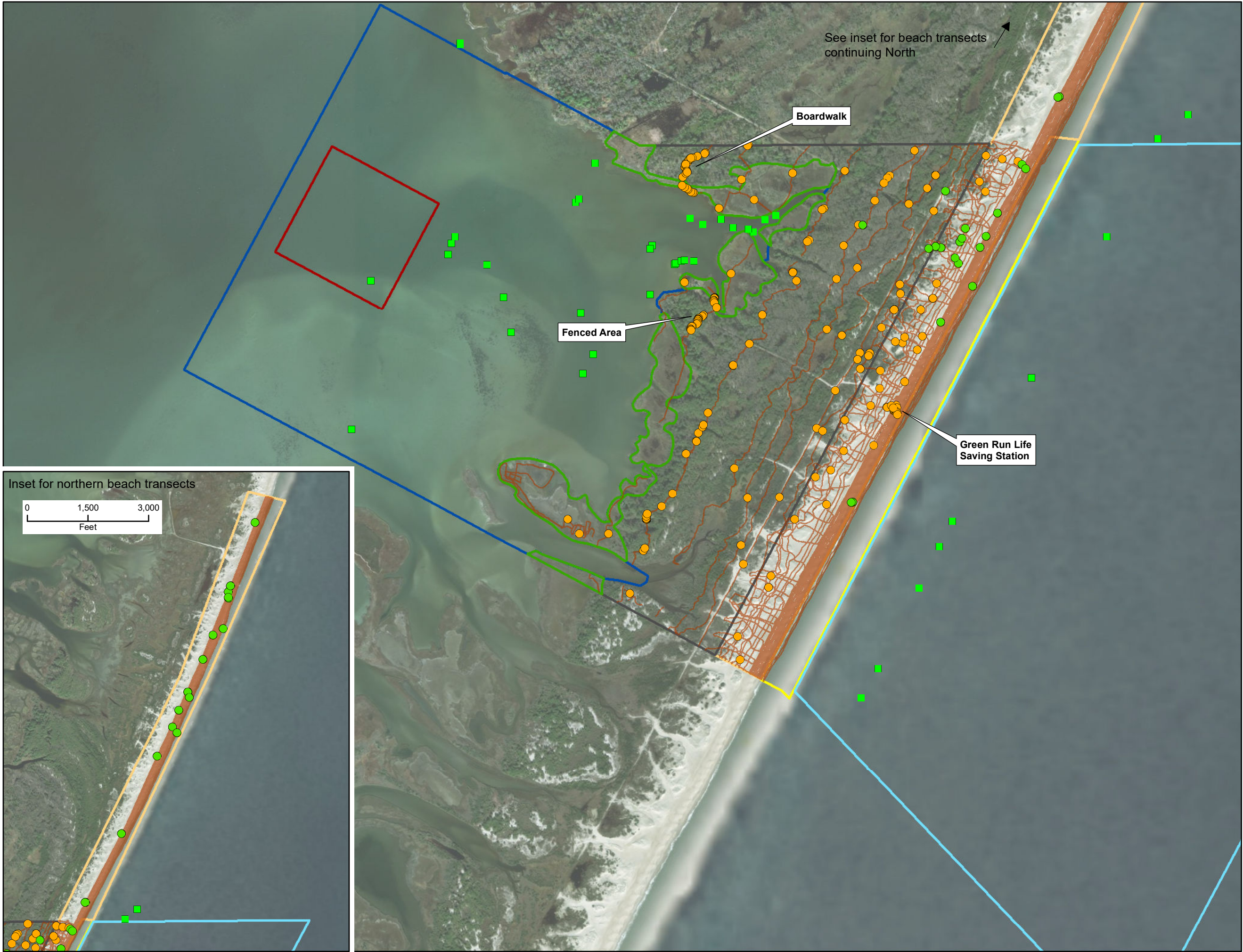
- No Survey - Parking Lot
- Beach - Land
- Campground - Land
- Marsh - Land
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/18/2018



PROGRESS MAP
17 APRIL 2018
Remedial Investigation Area 01
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

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Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- Other

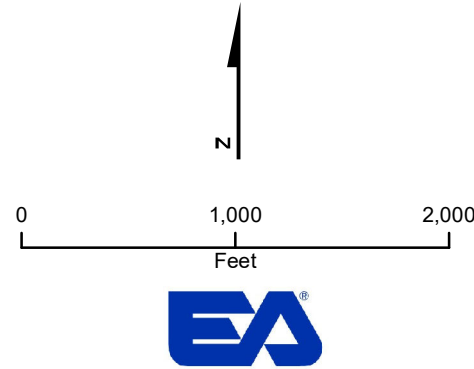
Water Anomaly Results

- Water Anomaly- NMRD
- Actual Transect

Subareas

- Backbay - Marine
- Beach - Land
- Marsh - Land
- Ocean - Marine
- Rocket Launch Area
- Surf Zone - Marine
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/18/2018



PROGRESS MAP
17 APRIL 2018
Remedial Investigation Area 03
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 4/18/2018

Project No: 6273206

Report No: 66



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Clear and wind increased through day's activities.	52	37	91	0.00

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

EA PM Mike O'Neill

Report Date: 4/18/2018

Project No: 6273206

Report No: 66



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	11.0		Supervised and monitored all activities in MRS 1.
Ron Morgan	1	UXOQCS/SO / EA	11.0		Morning safety brief, completed QC of anomaly locations in MRS 1.
Steve Yankay	1	RTK Operator / EA	11.0		RTK setup and performed QC. Reacquired anomaly locations on beach in MRS 1.
Trent Harvin	1	UXOT III/Team Leader / EA	11.0	Beach anomalies	Completed intrusive investigation of anomalies in dune and beach areas in MRS 1.
John Hayes	1	UXOT II / EA	11.0	Beach anomalies	Tested equipment on IVS. Operated heavy equipment. Completed intrusive investigation of anomalies in dune and beach areas in MRS 1.
Dane McCarthy	1	UXOT II / EA	11.0	Beach anomalies	Tested equipment on IVS. Operated heavy equipment. Completed intrusive investigation of anomalies in dune and beach areas in MRS 1.
JT Huggins	1	UXOT I / EA	11.0	Beach anomalies	Tested equipment on IVS. Completed intrusive investigation of anomalies in dune and beach areas in MRS 1.
Jeff Day	1	UXOT I / EA	11.0	Beach anomalies	Tested equipment on IVS. Completed intrusive investigation of anomalies in dune and beach areas in MRS 1.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	WH0353	8.0	Yes
RTK R10	Steve Yankay	WH0338	9.0	Yes
Schonstedt 52cx	John Hayes	WH0213	10.0	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	10.0	Yes

Report Date: 4/18/2018

Project No: 6273206

Report No: 66



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/Transect	Dig Count	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1	DGI	01	MRS01-B	15	0	108.00	0	0	0	0	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Report Date: 4/18/2018

Project No: 6273206

Report No: 66



Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety briefing was performed prior to start of daily activities. RTK setup and QC in MRS 1 was performed. UXO team personnel performed equipment checks on IVS. UXO team personnel performed checks and training on the mini excavator prior to start of intrusive activities. UXO team performed intrusive activities on 7 deep anomaly locations to include four anomalies in the dunes (B-253, B-174, B-245 and B-257) and three on the beach (B-242, B-243, and B-295). Anomaly location B-253 was identified as approximately 20 ft by 20 ft and covered by a vegetated dune which may have shielded the true size of this anomaly. A portion of this anomaly was excavated to a depth of 66-in and a large metal plate was observed which was identified as a suspect target. The item appeared to extend to the south and west from the original coordinates of the anomaly. The item was photographed and the approximate boundaries were documented with the RTK. The suspect target was left in place as being too large to recover without destroying the existing vegetated sand dune. The Team located a 2.25mm rocket motor on the opposite side of possible target pit at location B-257 which was determined by the UXOQCS and SUXOS to be MD. Location B-245 was prosecuted and a couple items were removed from the anomaly location. This excavation was subsequently expanded during the QC process as more items were identified extending out from the initial anomaly (in the sidewalls of the excavation). After removing a total of 14 items of MD from location B-245, the Team reported additional anomalies in the excavation side walls (5-6 ft below ground surface). The SUXOS and PM analyzed the findings from the crew and determined that the area was not a potential disposal area, rather the findings were associated with practice rounds being fired at the target (location B-245 is in close proximity to the suspect target area at B-253). UXO team moved on to anomaly location B-174 in the dunes where MD was identified and removed. The team then moved down to the beach at the high tide area in the original area where the TCRA was conducted. Two of the locations (B-243 and B-295) in the area of the TCRA on the beach produced only a few 2.25mm rocket sections (MD). In total, 8 items classified as MD were removed from the 4 anomaly re-acquisition locations to include B-243, B-295, B-174 and B-257. At location B-242 the crew dug to approximately 6-ft and recovered five 2.25mm rocket sections. The crew identified an area (approximately 12-ft X 12-ft) which contained a high concentration of anomalies at the bottom of the hole. The SUXOS in conjunction with the UXOSO and the Project Manager made the call not to perform additional recovery due the hole filling with water and sloughing sands from the sides of the excavations and the concern that the excavation could collapse. The team marked the location and extent of the findings. The UXOSO notified the OESS, Todd (Brian) Steelman, (a member of the USACE PDT conducting oversight) of the findings and location. OESS concurred with the team assessment (UXOSO spoke to him on the phone). All anomaly locations - B 298, B-157, B-260, B-159, B-155, B-178, B-156 and B-180 located in the low surf area were investigated with no recovery of anomalies. The anomalies were too deep to access and recover due to sluffing of sand and water entry. UXOSO identified a single inert 20 mm projectile (MD) approximately 6 ft to the northwest of location B-249. It is surmised that it was likely exposed due to shifting sands from heavy rains and high winds experienced earlier in the week. This is noted as a finding but it is not associated with an anomaly that was targeted for investigation. All items found were inspected by UXOQCS and SUXOS, classified as MD, and placed in the magazine area.

QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

Clearance Phase	MRS	Target ID	QA/QC Status	QA/QC Comment
DGI	01	MRS01-B-155	QC	Confirm. Too deep to investigate.
DGI	01	MRS01-B-157	QC	Confirm. Too deep to investigate.

Report Date: 4/18/2018

Project No: 6273206

Report No: 66



DGI	01	MRS01-B-159	QC	Confirm. Too deep to investigate.
DGI	01	MRS01-B-174	QC	Cleared
DGI	01	MRS01-B-178	QC	Confirm. Too deep to investigate.
DGI	01	MRS01-B-180	QA/QC	
DGI	01	MRS01-B-243	QC	Simultaneously QC'd. Clear.
DGI	01	MRS01-B-242	QC	Suspect burial pit co-located near TCRA/historical burial area. MD removed GPS coordinates collected of suspect pit remaining anomalies. Hole filled with water and sands.
DGI	01	MRS01-B-245	QC	Confirmed more anomalies in the sidewalls (5-6 ft bgs).*
DGI	01	MRS01-B-253	QC	Confirm target debris left in place
DGI	01	MRS01-B-257	QC	Cleared
DGI	01	MRS01-B-260	QC	Confirm. Too deep to investigate.
DGI	01	MRS01-B-295	QC	Simultaneously QC'd. Clear.
DGI	01	MRS01-B-298	QC	Confirm too deep for safe investigation.

QA = Quality Assurance QC = Quality Control

*SUXOS and PM determined it was not a disposal area, rather the MD were related to target use. B-245 is near suspect target area (B-253).

SEED Results

No SEED Results Collected

Report Date: 4/18/2018

Project No: 6273206

Report No: 66



Inspections

0630 Safety Brief

0700 Observed RTK calibration and IVS sweep.

0730: Mini-Excavator Operation and Safety Training. Team 1 used mini-excavator to gain access to anomalies in the dune area and three areas on one of the beach transects near the water that were too deep to hand excavate. The team was able to successfully prosecute 7 anomalies with the help of the mini-excavator to include B-253, B-174, B-245 and B-257 in the dune area and B-242, B-243, and B-295 on the beach. B-253 identified as suspect target (left in place to avoid destruction of the dune). Location B-245 was prosecuted and the excavation was expanded. SUXOS and I confirmed no hazardous components in the items removed (MD). The Team identified additional anomalies in the excavation side walls, SUXOS and PM analyzed the findings from the crew and determined they were the result of practice rounds being fired at the target (due to the proximity to the suspect target excavation area) not a potential disposal area. The remaining anomalies outside the original anomaly location were left in place. A total of 8 items of MD were removed from 4 anomaly re-acquisition locations to include B-243, B-295, B-174 and B-257). B-242 (on the beach) in the original area of the TCRA was identified as still containing a suspect burial pit. Excavated to about 6ft with recovery of five 2.25mm rocket sections identified as MD. Identified concentration of anomalies at the bottom of the hole. The SUXOS in conjunction with the UXOSO and the Project Manager made the call to suspend recovery due to the potential for collapse and the hole filling with water and sloughing sands on the sides of the excavations. The team marked the location and extent of the findings. UXOSO notified the OESS of the findings and location. OESS concurred with the team assessment. The other two locations (B-243, and B-295) in the area of the TCRA on the beach produced only a few 2.25mm rocket sections (MD). The following eight points were investigated in the surf: B-298, B-157, B-260, B159, B-155, B-178, B156, B-180. Team 1 attempted to recover the anomalies by hand, but they were all NLT five feet below the waterline and UXOSO made the call as unsafe to attempt due to collapsing sands and water entering the holes. All points listed were QC'd simultaneously due to conditions. UXOSO identified a single inert 20 mm projectile (MD) approximately 6 ft to the northwest of location B-249. It is surmised that it was likely exposed due to shifting sands from heavy rains and high winds experienced earlier in the week. This is noted as a finding but it is not associated with an anomaly that was targeted for investigation.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

Report Date: 4/18/2018

Project No: 6273206

Report No: 66



SAFETY INSPECTIONS AND RESULTS:

Inspections

0630: Safety Brief- focused on safe operation of mini-excavator in loose sand, PPE, personnel safety, confined space, emergency procedures, MEC precautions, sunscreen.

Team 1 used mini-excavator all day working in dunes area and on the beach. I spent the day with the team as both safety and QC.

No issues or concerns to report. Mini-excavator operations were performed successfully.

Summary of Deficiencies

None

Corrective Actions

none

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

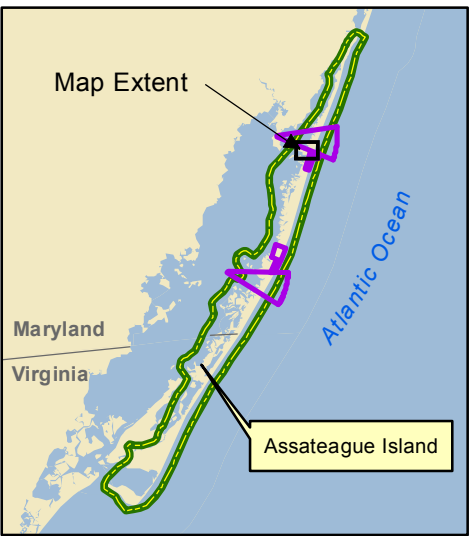
I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/18/2018 9:13:14 PM

SUXOS

Site Manager



Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- MD
- Digs Completed- Other

Water Anomaly Results

- Water Anomaly- NMRD
- Water Anomaly- MD

Actual Transects

CMUA Polygon

Approximate Location of Former Target Area (Parsons 1995)

Possible Burial Trench Location (Parson's 1995)

Rocket Launch Area

Subareas

No Survey - Parking Lot

Beach - Land

Campground - Land

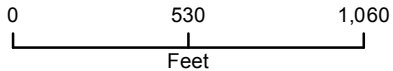
Marsh - Land

Western Island - Land

Source: NOAA.gov Navigational Charts

Parsons, 1995

Map Date: 4/19/2018



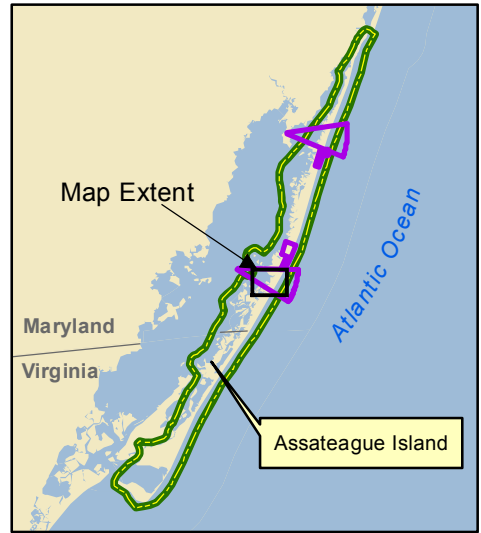
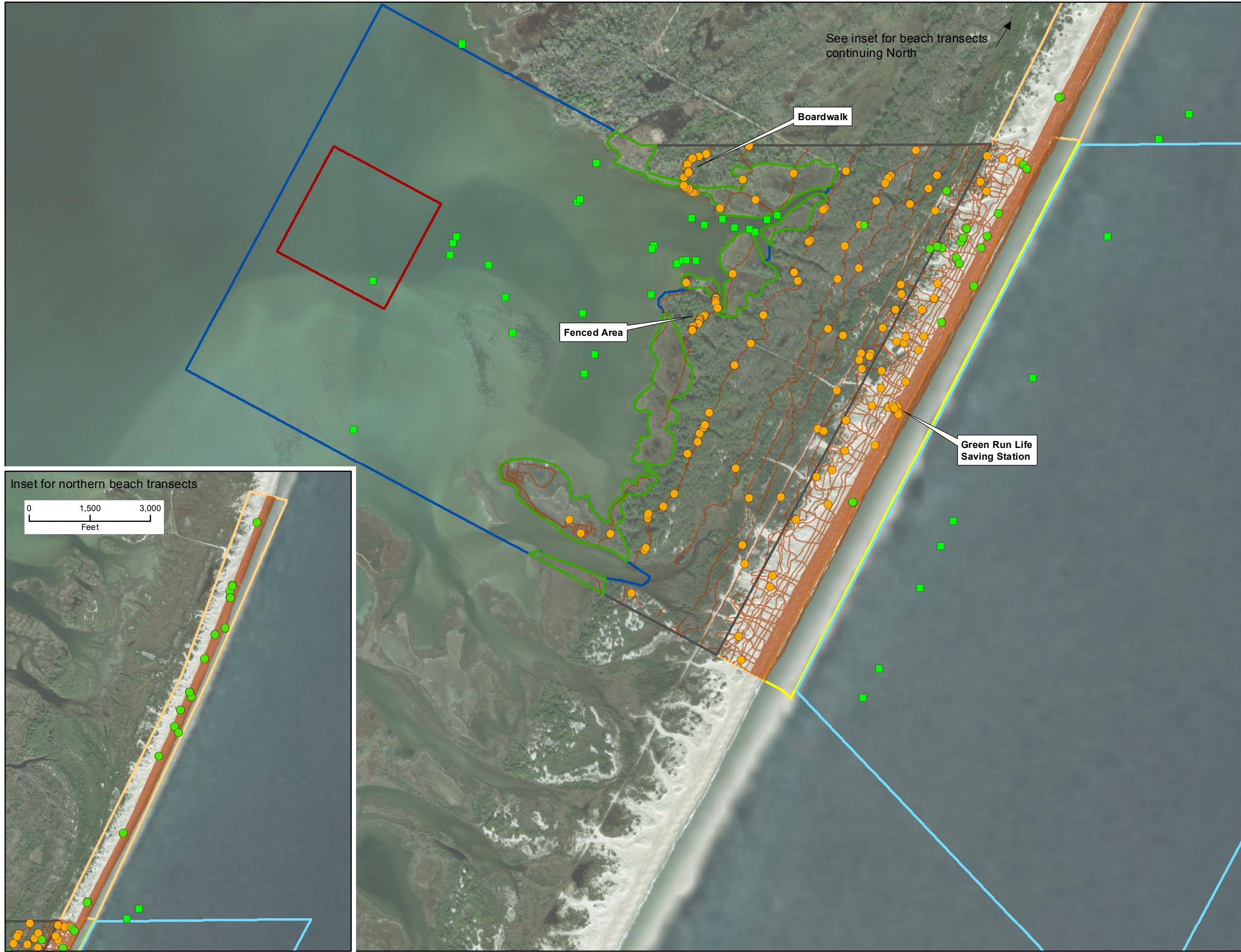
PROGRESS MAP

18 APRIL 2018

Remedial Investigation Area 01

Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

\\lovetong\gis\data\StateandLocal\Northeast\Maryland\Assateague\MXD\Figures\ProgressMaps\April 18 2018 - Progress Map_MRS03.mxd



Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- Other

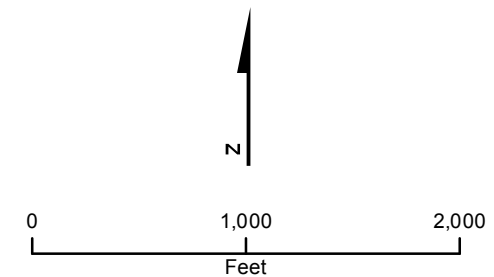
Water Anomaly Results

- Water Anomaly- NMRD
- Actual Transect

Subareas

- Backbay - Marine
- Beach - Land
- Marsh - Land
- Ocean - Marine
- Rocket Launch Area
- Surf Zone - Marine
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/19/2018



PROGRESS MAP
18 APRIL 2018
Remedial Investigation Area 03
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 4/19/2018

Project No: 6273206

Report No: 67



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Partly Cloudy and Windy	63	37	89	0.25

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

Report Date: 4/19/2018

Project No: 6273206

Report No: 67



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	3	SUXOS / EA	11.0		Supervised and monitored all activities in MRS 3.
Ron Morgan	3	UXOQCS/SO / EA	11.0		Gave morning safety brief, QCed anomaly intrusive activities in MRS 3.
Steve Yankay	3	RTK Operator / EA	11.0		Setup and QCed RTK. Reacquired anomaly locations in MRS 3.
Trent Harvin	3	UXOT III/Team Leader / EA	11.0	Beach/Dune Area in MRS 3.	Conducted intrusive investigations in dune and beach areas in MRS 3.
John Hayes	3	UXOT II / EA	11.0	Beach/Dune Area in MRS 3.	Tested equipment on IVS. Continued intrusive investigations in dune and beach areas in MRS 3.
Dane McCarthy	3	UXOT II / EA	11.0	Beach/Dune Area in MRS 3.	Tested equipment on IVS. Continued intrusive investigations in dune and beach areas in MRS 3.
JT Huggins	3	UXOT I / EA	11.0	Beach/Dune Area in MRS 3.	Tested equipment on IVS. Continued intrusive investigations in dune and beach areas in MRS 3.
Jeff Day	3	UXOT I / EA	11.0	Beach/Dune Area in MRS 3.	Tested equipment on IVS. Continued intrusive investigations in dune and beach areas in MRS 3.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonstedt 52cx	Ron Morgan	WH0353	3.0	Yes
RTK R10	Steve Yankay	WH0338	9.0	Yes
Schonstedt 52cx	John Hayes	WH0213	10.0	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	10.0	Yes

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Report Date: 4/19/2018

Project No: 6273206

Report No: 67



Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/Transect	Dig Count	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1		MRS03	MRS03-04	1	0	0	1.00	0	0	0	0
1		MRS03	MRS03-10	1/1 NC	0	0	0	0	0	0	0
1		MRS03	MRS03-11	5	0	0	0	0	0	0	0
1		MRS03	MRS03-12	4	0	0	1.10	0	0	0	0
1		MRS03	MRS03-B	21/1 NC	0	0	6.10	0	0	1	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/ Health & Safety brief performed prior to starting field activities. RTK setup and QC performed on benchmark in MRS 3. UXO team personnel performed equipment checks on IVS. RTK crew continued flagging anomaly locations in MRS 3. UXO team continued intrusive investigations on anomalies in the Dune/Beach area of MRS 3. No MD has been found to date. All items located in MRS 03 were NMRD or no contact. The "no contact" anomaly locations were extensively searched out to an 8 foot radius around the flag and the Schonstedt instrument was set on the highest setting (5) during the search. The UXO Team also, excavated a 2-ft depth X 2-ft diameter around the flag to verify. With the last Nor'easter coming thru the area after the DGM data was collected and the last storm (Monday 4- 16-2018) that came through, we feel the "no contact" anomalies could have been washed away, there was evidence of wet sand in the area of the anomalies.

Report Date: 4/19/2018

Project No: 6273206

Report No: 67



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

Clearance Phase	MRS	Target ID	QA/QC Status	QA/QC Comment
DGI	01	MRS01-B-156	QC	Confirm. Too deep to investigate.

QA = Quality Assurance QC = Quality Control

SEED Results

Clearance Phase	MRS	Grid/Transect	Type	Serial Number
	MRS03	MRS03-B		

Inspections

0630 Safety Brief

0700 Observe IVS Sweep, then all personnel moved to MRS 3. RTK Operator calibrated the RTK on a Survey Marker in MRS3. No points were QC'd today due to ongoing issues with iPads. If the issues are not corrected prior to start of operations in the morning I will QC points using Dig Sheets then forward that information via logs and reports. Shadowed Dig Team in MRS 3 and observed anomaly prosecution. Team was performing in excess of standard as outlined in QAPP.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

iPads are quickly becoming a hindrance to operations. May have to revert to dig sheets and analog data pending resolution.

Report Date: 4/19/2018

Project No: 6273206

Report No: 67



SAFETY INSPECTIONS AND RESULTS:

Inspections

0630 Safety Brief: Focused on beach driving, wildlife preservation, tick avoidance, safety of personnel, and PPE. All personnel worked in MRS 3 today with zero safety concerns.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

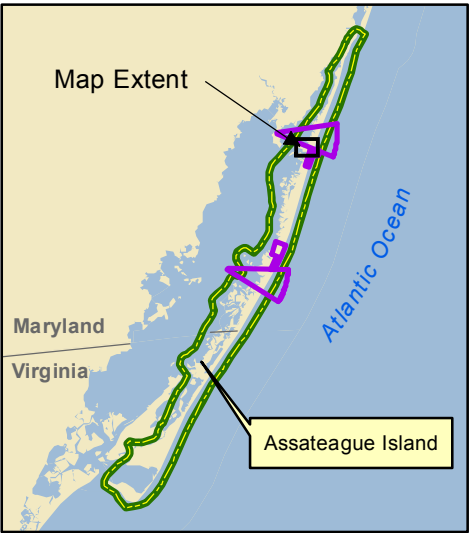
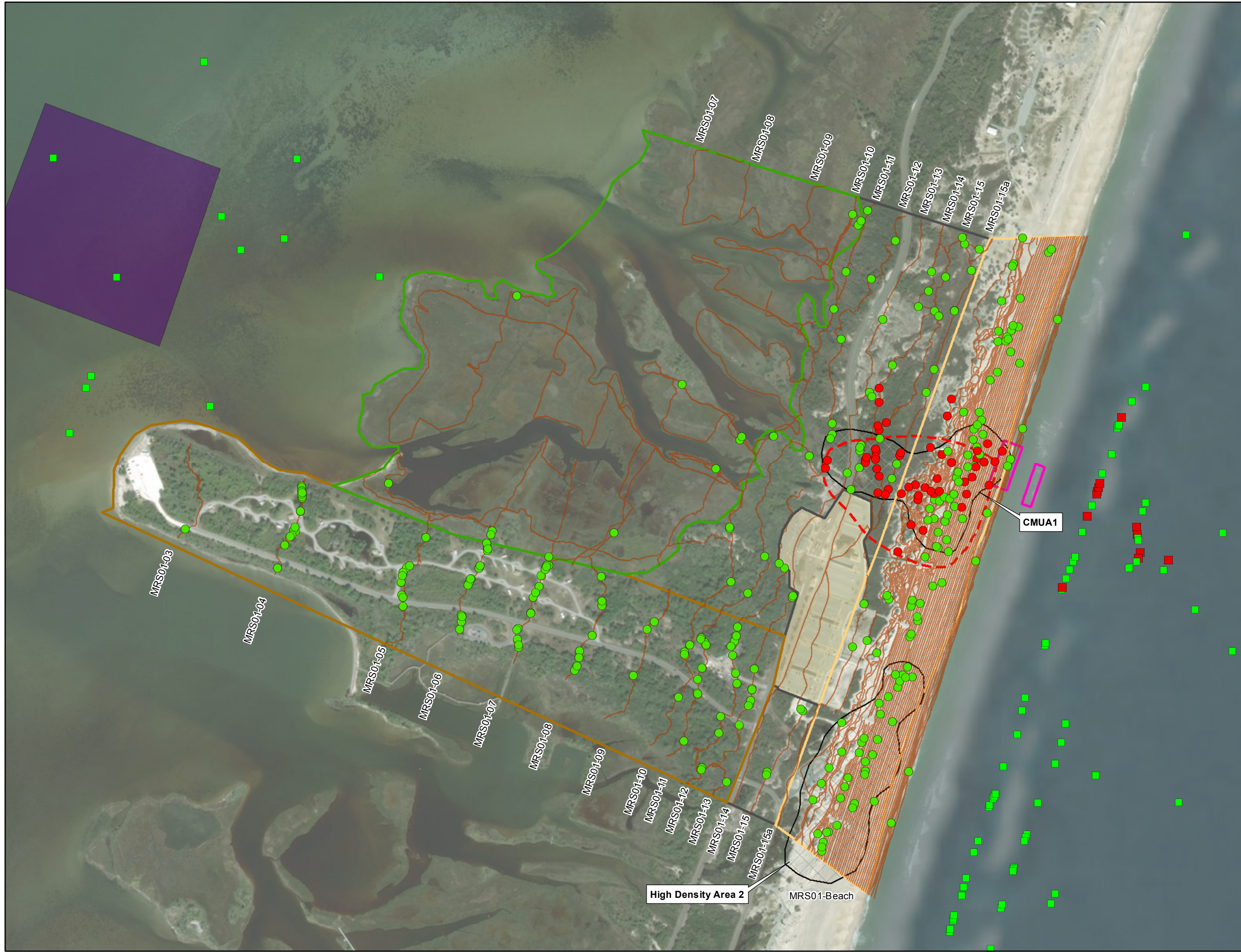
I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/19/2018 7:47:08 PM

SUXOS

Site Manager



Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- MD
- Digs Completed- Other

Water Anomaly Results

- Water Anomaly- NMRD
- Water Anomaly- MD
- Actual Transects
- CMUA Polygon
- Approximate Location of Former Target Area (Parsons 1995)
- Possible Burial Trench Location (Parson's 1995)
- Rocket Launch Area

Subareas

- No Survey - Parking Lot
- Beach - Land
- Campground - Land
- Marsh - Land
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/20/2018

0 530 1,060
Feet



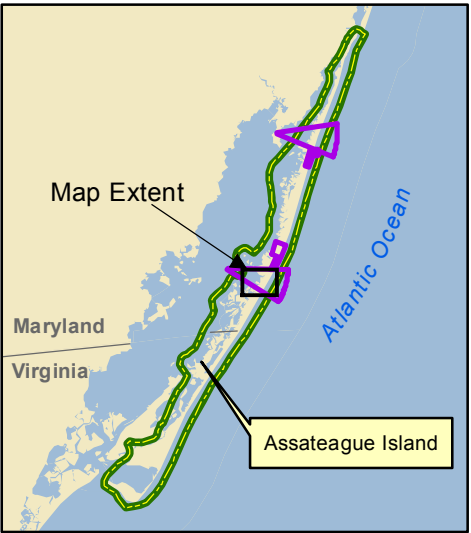
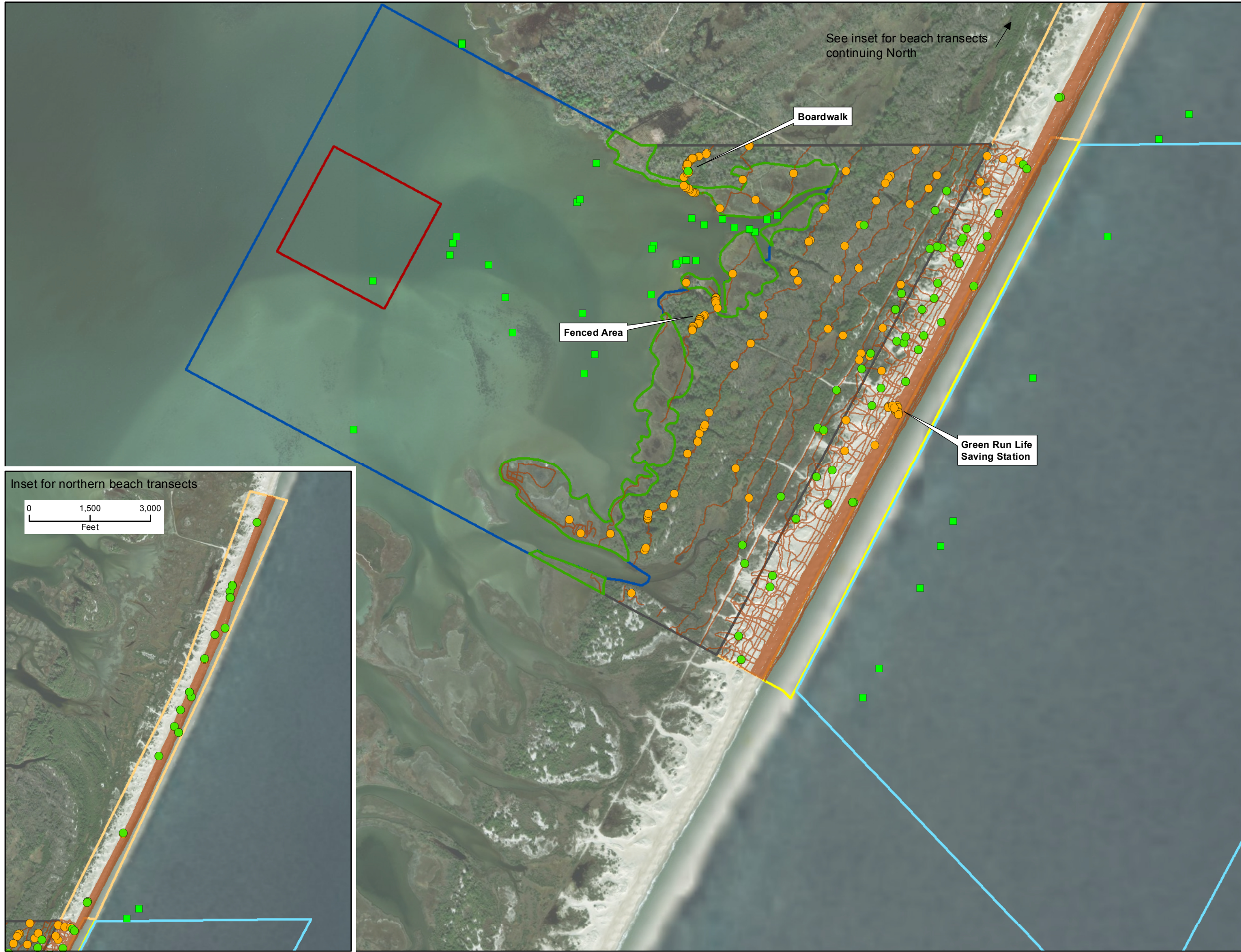
PROGRESS MAP

19 APRIL 2018

Remedial Investigation Area 01

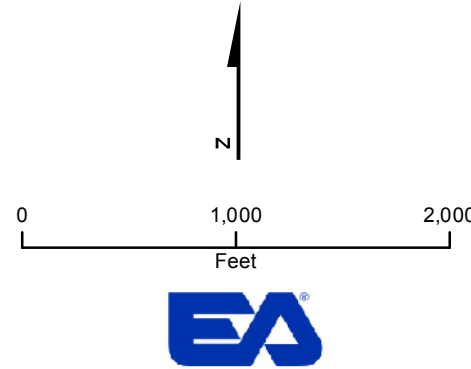
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

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- Legend**
- Land Anomaly Results**
- Digs Remaining
 - Digs Completed- Other
- Water Anomaly Results**
- Water Anomaly- NMRD
 - Actual Transect
- Subareas**
- Backbay - Marine
 - Beach - Land
 - Marsh - Land
 - Ocean - Marine
 - Rocket Launch Area
 - Surf Zone - Marine
 - Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/20/2018



PROGRESS MAP
19 APRIL 2018
Remedial Investigation Area 03
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 4/20/2018

Project No: 6273206

Report No: 68



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Partly Cloudy and windy	53	38	85	0.00

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

Report Date: 4/20/2018

Project No: 6273206

Report No: 68



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	3	SUXOS / EA	9.0		Supervised and monitored all activities in MRS 3.
Ron Morgan	3	UXOQCS/SO / EA	9.0		Gave morning safety brief, QCed completed anomaly locations and observed intrusive activities in MRS 3.
Steve Yankay	3	RTK Operator / EA	9.0		Completed RTK setup and QC. Reacquired anomaly locations in MRS 3.
Trent Harvin	3	UXOT III/Team Leader / EA	9.0	Dune and transects 4, 5 and 11.	Continued intrusive investigations in dune and transect areas in MRS 3.
John Hayes	3	UXOT II / EA	9.0	Dune and transects 4, 5 and 11.	Tested equipment on IVS. Continued intrusive investigations in dune and transect areas in MRS 3.
Dane McCarthy	3	UXOT II / EA	9.0	Dune and transects 4, 5 and 11.	Tested equipment on IVS. Continued intrusive investigations in dune and transect areas in MRS 3.
JT Huggins	3	UXOT I / EA	9.0	Dune and transects 4, 5 and 11.	Tested equipment on IVS. Continued intrusive investigations in dune and transect areas in MRS 3.
Jeff Day	3	UXOT I / EA	9.0	Dune and transects 4, 5 and 11.	Tested equipment on IVS. Continued intrusive investigations in dune and transect areas in MRS 3.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonstedt 52cx	Ron Morgan	WH0353	5.0	Yes
RTK R10	Steve Yankay	WH0338	8.0	Yes
Schonstedt 52cx	John Hayes	WH0213	8.0	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	8.0	Yes

Report Date: 4/20/2018

Project No: 6273206

Report No: 68



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/Transect	Dig Count	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1		MRS03	MRS03-05	1	0	0	1.00	0	0	0	0
1		MRS03	MRS03-06	23	0	0	18.00	0	0	0	0
1		MRS03	MRS03-07	5/1 NC	0	0	5.00	0	0	0	0
1		MRS03	MRS03-B	1/1 NC	0	0	0	0	0	0	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting, Health & Safety brief performed prior to start of field activities. RTK setup and QC performed on a bench mark in MRS 3. UXO Team performed equipment check on IVS. RTK crew continued flagging anomaly locations in MRS 3. UXO Team continued intrusive investigations on anomaly locations in MRS 3. No MD found to date in MRS 3 only NMRD.

QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

Clearance Phase	MRS	Target ID	QA/QC Status	QA/QC Comment
	MRS03	MRS03-B-100	QC	Confirm. No contact.

Report Date: 4/20/2018

Project No: 6273206

Report No: 68



	MRS03	MRS03-B-101	QC	Confirm. No contact.
	MRS03	MRS03-B-103	QC	Clear
	MRS03	MRS03-B-104	QC	Confirm. No contact
	MRS03	MRS03-B-105	QC	Clear
	MRS03	MRS03-B-106	QC	Clear
	MRS03	MRS03-B-124	QC	Clear
	MRS03	MRS03-B-125	QC	Clear
	MRS03	MRS03-B-126	QC	Clear
	MRS03	MRS03-B-127	QC	Clear
	MRS03	MRS03-B-133	QC	Clear
	MRS03	MRS03-B-147	QC	Confirm. No contact.
	MRS03	MRS03-B-149	QC	Clear
	MRS03	MRS03-B-95	QC	Seed MRS03
	MRS03	MRS03-B-98	QC	Clear
	MRS03	MRS03-B-99	QC	Confirm. No contact.

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0630- Safety Brief,
Team 1 and RTK Operator performed calibration checks in MRS 3 prior to start of operations. QC'd following points: B-183, B-182, B-98, B-133, B-106, B-103, B-125, B-95 (Seed EA012), B-127, B-147, B-149, B-126, B-101, B-99, B-105, B-100, B-124, B-104. Found one metal rod three feet from flag B-124 and three feet down, but well outside established search criteria per QAPP. Talked with Team Leader who stated they removed small items of NMRD from that point. All other points I checked showed zero contacts within a three-foot radius. Observed RTK calibration and IVS sweep at end-of-day.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

Report Date: 4/20/2018

Project No: 6273206

Report No: 68



None

SAFETY INSPECTIONS AND RESULTS:

Inspections

0630: Safety Brief- Focused on safe beach driving, speed limit on beach, protection of wild bird nesting areas, and emergency procedures. Movement to and from MRS 3 was accomplished within briefed guidelines. No safety related issues to report.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

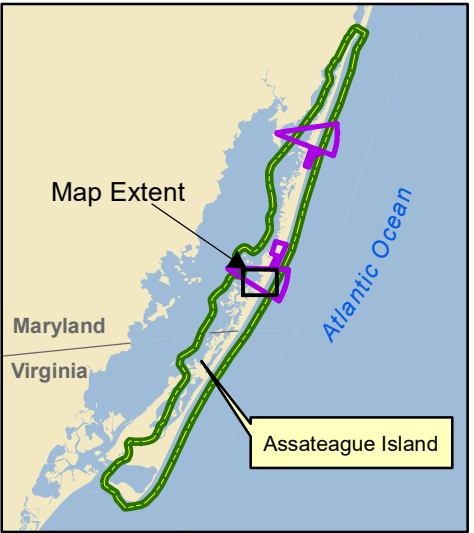
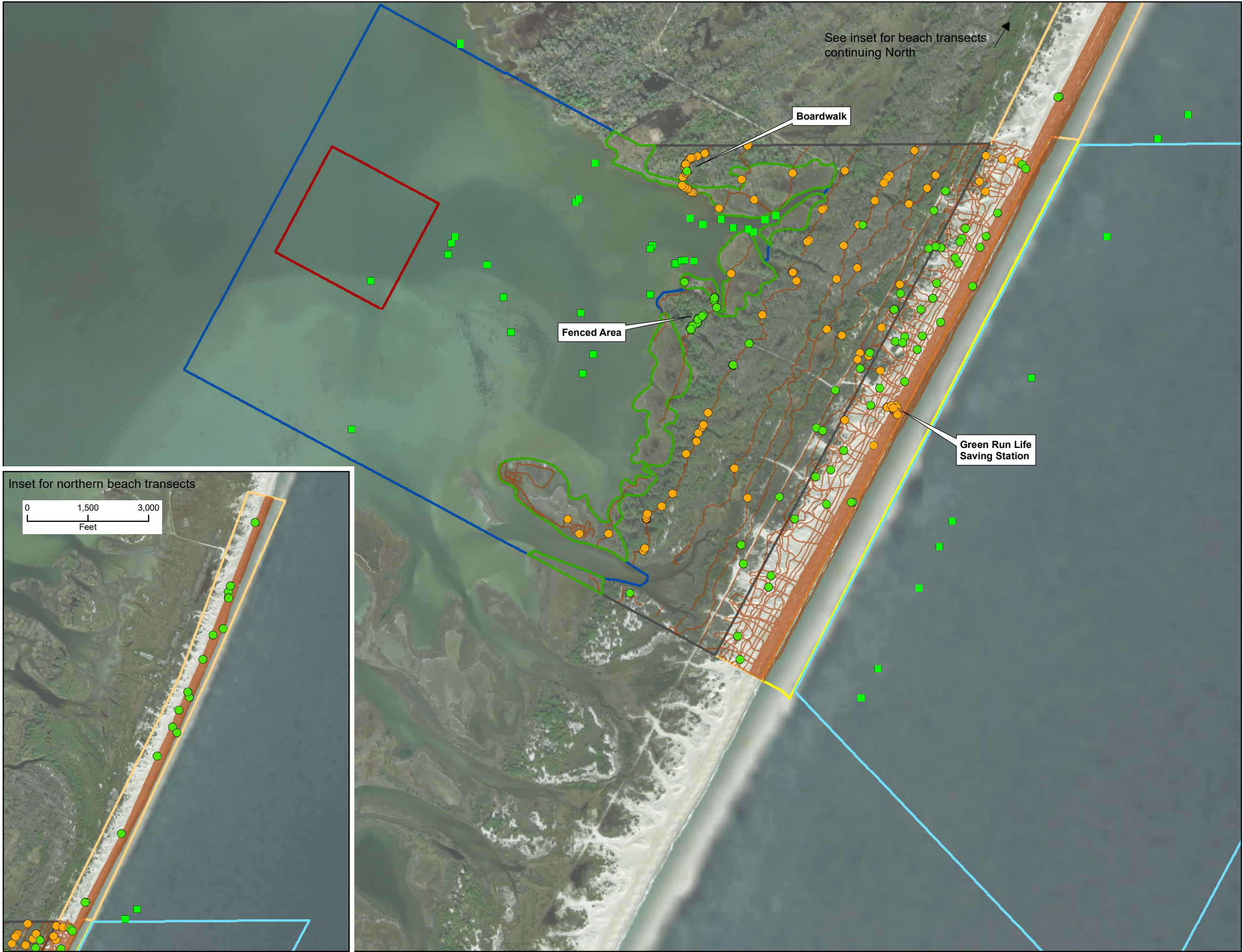
John Monk

4/22/2018 4:44:39 PM

SUXOS

Site Manager

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Legend

Land Anomaly Results

- Orange circle: Digs Remaining
- Green circle: Digs Completed- Other

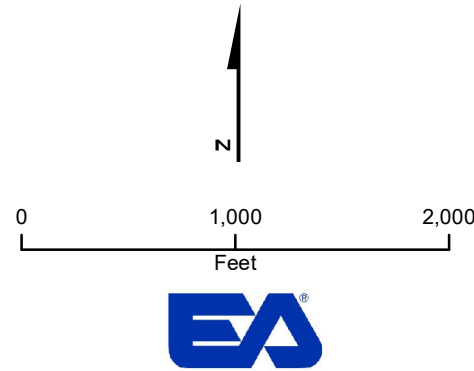
Water Anomaly Results

- Green square: Water Anomaly- NMRD
- Orange line: Actual Transect

Subareas

- Blue outline: Backbay - Marine
- Orange outline: Beach - Land
- Green outline: Marsh - Land
- Light blue outline: Ocean - Marine
- Red outline: Rocket Launch Area
- Yellow outline: Surf Zone - Marine
- Grey outline: Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/23/2018



PROGRESS MAP
20 APRIL 2018
Remedial Investigation Area 03
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 4/23/2018

Project No: 6273206

Report No: 69



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Partly cloudy	61	49	87	0.00

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

Report Date: 4/23/2018

Project No: 6273206

Report No: 69



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	3	SUXOS / EA	11.0		Supervised and monitored all activities in MRS 3.
Ron Morgan	3	UXOQCS/SO / EA	11.0		Conducted morning safety brief, review of WP/APP/SSHP/AHA's with new UXOT III, QC completed at anomaly locations and observed intrusive activities in MRS 3.
Steve Yankay	3	RTK Operator / EA	11.0		Completed RTK setup and QC. Reacquired anomaly locations on anomalies in MRS 3.
Shane Flaminio	3	UXOT III/Team Leader / EA	11.0	Transects 4, 5, 6 and 7 in MRS 3.	Continued anomaly intrusive investigations on transects in MRS 3.
John Hayes	3	UXOT II / EA	11.0	Transects 4, 5, 6 and 7 in MRS 3.	Tested equipment on IVS. Continued intrusive investigations on transects in MRS 3.
Dane McCarthy	3	UXOT II / EA	11.0	Transects 4, 5, 6 and 7 in MRS 3.	Tested equipment on IVS. Continued intrusive investigations on transects in MRS 3.
JT Huggins	3	UXOT I / EA	11.0	Transects 4, 5, 6 and 7 in MRS 3.	Tested equipment on IVS. Continued intrusive investigations on transects in MRS 3.
Jeff Day	3	UXOT I / EA	11.0	Transects 4, 5, 6 and 7 in MRS 3.	Tested equipment on IVS. Continued intrusive investigations on transects in MRS 3.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonstedt 52cx	Ron Morgan	WH0353	6.0	Yes
RTK R10	Steve Yankay	WH0338	8.0	Yes
Schonstedt 52cx	John Hayes	WH0213	8.0	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	8.0	Yes

Report Date: 4/23/2018

Project No: 6273206

Report No: 69



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/Transect	Dig Count	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1		MRS03	MRS03-04	17/1 NC	0	0	50.00	0	0	0	0
1		MRS03	MRS03-05	1	0	0	50.00	0	0	0	0
1		MRS03	MRS03-06	1	0	0	2.00	0	0	0	0
1		MRS03	MRS03-07	18/1 NC	0	0	22.00	0	0	0	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief was completed prior to start of field activities. Site introduction and review of WP/APP/SSHP/AHA's with new UXOT III. RTK setup and QC was performed on benchmark in MRS 3. UXO team personnel performed equipment checks on IVS. UXO team personnel continued intrusive activities on transect anomaly locations in MRS 3. NO MD was located, only NMRD was located on all anomaly location investigated.

Report Date: 4/23/2018

Project No: 6273206

Report No: 69



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

Clearance Phase	MRS	Target ID	QA/QC Status	QA/QC Comment
	MRS03	MRS03-06-200	QC	Clear.
	MRS03	MRS03-06-201	QC	Clear.
	MRS03	MRS03-06-202	QC	Clear.
	MRS03	MRS03-06-203	QC	Confirm. Left in place.
	MRS03	MRS03-06-208	QC	Clear
	MRS03	MRS03-06-210	QC	Confirm. Clear.

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0630 Safety Brief

0700-0800 New Team Leader training consisting of Work Plan review, AHA and SOP 21 review, as well as QC failure criteria. I also escorted the new Team Leader to the magazine storage area and the examined the MD previously recovered.

0810 movement to MRS 3. Once there, the Dig Team swept the remote IVS for instrument verification and the RTK operator set up on a Survey Marker for calibration.

QC'd the following points: B-210, B-208, B-200, B-201, B-203, B-202

Monitored Dig Team to assess new Team Leader in action. No QC deficiencies to report.

Observed IVS Sweep and RTK calibration for end of day.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

Report Date: 4/23/2018

Project No: 6273206

Report No: 69



SAFETY INSPECTIONS AND RESULTS:

Inspections

0600: Had to complete a Near Miss report once notified by employee that he removed a tick from his person Friday evening (23 April).

0630: Safety Brief- Focused on PPE and SOP 21 since majority of work will be in/around dead forest in MRS 3. Also focused on beach driving, protection of nesting birds IVO route of travel, and tick avoidance with the added importance of team members assisting each other in remaining vigilant.

No other issues to report.

Summary of Deficiencies

Near Miss report generated for Tick bite.

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

Use of Permethrin and taping over openings around cuffs at wrist and ankle to keep ticks out.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

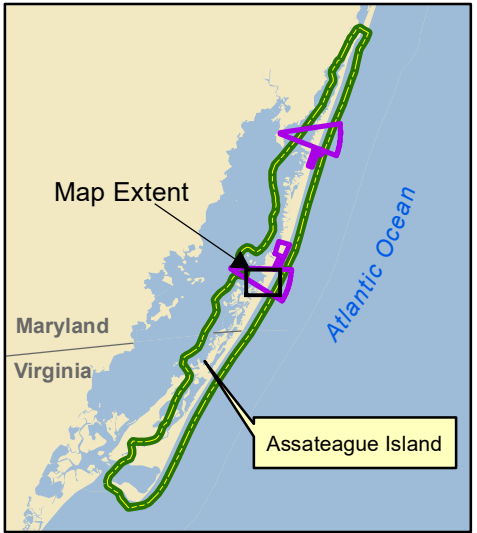
John Monk

4/23/2018 7:20:25 PM

SUXOS

Site Manager

\\lovetong\gis\data\StateandLocal\Northeast\Maryland\Assateague\MapX\ProgressMap\ProgressMap MRS03.mxd



Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- Other

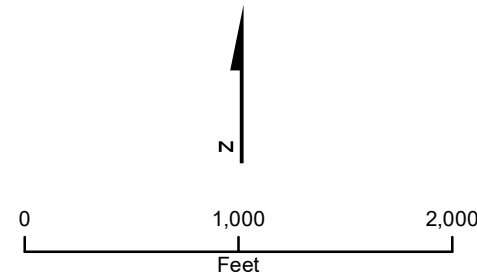
Water Anomaly Results

- Water Anomaly- NMRD
- Actual Transect

Subareas

- Backbay - Marine
- Beach - Land
- Marsh - Land
- Ocean - Marine
- Rocket Launch Area
- Surf Zone - Marine
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/26/2018



PROGRESS MAP
23 APRIL 2018
Remedial Investigation Area 03
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 4/24/2018

Project No: 6273206

Report No: 70



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Cloudy and a 80% chance of rain.	58	51	100	0.05

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

Report Date: 4/24/2018

Project No: 6273206

Report No: 70



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	3	SUXOS / EA	11.0		Supervised and monitored all activities in MRS 3.
Ron Morgan	3	UXOQCS/SO / EA	11.0		Conducted morning safety brief, reviewed WP/APP/SSHP/AHA's with new UXOT III, QC completed at anomaly locations and observed intrusive activities in MRS 3.
Steve Yankay	3	RTK Operator / EA	11.0		Completed RTK setup and QC. Reacquired anomaly locations on anomalies in MRS 3.
Shane Flaminio	3	UXOT III/Team Leader / EA	11.0	Transects 4, 5, 6 and 8	Continued intrusive investigations on transects in MRS 3.
John Hayes	3	UXOT II / EA	11.0	Transects 4, 5, 6 and 8	Tested equipment on IVS. Continued intrusive investigations on transects in MRS 3.
Dane McCarthy	3	UXOT II / EA	11.0	Transects 4, 5, 6 and 8	Tested equipment on IVS. Continued intrusive investigations on transects in MRS 3.
JT Huggins	3	UXOT I / EA	11.0	Transects 4, 5, 6 and 8	Tested equipment on IVS. Continued intrusive investigations on transects in MRS 3.
Jeff Day	3	UXOT I / EA	11.0	Transects 4, 5, 6 and 8	Tested equipment on IVS. Continued intrusive investigations on transects in MRS 3.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	WH0353	6.0	Yes
RTK R10	Steve Yankay	WH0338	9.0	Yes
Schonstedt 52cx	John Hayes	WH0213	9.0	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	9.0	Yes

Report Date: 4/24/2018

Project No: 6273206

Report No: 70



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/Transect	Dig Count	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1		MRS03	MRS03-04	12/1 NC	0	0	20.00	0	0	0	0
1		MRS03	MRS03-05	3/1 NC	0	0	1.00	0	0	0	0
1		MRS03	MRS03-06	2/1 NC	0	0	0	0	0	0	0
1		MRS03	MRS03-B	22/1 NC	0	0	38.00	0	0	0	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/ Health & Safety brief was completed prior to starting activities. RTK setup and QC was performed on benchmark in MRS 3. UXO Team personnel performed equipment checks on IVS. UXO Team continued intrusive investigations on anomaly locations in MRS 3. No MD has been located to date only NMRD. QC performed QC procedures on completed anomaly locations.

QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

Report Date: 4/24/2018

Project No: 6273206

Report No: 70



Clearance Phase	MRS	Target ID	QA/QC Status	QA/QC Comment
	MRS03	MRS03-04-10	QC	Confirm. Part of old boat launching area.
	MRS03	MRS03-04-11	QC	Clear
	MRS03	MRS03-04-12	QC	Confirm. No contact.
	MRS03	MRS03-04-13	QC	Clear
	MRS03	MRS03-04-14	QC	Clear
	MRS03	MRS03-04-15	QC	Clear
	MRS03	MRS03-04-37	QC	Scraps from old boat launch.
	MRS03	MRS03-05-9	QC	Confirm. Deck board with large nails. Left in place.
	MRS03	MRS03-07-61	QC	Clear.
	MRS03	MRS03-07-62	QC	Clear
	MRS03	MRS03-07-63	QC	Clear
	MRS03	MRS03-07-66	QC	Confirm. NPS well.
	MRS03	MRS03-07-67	QC	Clear

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0600 Safety Brief

0630 Movement to MRS 3. Observed IVS sweep by Dig Team and RTK calibration on Survey Marker.

QC'd following points: 4-12, 5-9, 4-11, 4-10, 4-37, 4-15, 4-13, 7-67, 7-62, 7-66, 7-61, 7-63, 4-14. All points cleared. No MD. Dig Team reported zero MD today. Observed IVS sweep and RTK calibration prior to movement back to Rally Point.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

Report Date: 4/24/2018

Project No: 6273206

Report No: 70



SAFETY INSPECTIONS AND RESULTS:

Inspections

0600:Safety Brief- Focused on over watch in dead forest, tick avoidance, preservation of wildlife nesting areas, lightning safety. No safety issues or concerns. All tasks performed safely.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/24/2018 6:07:51 PM

SUXOS

Site Manager

Report Date: 4/25/2018

Project No: 6273206

Report No: 71



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Cloudy, windy and a 40% chance of rain and thunderstorms.	63	53	100	0.02

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

Report Date: 4/25/2018

Project No: 6273206

Report No: 71



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	3	SUXOS / EA	11.0		Supervised and monitored all activities in MRS 3.
Ron Morgan	3	UXOQCS/SO / EA	11.0		Conducted morning safety brief, QC completed at anomaly locations and observed intrusive activities in MRS 3.
Steve Yankay	3	RTK Operator / EA	11.0		Completed RTK setup and QC. Reacquired anomaly locations in MRS 3.
Shane Flaminio	3	UXOT III/Team Leader / EA	11.0	Transects and extra area near #113.	Continued intrusive investigations on Transects 6, 7, 8, 11, 12 and beach area locations in MRS 3.
John Hayes	3	UXOT II / EA	11.0	Transects and extra area near #113.	Tested equipment on IVS. Continued intrusive investigations on Transects 6, 7, 8, 11, 12 and beach area in MRS 3.
Dane McCarthy	3	UXOT II / EA	11.0	Transects and extra area near #113.	Tested equipment on IVS. Continued intrusive investigations on Transects 6, 7, 8, 11, 12 and beach area in MRS 3.
JT Huggins	3	UXOT I / EA	11.0	Transects and extra area near #113.	Tested equipment on IVS. Continued intrusive investigations on Transects 6, 7, 8, 11, 12 and beach area in MRS 3.
Jeff Day	3	UXOT I / EA	11.0	Transects and extra area near #113.	Tested equipment on IVS. Continued intrusive investigations on Transects 6, 7, 8, 11, 12 and beach area in MRS 3.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonstedt 52cx	Ron Morgan	WH0353	6.0	Yes
RTK R10	Steve Yankay	WH0338	9.0	Yes
Schonstedt 52cx	John Hayes	WH0213	9.0	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	9.0	Yes

Report Date: 4/25/2018

Project No: 6273206

Report No: 71



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/Transect	Dig Count	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1		MRS03	MRS03-06	2	0	0	2.00	0	0	0	0
1		MRS03	MRS03-07	10/1 NC	0	0	33.00	0	0	1	0
1		MRS03	MRS03-08	6/1 NC	0	0	4.00	0	0	0	0
1		MRS03	MRS03-11	2/1 NC	0	0	0	0	0	0	0
1		MRS03	MRS03-12	1	0	0	1.00	0	0	0	0
1		MRS03	MRS03-B	10/1 NC	0	0	6.00	0	0	1	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief was completed prior to start of field activities. RTK setup and QC was performed on benchmark in MRS 3. UXO Team performed equipment checks on IVS. UXO Team continued intrusive investigation of anomalies in MRS 3. UXO Team performed mag and dig on anomaly location 113 area to the west of the flag in to the dune area as requested, 16 anomalies were located and investigated with a total of 15-lbs of NMRD located. No MD has been located to date only NMRD.

Report Date: 4/25/2018

Project No: 6273206

Report No: 71



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

Clearance Phase	MRS	Target ID	QA/QC Status	QA/QC Comment
	MRS03	MRS03-07-186	QC	Seed EA015
	MRS03	MRS03-11-155	QC	Seed EA010
	MRS03	MRS03-11-42	QC	Confirm. Deep in roadway. Left in place.
	MRS03	MRS03-11-43	QC	Still has signature, but item is below safe threshold (4') for investigation.
	MRS03	MRS03-B-93	QC	Seed EA017

QA = Quality Assurance QC = Quality Control

SEED Results

Clearance Phase	MRS	Grid/Transect	Type	Serial Number
	MRS03	MRS03-07		
	MRS03	MRS03-B		

Inspections

0600- Safety Brief

0630 - Movement to MRS 3. Observed IVS sweep and RTK calibration for start of operations.

0855- Team Leader notified QC of Seed recovery. I confirmed Seed MRS3 EA017 was removed from point B-93.

1017- Team Leader notified QC of Seed recovery. I confirmed Seed MRS3 EA015 was removed from point 7-186. This completes recovery of all seeds for this project.

QC'd the following points: 11-42, 11-43, 11-155, 7-186. All points clear. Observed IVS sweep and RTK calibration at close of operations.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

OESS Representative Todd Steelman notified me that USACE will be sending a representative to the site tomorrow to perform QA. I will meet with them and provide assistance.

Report Date: 4/25/2018

Project No: 6273206

Report No: 71



SAFETY INSPECTIONS AND RESULTS:

Inspections

0600- Safety Brief- Focused on wildlife nesting area protection, beach driving, mosquito and tick avoidance, and over watch within dead forest area. All personnel completed work day with no issues or incidents.

1700- End of Day, nothing further to report.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

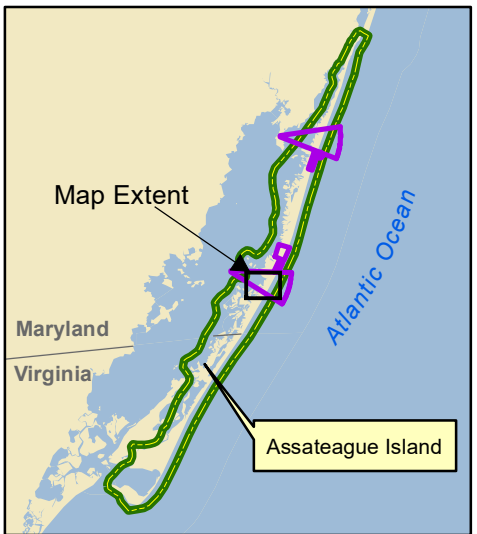
I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/25/2018 6:36:15 PM

SUXOS

Site Manager



Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- Other

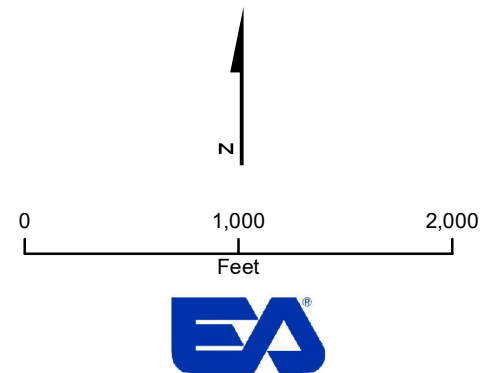
Water Anomaly Results

- Water Anomaly- NMRD
- Actual Transect

Subareas

- Backbay - Marine
- Beach - Land
- Marsh - Land
- Ocean - Marine
- Rocket Launch Area
- Surf Zone - Marine
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/26/2018



PROGRESS MAP
25 APRIL 2018
Remedial Investigation Area 03
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 4/26/2018

Project No: 6273206

Report No: 72



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Partly Cloudy	73	54	27	0.03

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase and USACE-Baltimore OESS Ricky Whitten

SITE VISITORS (Name/Organization):

None

Report Date: 4/26/2018

Project No: 6273206

Report No: 72



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	3	SUXOS / EA	11.0		Supervised and monitored all activities in MRS 3.
Ron Morgan	1 and 3	UXOQCS/SO / EA	11.0		Conducted morning safety brief, Accompanied OESS during QA in MRS 1 and MRS 3 and observed intrusive activities in MRS 3.
Steve Yankay	3	RTK Operator / EA	11.0		Completed RTK setup and QC. Reacquired anomaly locations in MRS 3.
Shane Flaminio	3	UXOT III/Team Leader / EA	11.0	Transects 8, 9, 10 and 12 in MRS 3.	Continued intrusive investigations on transects locations in MRS 3.
John Hayes	3	UXOT II / EA	11.0	Transects 8, 9, 10 and 12 in MRS 3.	Tested equipment on IVS. Continued intrusive investigations on transects in MRS 3.
Dane McCarthy	3	UXOT II / EA	11.0	Transects 8, 9, 10 and 12 in MRS 3.	Tested equipment on IVS. Continued intrusive investigations on transects in MRS 3.
JT Huggins	3	UXOT I / EA	11.0	Transects 8, 9, 10 and 12 in MRS 3.	Tested equipment on IVS. Continued intrusive investigations on transects in MRS 3.
Jeff Day	3	UXOT I / EA	11.0	Transects 8, 9, 10 and 12 in MRS 3.	Tested equipment on IVS. Continued intrusive investigations on transects in MRS 3.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	WH0353	6.0	Yes
RTK R10	Steve Yankay	WH0338	3.0	Yes
Schonstedt 52cx	John Hayes	WH0213	9.0	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	9.0	Yes

Report Date: 4/26/2018

Project No: 6273206

Report No: 72



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

Team #	Clearance Phase	MRS	Grid/Transect	Dig Count	MEC Total Wt (lbs)	MD Total Wt (lbs)	NMRD Total Wt (lbs)	RRD Total Wt(lbs)	Other Total Wt (lbs)	Seed Count	MPPEH Total Wt (lbs)
1		MRS03	MRS03-08	3	0	0	15.00	0	0	0	0
1		MRS03	MRS03-09	3/1 NC	0	0	2.00	0	0	0	0
1		MRS03	MRS03-10	5/1 NC	0	0	25.00	0	0	0	0
1		MRS03	MRS03-12	1/1 NC	0	0	0	0	0	0	0

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety brief completed prior to start of daily activities. RTK setup and QC on benchmark in MRS 3. UXO personnel performed equipment checks on IVS. UXO team continued intrusive investigations on remaining anomaly locations in MRS 3. Broke down magazine fencing and, with the help of the NPS maintenance personnel, removed ground and magazine from MRS 3 to be placed in MRS with the other magazine, transported fencing to bone yard with magazines. USACE-Baltimore OESS Ricky Whitten performed QA of transects, beach and dune areas with UXOQCS in MRS 1 and 3. QA was completed successfully in both MRS 1 and 3.

Report Date: 4/26/2018

Project No: 6273206

Report No: 72



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0600: Safety Brief. Movement to MRS 3. Observed RTK calibration and IVS sweep for start of operations. Met with USACE - Baltimore OESS Ricky Whitten, a representative of the USACE PDT providing Quality Assurance oversight for the Remedial Investigation. I provided Mr. Whitten with an update of the activities being performed at this site. I accompanied Mr. Whitten as he conducted an in-depth Quality Assurance inspection of MRS 1. Using a Schondstedt and, alternatively, a White's hand-held metal detector we walked Transects 3, 4, 6, 7, 8, 15 and 15a. All areas inspected were found to be clear. We also inspected several flag points in the dunes portion as well as 5 transects of 1,000 feet length on the beach. Mr. Whitten also conducted a sweep of approximately 70% of Grid #2, a 50' x 50' mag and flag area identified as a high-density area. Only two new tent pegs were found, both non-rusted and obviously recently lost. He also inspected the MPPEH items on the ground within the magazine storage area, the MDAS in the shipping barrels, and the MPPEH located in the concrete box that the NPS had recovered prior to the RI. Once he was satisfied with his inspection we moved to MRS 3. Mr. Whitten was satisfied that we had recovered no Munitions Debris within MRS3. We moved back to MRS 1, discussed his findings, and then he departed. Once Mr. Whitten left I returned to MRS3. Observed IVS sweep and RTK calibration for end of day checks.

Summary of Deficiencies

None. USACE-Baltimore representative was very satisfied with our project.

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

Report Date: 4/26/2018

Project No: 6273206

Report No: 72



SAFETY INSPECTIONS AND RESULTS:

Inspections

0600: Safety Brief- Focused on safe beach driving, nesting bird sanctuary protection, dead forest safety, tick and mosquito avoidance.

No issues or concerns noted for day.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/26/2018 6:51:11 PM

SUXOS

Site Manager

\\lovetong\gis\data\StateandLocal\Northeast\Maryland\Assateague\MapX\ProgressMap\ProgressMap MRS03.mxd



Legend

Land Anomaly Results

- Digs Remaining
- Digs Completed- Other

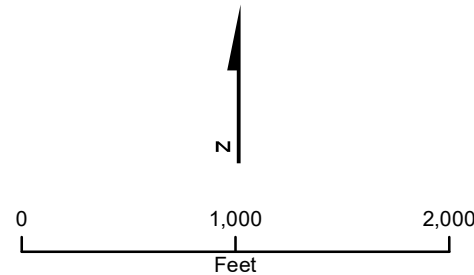
Water Anomaly Results

- Water Anomaly- NMRD
- Actual Transect

Subareas

- Backbay - Marine
- Beach - Land
- Marsh - Land
- Ocean - Marine
- Rocket Launch Area
- Surf Zone - Marine
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/27/2018



PROGRESS MAP
26 APRIL 2018
Remedial Investigation Area 03
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 4/27/2018

Project No: 6273206

Report No: 72



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Cloudy, rainy and an 80% chance of thunderstorms.	67	52	100	0.15

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	3	SUXOS / EA	2.0		Supervised and monitored all activities in MRS 3.
Ron Morgan	3	UXOQCS/SO / EA	2.0		Conducted morning safety brief and assessed the weather conditions and beach access to MRS 3.
Shane Flaminio	3	UXOT III/Team Leader / EA	2.0	None	None
John Hayes	3	UXOT II / EA	2.0	None	None
Dane McCarthy	3	UXOT II / EA	2.0	None	None
JT Huggins	3	UXOT I / EA	2.0	None	None
Jeff Day	3	UXOT I / EA	2.0	None	None

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

No Equipment Used

Report Date: 4/27/2018

Project No: 6273206

Report No: 72



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/Health & Safety was performed prior to start of daily field activities. Checked weather conditions and made an attempt to access MRS 3 via the On Shore Vehicle (OSV) access. Made it down the beach just south of the location of the magazine in MRS 3 and had to turn all personnel around due to high tide from the storm moving through. Lightning was within 10 miles and more expected to come. Made the call to end all activities for the day due to limited access to the site and thunderstorms in the area. Notified PM of intentions.

Report Date: 4/27/2018

Project No: 6273206

Report No: 72



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0600 Safety Brief

Movement to MRS 3. SUXOS turned all personnel around and moved back to Rally Point, as beach was impassable south of magazine location, plus lightning was in the area and more storms were in the forecast.

No work performed today.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

Report Date: 4/27/2018

Project No: 6273206

Report No: 72



SAFETY INSPECTIONS AND RESULTS:

Inspections

0600: Safety Brief- Focused on storms in area, beach driving, nesting bird sanctuary protection, and dead forest safety. Movement to MRS 3. High tide and storm surge made beach impassable south of magazine location (mile marker 25.3). Storms are rolling through and there is lightning within 10 miles of beach. SUXOS made the call to return to rally point and suspend operations due to storms.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/27/2018 9:46:46 AM

SUXOS

Site Manager

Report Date: 4/30/2018

Project No: 6273206

Report No: 73



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT

Assateague Island FUDS RI

Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Partly cloudy and windy	68	44	24	0.00

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

Report Date: 4/30/2018

Project No: 6273206

Report No: 73



WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	3	SUXOS / EA	11.0		Supervised and monitored all activities in MRS 3.
Ron Morgan	3	UXOQCS/SO / EA	11.0		Performed morning safety brief, QC of anomaly locations in MRS 3, and observed UXO team during intrusive investigation procedures.
Shane Flaminio	3	UXOT III/Team Leader / EA	11.0	Anomalies 7,41,47,48,50,73,126, 174 and 156	Re-investigate anomalies to further evaluate surrounding area to ensure nothing was missed and remove all survey flagging and flags from all locations in MRS 3.
John Hayes	3	UXOT II / EA	11.0	Anomalies 7,41,47,48,50,73,126, 174 and 156	Performed equipment checks on IVS. Re-investigated anomalies to further evaluate surrounding area to ensure nothing was missed and remove all survey flags from MRS 3.
Dane McCarthy	3	UXOT II / EA	11.0	Anomalies 7,41,47,48,50,73,126, 174 and 156	Performed equipment checks on IVS. Re-investigate anomalies to further evaluate surrounding area to ensure nothing was missed and removed all survey flags from MRS 3.
JT Huggins	3	UXOT I / EA	11.0	Anomalies 7,41,47,48,50,73,126, 174 and 156	Performed equipment checks on IVS. Re-investigated anomalies to further evaluate surrounding area to ensure nothing was missed and remove all survey flags from MRS 3.
Jeff Day	3	UXOT I / EA	11.0	Anomalies 7,41,47,48,50,73,126, 174 and 156	Performed equipment checks on IVS. Re-investigated anomalies to further evaluate surrounding area to ensure nothing was missed and remove all survey flags from MRS 3.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

Report Date: 4/30/2018

Project No: 6273206

Report No: 73



OPERATING EQUIPMENT DATA (Not Hand Tools):

Equipment	User	Equipment ID/TAG	Hours Used	Equipment Check
Schonsted 52cx	Ron Morgan	WH0353	6.0	Yes
RTK R10	Steve Yankay	WH0338	3.0	Yes
Schonstedt 52cx	John Hayes	WH0213	10.0	Yes
Schonstedt 52cx	Dane McCarthy	WH0385	10.0	Yes

SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Report Date: 4/30/2018

Project No: 6273206

Report No: 73



Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning safety brief was performed prior to start of daily field activities. RTK setup and QC was performed on benchmark in MRS 3. UXO Team performed equipment checks on IVS in MRS 3. UXO Team re-investigated anomaly locations to further evaluate surrounding area for possible missed contacts. UXO Team mag and dug an area between Transects 8 and 9 to further evaluate area. No MD or range residue was located, only NMRD was found. UXO Team removed all survey tape and flags throughout the site, cleaned up work areas, and removed IVS items. MRS 3 was completed today.

Report Date: 4/30/2018

Project No: 6273206

Report No: 73



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0630 Safety Brief

0700 Movement to MRS 3. Observe RTK calibration and IVS sweep for start of operations. QC'd the following points: 8-174, 7-185, 7-188, 7-187, 7-189, 8-175. Observed sweep of GIS-suggested areas. No munitions debris recovered. Observed RTK calibration and IVS sweep for end-of-day. Nothing further to report.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

Report Date: 4/30/2018

Project No: 6273206

Report No: 73



SAFETY INSPECTIONS AND RESULTS:

Inspections

0630 Safety Brief- focused on wild fire prevention (Red Flag Alert for dangerous fire conditions), nesting bird sanctuary preservation, beach driving, dead forest over watch, and tick avoidance. No safety issues to report.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

4/30/2018 8:05:23 PM

SUXOS

Site Manager

\\lovetongis\GIS\data\StateandLocal\Northeast\Maryland\Assateague\MXD\FieldFigures\Map\April 30 2018 Update Map_MRS03.mxd



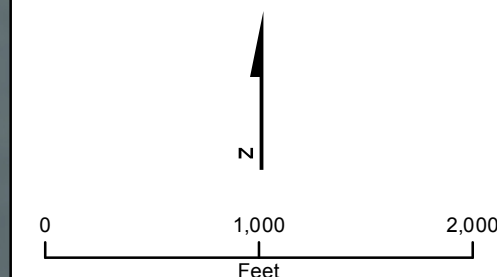
Legend

- Digs Completed- MD
- Digs Completed - Other
- Digs Completed 4/30/18 - Other
- Access Road (Mag/Flag Grid)

Subareas

- Backbay - Marine
- Beach - Land
- Marsh - Land
- Ocean - Marine
- Rocket Launch Area
- Surf Zone - Marine
- Western Island - Land
- Access Road (Surface Clearance)

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 5/3/2018



UPDATE MAP
30 April 2018
Remedial Investigation Area 03
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Report Date: 5/1/2018

Project No: 6273206

Report No: 74



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT Assateague Island FUDS RI Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Partly cloudy	75	43	57	0.00

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

None

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	11.0		Supervised and monitored all MPPEH procedures in MRS 1.
Ron Morgan	1	UXOQCS/SO / EA	11.0		Performed morning safety brief and MPPEH procedures on MD found during intrusive investigations in MRS 1.
John Hayes	1	UXOT II / EA	11.0		Performed clean up of MRS 1 and MPPEH procedures on MD in MRS 1.
Dane McCarthy	1	UXOT II / EA	11.0		Performed clean up of MRS 1 and MPPEH procedures on MD in MRS 1.
JT Huggins	1	UXOT I / EA	11.0		Performed clean up of MRS 1 and MPPEH procedures on MD in MRS 1.
Jeff Day	1	UXOT I / EA	11.0		Performed clean up of MRS 1 and MPPEH procedures on MD in MRS 1.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

No Equipment Used

Report Date: 5/1/2018

Project No: 6273206

Report No: 74



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting, Health & Safety brief was performed prior to start of daily field activities. UXO personnel continued clean up of survey tape and flags from all transects, dunes and beach areas. Start MPPEH procedures on all items found in MRS 1 and start MPPEH procedures on items previously found by NPS personnel. Completed MPPEH procedures on 742-lbs classified as MDAS and placed in 55-gal drums (2).

Report Date: 5/1/2018

Project No: 6273206

Report No: 74



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0600- Safety Brief

0630 Begin inspection and certification process for Munitions Debris disposal. As of close of business today 742 lbs of Munitions Debris have been processed and certified as Material Documented as Safe and placed in shipping containers.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

Report Date: 5/1/2018

Project No: 6273206

Report No: 74



SAFETY INSPECTIONS AND RESULTS:

Inspections

0600 Safety Brief- Focused on compliance with handling Munitions Debris, tick avoidance, wearing proper PPE while preparing MDAS for shipment. UXO Team completed processing 742 lbs of MDAS with no safety concerns.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

None

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

5/1/2018 7:57:07 PM

SUXOS

Site Manager

Report Date: 5/2/2018

Project No: 6273206

Report No: 75



EA Engineering, Science, and Technology, Inc., PBC

SUXOS DAILY REPORT Assateague Island FUDS RI Assateague Island, Worcester County, MD

WORKDAY WEATHER:

Weather Description	High (°F)	Low (°F)	Humidity (%)	Rainfall (in)
Sunny	86	50	75	0.00

GOVERNMENT PERSONNEL (Name/Organization):

NPS Ranger Jonathan Chase

SITE VISITORS (Name/Organization):

EA PM Mike O'Neill and Jeff Smith

WORK PERFORMED BY CONTRACTOR/SUBCONTRACTORS:

Name	MRS	Title / Company	Hours	Grid/Transect Worked	Description of Work
John Monk	1	SUXOS / EA	11.0		Supervised and monitored all MPPEH procedures in MRS 1.
Ron Morgan	1	UXOQCS/SO / EA	11.0		Performed morning safety brief and MPPEH procedures on MD found during intrusive investigations in MRS 1.
John Hayes	1	UXOT II / EA	11.0		Performed clean up of MRS 1 and MPPEH procedures on MD in MRS 1.
Dane McCarthy	1	UXOT II / EA	11.0		Performed clean up of MRS 1 and MPPEH procedures on MD in MRS 1.
Jeff Day	1	UXOT I / EA	11.0		Performed clean up of MRS 1 and MPPEH procedures on MD in MRS 1.

SUXOS = Senior Unexploded Ordnance Supervisor UXOSO = Unexploded Ordnance Safety Officer
UXOQCS = Unexploded Ordnance Quality Control Specialist MRS = Munitions Response Site

OPERATING EQUIPMENT DATA (Not Hand Tools):

No Equipment Used

Report Date: 5/2/2018

Project No: 6273206

Report No: 75



SUMMARY OF WORK PERFORMED:

Grid/Transect Status

No Grids Completed

SS = Surface Sweep MG = Mag & Dig DGM = Digital Geophysical Mapping Activities
DGI = Digital Geophysical Intrusive Activities

Grid/Transect Results

No Field Data Collected

NMRD = Non Munitions Related Debris NC = No Contact MEC = Munitions and Explosives of Concern MD = Munitions Debris
RRD = Range Related Debris MPPEH = Material Potentially Presenting an Explosive Hazard Wt = Weight lbs = Pounds

MEC Summary

No Munitions and Explosives of Concern (MEC) found

Demo Summary

No Demo Conducted

ADDITIONAL REMARKS:

Morning meeting/ Health & Safety brief was completed prior to daily field activities. Continued site clean-up and MPPEH procedures on MD. Returned all fencing and loaded both magazines for demobilization to EA warehouse. Total weight for items found during MRS RI was 525-lbs. Total weight of other MD after MPPEH procedures was 1,724-lbs for a grand total of MDAS to be shipped out of 2,249-lbs. All MDAS was placed into a total of 6-55-gal drums with the following custody seal numbers attached: Drum #1 TBS 102095, Drum #2 TBS 102092, Drum #3 TBS 102091, Drum #4 TBS 102093, Drum #5 TBS 102096 and Drum #6 TBS 102097. COC form has been completed to accompany the MDAS to Demil Metals in Northlake, Illinois tomorrow 5-3-2018.

Report Date: 5/2/2018

Project No: 6273206

Report No: 75



QUALITY CONTROL INSPECTIONS AND RESULTS:

Quality Assurance and Quality Control Grid/Transect Status

No QA/QC Inspections Conducted

QA = Quality Assurance QC = Quality Control

SEED Results

No SEED Results Collected

Inspections

0530 Safety Brief

0515 Munitions Debris preparation for shipment. SUXOS and I certified 525 lbs of MDAS from this Remedial Investigation, with an additional 1,724 lbs processed for the client as a courtesy for a grand total of 2,249 lbs.

There are six 55-gallon drums sealed for shipment with the following seal numbers and weights: Drum #1: TBS 102095, 365 lbs; Drum #2: TBS 102092, 417 lbs; Drum #3: TBS 102091, 364 lbs; Drum #4: TBS 102093, 355 lbs; Drum #5: TBS 102096, 507 lbs; Drum #6: TBS 102097, 241 lbs. All drums are affixed with 1348a1's and sealed.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

Project is complete.

Report Date: 5/2/2018

Project No: 6273206

Report No: 75



SAFETY INSPECTIONS AND RESULTS:

Inspections

0530 Safety Brief- focused on Munitions Debris processing safety, wear of proper PPE, hydration, and tick/mosquito avoidance. Team processed approximately 1700lbs of MD safely and completed the project with no safety violations or incidents.

Summary of Deficiencies

None

Corrective Actions

None

Reinspection Results

N/A

Additional Notes

Project complete. Zero safety violations or incidents, with only two near misses for ticks, but with no tick bites.

CONTRACTOR'S VERIFICATION:

I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

John Monk

5/2/2018 6:29:08 PM

SUXOS

Site Manager

APPENDIX A-3: Fieldbooks

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ASSATEAGE
ISLAND
SUXOS

FULDS



Rite in the Rain®


ALL-WEATHER

FIELD BOOK

Nº 350

2

3/5/18 Assateague Island FUDs

- 0730 Meet Qc/so & Steve Yankay at Visitors Center to discuss project and show them how to get to MRS 1.
- 0742 On site @ magazine location in MRS 1
- 0800 Operations & Safety meeting
- tour site out to beach area
- 0830 All site personnel, NPS personnel, EA PM Mike O'Neill and USACE - Baltimore PM Julie Kaiser arrive for Kick-off meeting.
- 1130 End Meeting - depart for site
- 1156 On site with Qc/so, EA PM, USACE PM, NPS - Johnathan Chase and Brush cutting personnel Steve Yankay & Coner O'Hara.
- Walk transects in MRS to get a feel for brush cutting effort and to see what can be cut as approved by Johnathan Chase.
- 1225 Located an MD item while walking transect 12 approximately 150 ft north of magazine area. Inspected item to determine if safe to move with Qc/so.
Placed in magazine.
- 1310 Continue visual of transects
- 1630 Meet in parking lot - Debrief
- 1700 Secure all equipment, Depart for day
- NFETP 

3

Assateague Island FUDs

Suxos - John Monk, uxooes/so - Ron Morgan, EA PM
Mike O'Neill, Steve Yankay, Coner O'Hara, Zapata
personnel - Steve Hodges & Emery Mueller ^{NPS} Johnathan Chase

3/6/18

- 0630 On site
- 0730 Morning meeting, H's brief with all personnel listed above
- 0745 USACE - Baltimore PM Julie Kaiser and OESS Brian Todd Steelman on site
- 0800 Zapata personnel start setup of UTV Towed array and locate ideal location for IVS.
- Brush cutting crew ~~Steve~~ Steve Yankay and Coner O'Hara start Brush cutting in MRS 1 on transect #5.
- Help Qc/so clear IVS area after moving location to area near parking lot across from Ranger station
- 1000 Zapata personnel complete setup of Towed array and start ^{sweep} survey of ~~beach area~~ ^{array to ensure proper} ~~operation~~ ^{test} ~~main~~ ^{22~} ~~towed array on IVS~~ ^{22~}
- 1016 Check on Brush cutting personnel progress is slow. Recommended to PM to bring in at least 2 additional personnel to help.

Rite in the Rain.

4 Assateague Island FUDS

USACE - Baltimore

3-6-18 Cont.

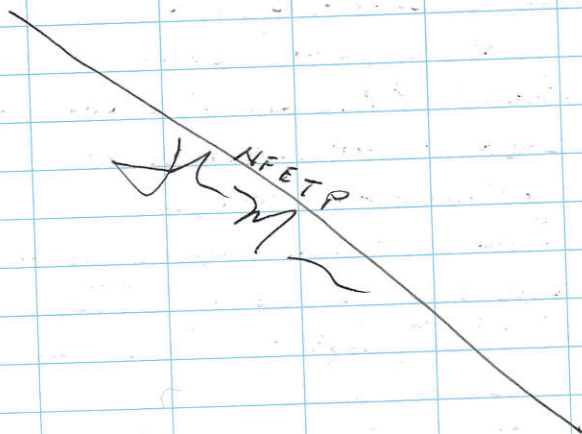
- 1123 Check on status of Zapata personnel
- Wire cable close to IVS needs removed
 - Removed with also as much as possible
 - Zapata personnel survey/test IVS again
 - IVS passes test

1414 Observe Brush cutting

1500 DGM on beach area started on 3/7 all equipment props check out

1630 stow all equipment put batteries on charge.

1700 Depart for day



Assateague Island FUDS

USACE - Baltimore

5

3/7/18

0630 On site

0730 Morning meeting, t/e's brief

0748 Start all activities

- Brush cutting

- Zapata setup & Test UTV Towed array on IVS

0930 Set pen flags to mark Northern & Southern boundaries on beach

1000 Planted seed item EA 001

1030 Check on Brush cutting at Trans. 10

1200 Dave King USACE-Baltimore GEO on site

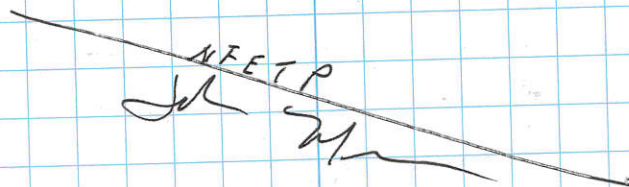
1325 Zapata calibrate's array

1450 check on brush cutting - Complete transects 8 & 9 all of wooded area.

1630 - Complete wooded area of 10 to marsh in southern area.

- Clean & stow equipment

1700 Depart



3/8/18

0635 on site

0730 Morning meeting, H&S brief

0753 start all activities

- Brush cutting on transect 10

- Zapata setup & test UTV towed array on IVS

0820 ^{Determine} ~~Place~~ ^{juv} ~~went~~ ^{place} seeds for DGM survey with so

1015 Depart for MRS 3 to inspect magazine and show Qc/so area.

Inspected extent of brush cutting with NPS Johnathan Chase.

1110 Mike McGuire reported finding a suspect item

1130 Inspected item with Qc/so. Old pipe not MD.

1300 Place seed item EA002

1330 Place seed item EA003

1350 On site with Brush crew

- Complete Transect 3 & 4

- Move to northern area of transects 9-11 to investigate ends

1430 Monitor Zapata

1730 Stop all activities off site

NFETP

JL M

0630 Pickup pipe nipples for seed items at Northeastern Supply on 611.

0700 On site - Receive H&S brief

- Brush Crew out on transects in MRS1

0730 Zapata personnel on site

0800 Zapata reports issues with software.

start ^{Prep} on ~~start~~ ^{Man} towed array for marsh area to the north of transects

- Run Man towed array on IVS

1200 Zapata starts marsh area survey activities

1300 Observed Qc/so and Mike McGuire place seed item EA004 on transect 8

1400 Zapata setup Man portable (skid) to run thru IVS

- Zapata completes as much as possible on transects 5-10. Will have to do fingers another way to get enough data, will do East/West runs on fingers due to access.

1421 Check on brush crew - Done for day.

1430 Stop all activities for Brush cutting

- Qc/so will stay until Zapata completes activities

NFETP

JL M

Assateague Island FUDS USACE - Baltimore

3/12/18 New Person of site Neil Hollowell

0630 on site

0700 Morning meeting, HES brief

0723 Start all activities

0800 Check on Brush crew completing transect

11

1030 QC/so and Mike McGuire placed two seed items EA 005 and EA 006, collected GPS Coordinates for both

1100 Check in on Zapata personnel, Observed operations with Man-towed array

1230 Observed brush crew

1300 QC/so and Coner O'Hara depart to mark/Flag MRS 3 boundaries

1357 QC/so notifies they have stuck the truck on the beach approximately midway point to MRS 3. Notify NPS Johnathan Chase.

1403 Depart with Johnathan Chase to assist unsticking the EA truck

1430 EA truck unstuck and off beach

1530 Check on progress of brush crew clearing Transect 156

1600 Zapata stops all activities, break down equipment. They were not able to complete wooded area due to missing part.

Assateague Island FUDS USACE - Baltimore

3/12/18 Cont.

1730 Brush crew stops all activities for day, cleanup gear & store

1745 Debrief - in office space provided by NPS

1800 Depart

NEETP

Assateague Island FUDS USACE - Baltimore

3/13/18 New person on site John Hayes T11

0625 On site

0700 Morning meeting, H's brief performed in NPS Ranger station space provided by NPS.

0726 All personnel depart to start days activities

- Setup printer/scanner

- Complete i email reports

0730 Depart for Brush crew location on northern section of transect 12 working south

0734 on site with brush crew

0831 On site with Zapata personnel - setup man-portable (skit) EM 61.

0951 Qclso and Coner O'Hara depart to MRS 3, setup DGM IVS and place marker stakes on Northern most transect, Northern range fan boundary & Southern most boundary

1003 Observe Zapata personnel test man-portable array (skit) on IVS.

1111 Check on brush crew working on transect 12 moving south

1231 Check on Zapata personnel surveying wooded transects

Assateague Island FUDS USACE - Baltimore

3/13/18 Continued

1259 Qclso & Coner arrive at air station to re-inflate tires

- Qclso complete setup of IVS in MRS 3 and place markers on Northern Beach Boundary, place markers on North boundary of range fan and southern boundary of range fan area

1330 Check on Brush Crew working transect 12

1600 Zapata personnel & Mike McGuire depart for day

1630 Brush Crew complete transect 12, stow all equipment

1645 Debrief

1700 Depart

JNFETP

3/14/18

0630 Arrive on site

0700 Morning meeting, H's brief - email paperwork

0724 All personnel depart for assigned tasks

0800 Check on brush crew on transect 13

0926 Observed Qc/so place seed #EA007 and collect GPS coordinates

1011 Check on Zapata Crew - setup man-portable array (skirt) - Test on IVS

1108 Zapata personnel start survey of wooded area transects starting on #10

- Setup UTV towed array

1214 Check on brush crew clearing transect 15

1310 Qc/so place seed #EA008 in low tide area of beach

- Zapata survey low tide area of beach with UTV towed array

1330 Brush crew report transect 14 complete

- Zapata Personnel depart to MRS 3 with RTV towed array and truck.

- NPS personnel put down racoon after brush crew reported it.

1545 Zapata returns from MRS 3

1654 Brush crew reports finished transect 15

1709 Debrief

1730 Depart

3/15/18

0625 on site

0700 Morning meeting, H's brief

0725 Depart for OVS tide deflation/gate

0800 Depart OVS Gate to MRS 3

0850 Arrive at Green Run MRS 3

0908 Start brush cutting on transect 7

1015 Check on Brush Crew

1121 Walk site to investigate conditions of other transects

1211 Check status of brush crew

1415 Zapata - Steve Hodges arrives with RTV towed array to park it for staging for tomorrow.

1443 Qc/so, Steve Hodges - Zapata and Jonathan Chase - NPS readjust IVS within OVS boundary

1533 Check on Brush Crew on Southern section of transect 8

1608 Depart for OVS access gate

1656 All vehicles & personnel arrive at Pump station

1721 Arrive at Ranger station - Debrief

- Zapata completed Marsh & transects 14, 15 & 15b.

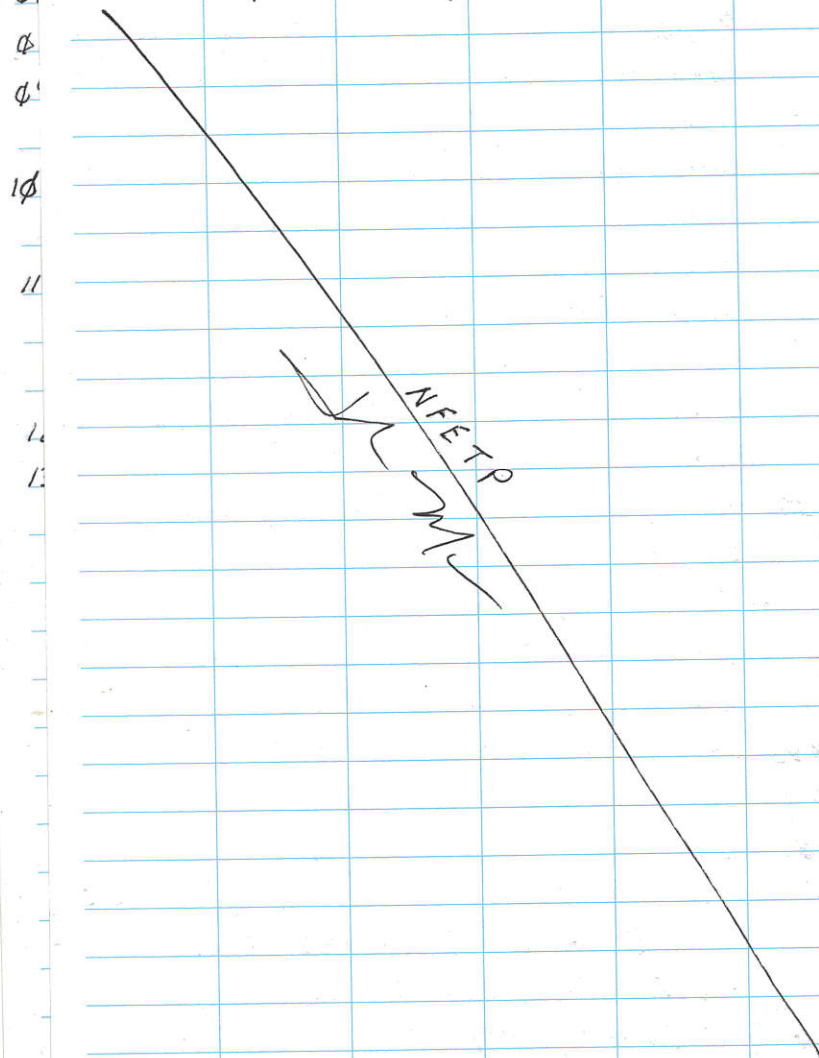
- Brush crew completed transect 7 - 75%

3/15/18 Continued

and 400-ft of transect 8.

- Zapata personnel departed at 1700

1733 All personnel depart for day



3/16/18

0630 Arrive on site

0700 Morning meeting, H&S brief

0727 All personnel depart for assigned tasks

- Zapata setups i' Test on IUS in MRS 1
- man-towed array and RTV towed array then transit to MRS 3

- Brush crew depart for MRS 3

0809 Depart OVS entrance gate for MRS 3
Valentine Rd.

0910 Arrive @ Valentine Rd gate

- Check on brush crew

0925 Move to Green Run hunting Lodge
area0937 Arrive @ Green Run hunting Lodge
area

- Call Brush crew to check on status - Almost complete with northern section of transect 5

1000 Zapata on beach to run beach
transects at MRS 31110 Qc/so notified me Zapata crew
with man towed array and his self are
in route to beach at MRS 3

1141 On site with DGM crew and Qc/so

1208 On site with Brush crew

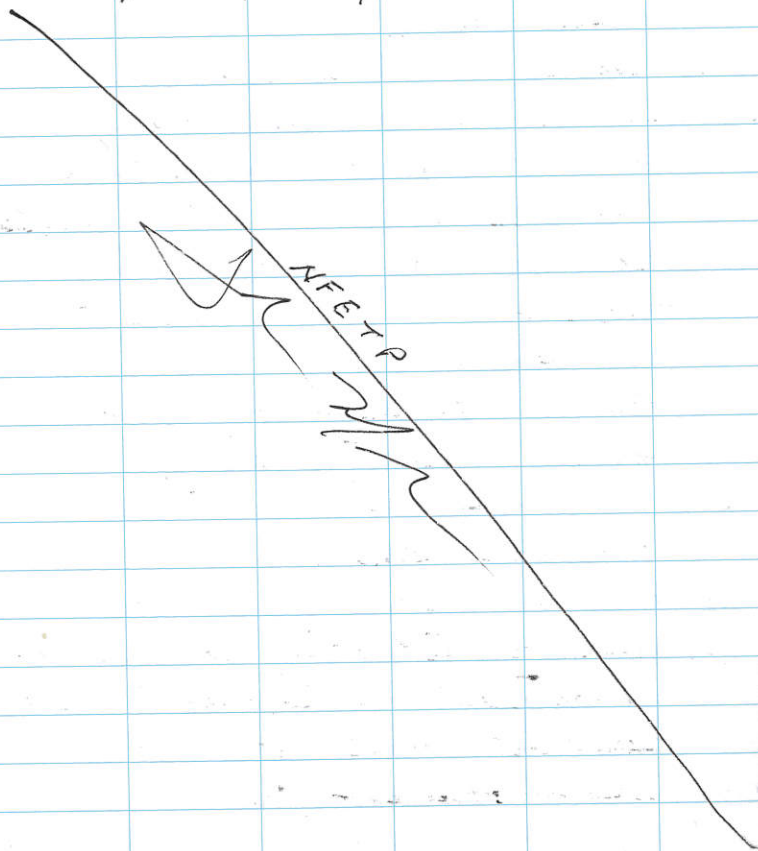
3/16/18 Continued

1243 Brush Crew and I depart for OVS entrance gate
 - QC/so will stay with DGM personnel until they complete work for today

1311 Arrive @ OVS Gate entrance

- re-inflate tires on all vehicles
- debrief Brush Crew

1330 Depart for day



3/19/18

0630 Arrive on-site

0700 Morning meeting, H's brief

0721 All personnel depart to start assigned duties

0816 Call EA PM Mike O'Neill - brief on progress & plan for today's events

0830 Depart for MRS 3 Valentine Rd.

0900 Arrive on site @ Valentine Rd. in MRS 3

- Zapata personnel setup base station and test RTV Towed array.

0914 RTV Towed array departs to run array over IVS then start Beach transects

- Zapata personnel setup man-portable (skirt) array
- Brush crew working on transects #6 and #11

- QC/so and NPS Ranger Jonathan Chase depart to talk with NPS Law enforcement Chief to discuss Life flight access and possible landing area's

1030 DGM Crew with skirt depart to start survey of transects #4 & 5

- Brush Crew complete #11
- Brush Crews move to #7

3/19/18 Continue

1100 Check on RTU towed array progress

1138 Check on brush crew on transect #7

1310 DGM skiff crew surveying transect 11

1343 Brush crew move to Green Run Rd to cut transect #6 @ the point then moving to complete final 200-ft of #7

1445 QCSO planting 2 seed items one on beach and one on north end of #11

1540 Check on brush crew cutting #7

1635 Brush crew reports completing #7
- Move to southern end of #8
- Start #8 to south

1730 Zapata personnel depart
- Brush crew continues on 8 to south

1825 Brush crew complete south end of transect 8 from Green Run Rd to south
- Depart for OSV Gate

1850 Arrive @ OSV Gate / Pump station

1900 Depart for day

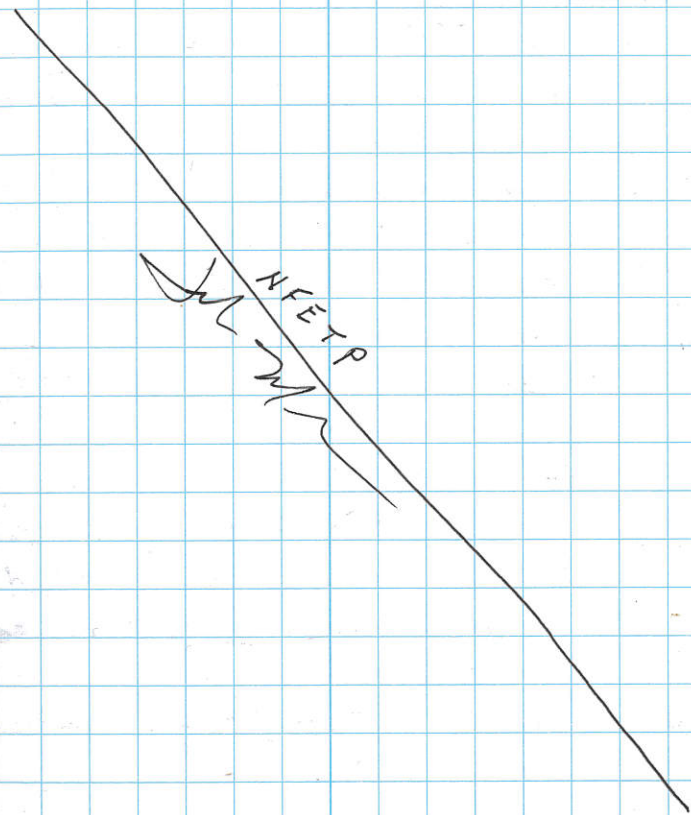
3/20/18 Heavy Rain and Extreme High winds

0630 On site to meet with NPS Ranger Jonathan Chase

0700 QCSO, Jonathan Chase and Myself check beach conditions

0830 Cancel days work activities due to extreme weather.

0840 Depart



3/21/18 Extreme Weather Continues Nor'easter

0630 Arrive on site

0700 Morning meeting, H&S brief -

Discuss course of action

- Send QCS/so, Two Zapate personnel and Jonathan Chase to check conditions at MRS 3 and move DGM equipment to a location on higher ground.

0730 Crew depart for MRS 3 - Steve Tankay and I wait @ OSV gate in case personnel at MRS 3 need assistance

0930 Personnel arrive back at OSV gate - Report OSV beach area down to one lane and tidal surge still rising. High winds of 35-40 mph with gusts to 50 mph

- ~~Atty~~ Made the call to cancel all activities

0945 ~~Def~~ Debrief Crew

1000 Meeting at NPS Headquarters with NPS Chief of Police Walt West, NPS Ranger Jonathan Chase, QCS/so and I.

1145 End of meeting

1210 Debrief with QCS/so and Jonathan Chase

1230 Depart

3/22/18

- OSV Closed and will not re-open until around 1430 to 1500

- No work activities in MRS 3

- Cancel Days work notified EA PM

~~MEET P~~

3-23-18 Mostly Sunny 46° 29°

0640 On site - after picking up seed items Northeastern supply

0700 Morning meeting, H/S brief

0720 Depart for On Shore Vehicle access gate

0800 All personnel deflate tire's and are in route to MRS 3

- locate 3 old ship timbers exposed on beach. Removed one, moved one so it is parallel with Beach and the other is too big to move by hand, will move so it is parallel to beach when tide goes out.

- At entrance to Green Run Rd there is a large approximately 30' x 12' concrete/metal/terracotta tile foundation exposed at high tide location.

0840 Brush Crew working to south on transects 8, 9, 10 & 12 to Green Run.

- Zapata DGM personnel utilizing RTV towed array and man array to collect DGM data on beach and in Dune Area's.

- Also placing 2 seed items 1 in Dunes and 1 on Beach.

0900 Zapata start DGM activities

3/23/18 Cont.

0930 Check on Brush Crew clearing southern section of transect 9

1023 Check on Zapata DGM Crew in Dune area

1133 Observe DGM with RTV towed array on beach

1254 Check on Brush Crew clearing transect 10 to the south from Green Run Rd.

1446 Check on DGM Dune survey

1524 Observe RTV survey

1615 Zapata Personnel depart for day

1630 On site near brush crew

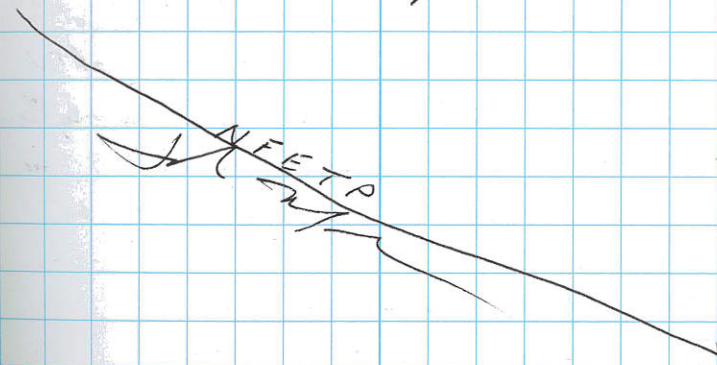
1826 Depart for OSU gate

1851 Arrive @ OSU gate

1855 Arrive @ Ranger station/office

- Debrief

1905 All personnel depart



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3/24/18 Partly Cloudy 48° 32°

0605 Arrive @ OSU gate - deflate tires

0630 Morning meeting, H's brief - Saxos, QCS/so,
NPS Ranger Jonathan Chase, Brush Team Leader
Steve Yankay, Neil Hollowell and John
Hayes USOTI - Zapata Crew coming in around 11am

0651 Depart thru OSU gate to MRS 3

0720 Arrive @ Green Run Rd.

- QCS/so placing seed items with Steve
Yankay & John Hayes

0743 Radio check with all radios

- Brush Crew start activities on Transect 12

0840 Brush Crew completed northern section
of transect 12 to Green Run.

1021 Brush Crew completed transect 12
Moved to transect 9 cutting to the
north from Green Run in the dead
forest area

1135 Zapata personnel on site at
Valentine Rd. - start setup of
RTV Towed array and base station.

1233 Brush Crew complete transect 9
DGM started on Beach area to
North.

1310 Check on DGM crew

1433 Check on Brush crew

Assateague Island FUDS USACE - Baltimore

3/24/18 Continued

1600 Brush Crew completed Transect 10

1615 Depart for OSU Gate

- Zapata still surveying Beach, QCS/so
will stay with them

1643 Arrive @ OSU gate inflate tires

1700 Depart for day

3/26/18 Partly cloudy 44° 31°

0600 Arrive at Ranger station

0630 Morning meeting, H's brief

0651 All personnel depart for OSV gate
- deflate tires0700 Brush Crew, QCS/50, Jonathan Chase
and I depart OSV access gate
for MRS 3

0733 Arrive @ Green Run in MRS 3

- Brush Crew start on northern section of ~~MRS~~ transect 8 in MRS 3
- Zapata Crew start setup of RTU towed array and man-portable (skirt) array

0825 DGM started on beach & wooded transects

0933 Check on DGM crew in the wooded areas

1016 Check on Brush Crew

1136 Check on DGM Crews

1248 Check on Brush Crew

1343 Check on DGM crew in the wooded areas

1400 Brush Crew completed transect 8
and depart to clean equipment.1530 Zapata DGM stop for day
- Depart for ^{OSV} Gate

1630 All Personnel Depart

3/27/18 Partly Cloudy 48° 35° Hum. 85%

0600 Arrive @ Ranger Station

0700 Morning meeting, H's brief - Visitor Vince
Williams EA MEC Profit Center Manager

0715 All Personnel depart for MRS 3

0725 Depart with Vince for MRS 3 Mag
area.

0800 On site @ MRS

0843 Fork Lift on site

- Load Mag & re-secure gate

0911 Move to Green Run Rd.

0926 On site @ Valentia Rd with Vince and
Jonathan Chase

- Tour site with Vince

- Stop and talk with Steve Hodges
and the Towed array

- Tour MRS 1 with Vince

1110 Vince departs

1112 Depart for MRS 3

1135 On site at Green Run Rd.

- Check on DGM personnel on transect
6

1243 move to beach to check on DGM
survey of beach progress1410 Move to DGM survey of wooded
transect location

3/27/18 Continued

1545 DGM Complete. Out process UTV
Towed array and start driving UTV
back to MRS-1, all Beach area's
surveyed.

- Process skirt through IUS. Staged
in wooded area on Valentine Rd. for
DGM survey activities for tomorrow.

1620 All personnel depart for OSV
gate from MRS 3

1650 Arrive at OSV access gate air
hose's to re-inflate tires on
vehicles

1710 Arrive at Ranger Station to
debrief of today's activities and
to discuss tomorrow's activities

1754 All personnel depart

NFETP

3/28/18

0651 Depart hotel for EA Warehouse
from site after discussing daily
activities with Zapata personnel
and QCS/so.

1055 Arrive at EA Annex

- Meet with EA PM Mike O'Neil
and Conference call with Mike McGuire
and Ivy Harvey

- Pickup RTK instrument

1141 Depart for EA Warehouse

1154 Arrive at EA Warehouse - pickup
equipment for next weeks Intrusions
activities start up.

1245 Depart EA Warehouse for Assateague
Island site

1545 Arrive @ Assateague Island office
in onsite Ranger Station. - Discuss
tomorrow's activities

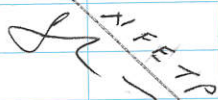
- Off load equipment near magazine

1615 Depart for day

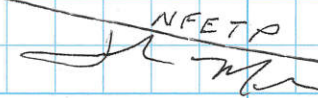
NFETP

3/29/18

- 0630 on site
- 0700 Morning meeting, H&S brief
- 0716 Start setup of RTK and QC checks on Bench marks in MRS 3
- 0830 Zapata personnel on site to break down equipment
 - Observed RTK operations
- 1130 Zapata personnel complete break down and load of all equipment.
- 1200 Depart for day - RTK personnel Steve Yankay and QCS/30 continue checks on RTK and locating seed items.

~~
NFETP~~

- 4/2/18 Cloudy, windy Rain 51° 39° Humidity 89%
- 0630 Meet with UXO personnel in parking lot at visitors center.
- 0638 depart for NPS Ranger station (Field office)
- 0646 Arrive in parking area
- 0700 Morning meeting, H&S brief
- 0715 RTK team depart to setup RTK and start reacquaint activities
 - Continue with WP/APP/SSHP/AHA review and site familiarization for UXO Team personnel.
- 1022 start Intrusive activities - starting on anomalies for transect 3 & 4
- 1138 deliver dig sheets to UXO Team Leader
- 1233 Check on Reac Team
- 1328 Check on UXO Team
- 1411 Check on RTK Team
- 1516 Print forms & scan/email Dhrm dig sheets
- 1602 Depart for UXO Team location
- 1716 Secure all activities for day
 - Debrief
- 1730 Depart for day

~~
NFETP~~

4/3/18 Cloudy 63° 41°

0630 Morning meeting, H&S brief - iPad training

0715 UXO Team depart to test equipment on IVS

0741 UXO Team departs to continue intrusive investigation of anomalies.

- RTK setup and QC

0820 Observe UXO Team

0940 observed RTK activities

1145 on site with UXO Team

- Located 2 pieces of MD inspected by QCS/so and myself and placed in Mag area.

1215 On site with UXO Team investigating anomalies on beach area

- ALL NMRO

1350 Move to RTK Team location

1445 UXO Team Leader reports finding another 2.25 rocket empty. Placed in Mag area after QCS/so & I verified

1500 UXO Team move to points on transects in camp area. RTK on transect 11

1553 On site with UXO Team

1650 stop all activities - Clean store equipment

1715 Debrief

1730 Depart for day

JL MR

3/4/18 Cloudy 60% Chance of Thunderstorms 67° 36°

High winds 20mph SSW

0640 on site

0630 Morning meeting, H&S brief

0656 All personnel depart for assigned tasks
- Email daily reports

0724 Depart UXO Team location

0900 Check on RTK Crew

1046 Check on UXO Team

- Email documents to Sherry Orange for JT Higgins

1115 Check on RTK team progress

1200 UXO Team reports finding two MD items
QCS/so and Myself inspect and place in Mag area.

1311 On site with RTK Crew

1421 On site with UXO Team

1500 Issue with an anomaly location on iPad
talk to Mark Dhruva to correct and discussed with UXO Team Leader, RTK Crew and QCS. Corrected issue.

- On site with UXO Team

1640 On site with UXO Team

1715 Stop all activities - Debrief

1730 Depart for day

NFE TP

JL MR

3/5/18 P. Cloudy 48° 39°

0630 Morning meeting, H & S ^{brief} meet - in Hotel lobby0656 ~~Hotel~~ All Personnel depart Hotel for site

0721 QCS starts QC activities - RTK QC and UXO Team QC of equipment on IVS

0744 UXO Team start intensive on anomalies in Camp site area's not previously done due to campers near flag's

- QC on previously completed anomaly location
- RTK Crew mark locations in High density area. Boy Scouts in area, will set what they can.

1009 Observed UXO Team in high density area

- Boy Scouts in area instructed team to work around them. Boy Scout's left for a while and team moved in to clear anomalies in and around their camp

1045 Conference Call with Irv Harvey, Mike McGuire and Mike O'Neill to discuss additional anomaly points and two 50'x50' grids to mag and dig.

1715 Debrief personnel and advise them of added anomaly points & grids

1730 All personnel depart.

NFETD



3/6/18 Partly Cloudy 64° 43° Humidity 89%

0630 Morning meeting, H's brief in Hotel Lobby

0645 Depart for MRS 1 site

0710 On site - RTK QC, UXO Team test equipment on IVS.

0736 On site with UXO Team on transect 15 northern section.

- RTK team Yankay & QCS start reacquaint activities on Northern Beach anomaly locations

- UXO Team located 11 MD 2.25 parts on 9 anomaly locations on Transect 15. QCS and I verified they are MD and placed in mag area.

1045 On site with UXO Team on beach

1125 Work on issues with iPad with Yankay

1215 All activities complete for day - Debrief

1230 All personnel depart

3/9/18 Cloudy 44° 33°

0630 Morning meeting, H&S brief in Hotel Lobby

0645 Depart for Assateague Island MRS 1

0711 On site in MRS 1 - RTK QC and
UXO Team check equipment on IVS0721 UXO Team start on Beach anomaly
locations

- RTK Crew start marking anomalies

0834 On site with UXO Team

1015 On site with RTK Crew

- Check location of grid area's

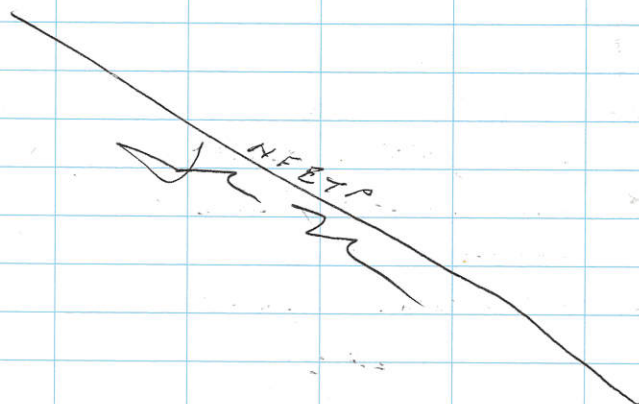
1121 On site with UXO Team

1310 Check on RTK progress

1501 On site with UXO Team

1714 All personnel stop activities
- Debrief

1730 All personnel depart



3/10/18 55° 35° Partly Cloudy

0630 Morning meeting, H&S brief in Hotel
Lobby

0645 Depart for Assateague Island MRS 1

0710 On site in MRS 1

- RTK QC setup

- UXO Team test equipment on IVS

0721 UXO Team start intensive investigations

- RTK Crew start reacquire activities
on Target area anomalies0842 On site with RTK Crew in target
area

0950 On site with UXO Team

1100 Check on RTK Crew

1242 On site with UXO Team

1320 UXO Team reported finding 5" 2.25 mm
parts ~~500~~ QCS and myself inspected
and placed in mag area. Located on
transect 15.

1546 On site with UXO Team

1712 All activities stopped for day

- Clean and stow equipment

- Debrief

1730 All personnel depart for day

NFETP

3/11/18 Partly Cloudy 55° 29°

0600 on site

0630 Morning meeting, H&S brief

0646 UXO Team departs to test equipment on IVS.

0656 RTK operator departs to QC RTK on bench mark.

0710 UXO Team continue intrusive activities on transect 14 northern section

0720 RTK setup grids in high density area - Pulled UXO team from 14 to clear 3 beach pins

0830 Mike O'Neill EA PM on site

- UXO Team prosecute 3 anomaly locations on beach near High density area

0950 - UXO Team start transect 14 northern section again

- UXO Team located 3, 2.25 mm sections

1110 UXO Team continue anomaly locations in target area

1245 UXO Team investigate points near surf zone

- 3 locations deeper than 4'

- Discuss with PM about getting an excavator on site to complete those locations. Will wait to see how the points in the low tide area go.

3/11/18 Continued

1350 UXO Team continues to investigate points on beach

- located 2, 2.25 mm MD on Beach locations
- QCS and I inspected and placed in mag area

1646 UXO Team off load all NMRD metal in metal bin in bone yard area

- Test out equipment on IVS
- Debrief

1705 All personnel depart for day

- RTK QC out

AFETP

3/12/18 Partly Cloudy, windy 67° 45°

0600 On site

0630 Morning meeting, H&S brief

0700 UXO Team departs to perform morning equipment checks on IVS

0703 RTK crew depart for MRS3 to setup RTK and mark anomaly locations

0715 UXO Team start intrusive activities on locations in northern section

0856 UXO Team start Beach intrusive activities

- UXO Team located 17 2.25mm MD

1200 Walk beach with Mike O'Neill

1248 Mike depart

1524 RTK crew arrive back from MRS3

- QCS and I inspected all 2.25mm items and classified them as safe to move and placed MD in mag area

1715 All personnel stopped all activities and out checked all equipment

- Debrief

1730 All personnel depart

NFETP

JL

3/13/18 Sunny 75° 56° ~~Seen~~

0600 Arrive on site

0630 Morning meeting, H&S brief

0656 UXO Team departs to perform equipment checks on IVS

- RTK setup and QC check

0718 UXO Team starts intensive investigation on last 5 anomaly locations in northern section of Target area

0756 UXO Team reported locating a possibly pit. Large anomaly 20'x20' radius ~~deeper~~ deeper than 4'. Call EA PM

0922 Julie Kaiser USACE-Baltimore on site

0930 Move to grid area to show Julie what the grids look like.

- Walk up to anomaly B-253, large anomaly location

- UXO Team intensive investigation of Grid # MRS01-B-G2 (100 anomalies)

- Pull all 174 flags from Grid # MRS01-B-G1 due to campers coming in.

1215 Stop all activities clean & stow all equipment

1248 All personnel depart for day

NFETP

JL

4/16/18 Thunderstorms and High Winds SSW 34 mph
58° 40° Gusts SSE 38 mph

0600 On site

0630 Morning meeting, H&S brief
- Lightning held

1030 Call days activities off due
to weather

NETP

4/17/18 Mostly Cloudy 49° 37° 84° 0.02"

0600 On Site

0630 Morning meeting, H&S brief

0700 All personnel ~~are~~ depart for OSV gate

0715 Deflate tire's

0739 All personnel depart thru OSV gate
to MRS 3 - QCS performing QC on points in MRS 3

0815 RTK setup and QC on bench mark
in MRS 3

- Show UXO Team Green Run Rd and
Transects. Then moved to Valentine Rd
to show them location and transects.

0836 UXO Team starts anomaly intrusive
investigation.

0904 Moved UXO Team to clear anomaly
locations on Northern beach area.

1031 Depart MRS 3 to meet Sunbelt
driver with mini excavator at visitor's
center.

1114 Escort Sunbelt to parking lot inside
National Park to off load Mini Ex.

1146 Depart for MRS 3

1218 Arrive @ MRS 3 Green Run Rd.

- Observed UXO Team

1615 stop all activities - Depart MRS 3

1715 Arrive at parking lot near NPS office
- De brief

1730 Depart

Rite in the Rain

3/18/18 Partly Cloudy 60° 37°

0630 Morning meeting, H&S brief

0700 UXO Team personnel depart to perform equipment checks on IVS

0745 Mike O'Neill on site

0750 Heavy Equipment checks and training

0816 Move mini ex. to B-253

0845 Start intrusive activities on B-253
 - Large metal plate possible target, extends under dune.

0951 - located a 2.25 mm rocket motor at 5' on opposite side of dune - MD

1000 Start excavation of another anomaly deeper than 4'

- located 14 2.25 mm rocket motors - MD

13011 Start intrusive investigation of anomalies near water

- located 4 2.25 mm on Flag # B243

- located a 12' x 12' large anomaly area on Flag # B242 - recovered 5 2.25 mm MD and small parts

- located 2 2.25 mm on Flag # B295

1447 Mike O'Neill departs

1710 Stop all activities - Move all items found to mag area - Debrief

1730 All personnel depart

3/19/18 Partly Cloudy 63° 37° winds increasing to west 15 to 20 mph with gusts to 35 mph

0600 on site

0630 Morning meeting, H&S brief

0650 All personnel depart for OSV gate to deflate tires.

0658 Arrive @ OSV gate - deflate tires

0711 All personnel depart OSV gate for MRS 3

0758 Arrive at Valentine Rd in MRS 3

- RTK setup and QC

- UXO Team modify DGM IVS and perform equipment checks.

0821 UXO Team starts intrusive investigations on anomaly locations

- RTK start reacquire activities

1045 Check on RTK Crew

1143 Check on UXO Team

1318 On site with RTK Crew

1433 On site with UXO Crew

1645 Stop all activities - all personnel depart MRS 3 for OSV gate

1721 Arrive @ OSV gate - inflate tires - Debrief

1730 All personnel depart for day

NFETP

4/26/18 Clear 53° 38°

0600 On site in MRSI

0630 Morning meeting, H's brief

0651 All personnel depart for OSV Gate

0700 Arrive @ OSV Gate deflate tires

- I went back to hotel to submit documents, scan dig sheets and email to Brian Pawling to update server for progress map.

0750 RTK Setup and QC

- UXO Team test equipment on IUS

0816 RTK Crew start flagging anomalies

- UXO Team @ continue intrusive activities on anomalies

- QC starts QC of completed anomaly locations

0926 Arrive on site - on site with RTK Crew

1110 On site with UXO Team

1323 On site with RTK Crew

1433 On site with UXO Team

1446 Stop all activities, depart for OSV Gate

1516 Arrive at OSV air hose station - refill tires - Debrief

1534 Depart for day

4/23/18 Partly Cloudy 61° 40°

0630 Morning meeting, H's brief in Hotel Lobby - start intro to site with new TII

0651 All personnel depart for MRSI area

0724 On site in MRSI - continue intro of project with UXOT III, WA/AA/SSHP/AHA's and site orientation, IPAD training

0910 On site @ Green Run

- RTK Setup & QC

- UXO Team perform equipment checks

1045 On site with UXO Team

1215 On site with RTK Crew

1333 On site with UXO Team

1536 On site with UXO Team on Validation road - Transect 4

1645 Stop all activities - depart for OSV Gate

1723 Arrive @ OSV Gate - re-inflate tires, Debrief

1730 All personnel depart

NFETP
JLC 2/2

4/24/18 Cloudy 58° 51°

0600 Morning meeting, H's brief

0624 All personnel depart for MRS 3

0651 Arrive @ OSV - deflate tires

0656 Depart for MRS 3

0744 Arrive at Green Run Rd. MRS 3

- RTK setup and QC

- UXO Team test equipment on IVS

0756 UXO Team continue intrusive investigation of anomalies.

- RTK Crew starts reacquire

- QC continues QC of completed anomaly locations

0850 On site with UXO Team

1021 Lightning hold

1051 off Lightning hold

1143 On site with UXO Team

1356 Check on RTK Crew

1421 On site with UXO Crew

1615 stop all activities - Debrief - Depart for OSV Gate

~~1645~~ 1645 Arrive at OSV Gate - refill tires

~~1700~~ 1700 Depart for day

NFETP

[Signature]

4/25/18 Cloudy 40% Chance of Rain/Thunderstorms
63° 53° Hum 100%

0600 Morning meeting, H's brief in Hotel

0621 Depart for OSV Gate

0635 Arrive at OSV Gate - deflate tires

0650 Depart OSV Gate for MRS 3

0729 Arrive at Green Run Rd.

- QC and setup of RTK

- UXO Team performs equipment checks on IVS

0742 UXO Team starts intensive activities

0921 Check on beach tide

1056 On site with UXO Team

1210 Check on RTK progress

1410 On site with UXO Team

1615 stop all activities - Debrief

1621 Depart MRS 3 for OSV

1656 Arrive at OSV Re-inflate tires

1700 Depart for day

4/26/18 Partly Cloudy 63° 54°

0600 Morning meeting, He's brief - in Hotel

0621 All personnel depart for Assateague Island
OSV Gate

0635 Arrive at OSV Gate - deflate tires

0636 Depart OSV gate for magazine area in
MRS 3

0704 Arrive at mag area

- Disassemble fence - load onto EA
truck

0736 NPS Skid steer with fork's arrives

- Pull ground rod

- load magazine on forks

0743 NPS skid steer departs.

0800 depart for MRS 1 mag area to
off load fencing

0841 Arrive at MRS 1 mag area

- off load fencing

0846 All personnel except QC depart for
MRS 3- QC awaiting USACE-Baltimore
OESS Ricky Whitten

0922 On site in MRS 3

- RTK setup i QC

- UXO personnel perform equipment
checks on IUS

3/26/18 cont

0935 UXO Team continue intrusive
investigations on final anomalies1100 UXO Team re-investigate anomaly
location #113- NPS Ranger Jonathan Chase
authorized team to sweep
area inside rare ~~bird~~^{bird} bird
boundary.

- Team located 16 anomalies

- RTK collect data

- NMRD found about 15-16s

1310 UXO Team continue completing
anomaly clearance- Review maps and spreadsheets
with RTK operator to ensure all
anomalies have been located, marked
and investigated

1522 On site with UXO Team

1605 stop all activities - all personnel
move to OSV to re-inflate tires1645 all personnel arrive at OSV re-inflate
tires - Received emails from PM's
McGuire - Notify them we will return
to anomaly locations request on ~~Monday~~
tomorrow -

1700 All personnel Depart

Rite in the Rain

52 Assateague Island FUDS USACE-Baltimore
4/27/18 Cloudy 80% Rain/Thunderstorms
63° 53°

- 0600 Morning meeting, H's brief - in Hotel lobby
- 0621 All personnel depart for Assateague Island OSV gate
- 0642 Arrive at OSV gate - Rain
- 0656 Depart for MRS 3
- 0715 Lightning - 30 min wait - continue to MRS 3
- 0728 Made it to mile marker 26, tide too high to go any further - all personnel backup to an area to turn around.
- 0742 All personnel return to OSV gate
 - Day canceled due to weather and tide. Thunderstorms are to continue until 1400
- 0814 All personnel arrive at OSV - re-inflate tires - debrief
 - depart for day
 - Notify PM of no work for day

~~NFETP~~
~~JL~~

53 Assateague Island FUDS USACE-Baltimore
4/30/18 Partly Cloudy 63° 52°

- 0600 On site
- 0630 Morning meeting, H's brief
- 0639 All personnel depart for OSV gate
- 0641 Arrive at OSV gate - deflate tires
- 0649 All personnel depart OSV for MRS 3
- 0739 Arrive at Green Run Rd.
 - UXO team performs equipment checks
 - RTK setup and QC in
- 0752 RTK starts acquire of missing locations to re-evaluate
 - UXO Team re-investigate around anomaly locations requested and start removal of surveyor tape and complete Flag's
- 0850 On site with UXO Team
- 1020 Accompany RTK operator to mark requested area to investigate
- 1320 On site with UXO Team performing mag & dig activities on additional location to investigate
- 1445 All personnel depart for OSV
- 1723 Arrive at OSV - re-inflate tires - debrief
 - load all none required equipment into truck to take back to warehouse.
- 1730 All personnel depart

~~NFETP~~

Rite in the Rain

Assateague Island FUDS USACE - Baltimore

5/1/18 Sunny 75° 43° Hum 57%

0600 On site, morning meeting, H's brief

0620 usx personnel start removal of
Flagging and cleanup of MRS1

- Setup for MPPEH procedures

0950 Palled team to start MPPEH procedures
on MD found in MRS1

1640 Stop all activities

- Completed 742-lbs of MDAS and
placed in 2-55-gal Drums

- secured in fence area.

- Debrief

1700 Depart for day

NFETP
JL

Assateague Island FUDS USACE - Baltimore

5/2/18 Sunny 85° 57°

0530 On site, Morning meeting, H's brief

0554 ~~start~~ Continue MPPEH procedures on
MD1145 Jeff Smith and Mike O'Neill
on site

- load fence on trailer.

1250 Jeff departs to return fence

1341 Mike departs for meeting with
NPS personnel and then departs
to EA warehouse

- Drum #1 365-lbs TBS 102095

- Drum #2 417-lbs TBS 102092

- Drum #3 364-lbs TBS 102091

- Drum #4 355-lbs TBS 102093

- Drum #5 507-lbs TBS 102096

- Drum #6 241-lbs TBS 102097

1630 All tasks complete - depart

NFETP
JL

5/3/18 Clear 80° 54°

0700 On site in NPS Bone Yard

- Band all drums to Pallets
- Place Copies of 1348-1a to each drum in ziplock bags and tape to drum

1014 Meet with NPS Chief Ranger Bill Huslander and NPS Chief of Police Walt West to thank them for all of there help and support during the project and to let them know everything is done and all MDAS will be shipped out today.

1124 Await ESTES Hauler

1421 ESTES Hauler on site

- Load all MDAS onto Truck
- Complete all paperwork
- Photo and send copies of CDC, 1348-1a and BOC to EA PM and shipping agency

1510 Depart for Home

- End of Field effort

~~NFETP
JL M~~



Rite in the Rain®
ALL-WEATHER
FIELD BOOK
Nº 350

3/5/18

62732.86

Clear - Windy
47°/26°

0730 - QC meeting w/ SUXOS at jobsite
to cover roles & responsibilities

0800 - Safety Meeting

0830-1130 - Kick-off meeting at
AINS Visitor Center

USACE- Julie Kaiser PM

NPS- Jonathan Chase

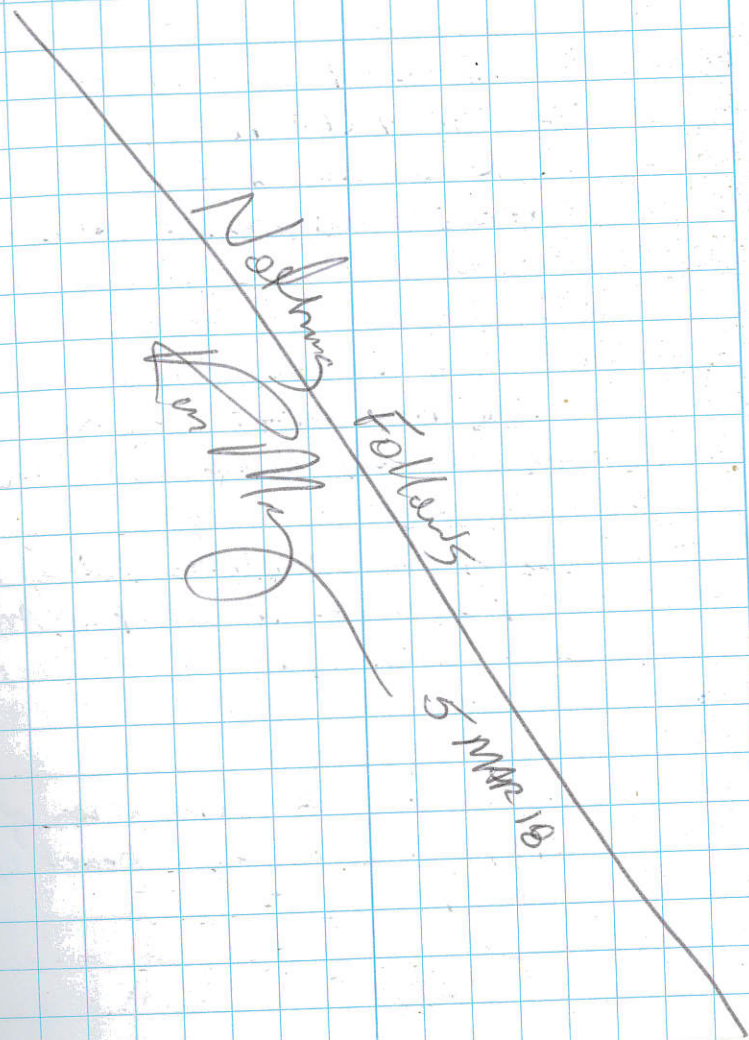
1130-1200 Lunch

1200-1700 - USACE, EA and NPS personnel
walk MRS1 Transect areas to
gauge difficulty for DGM crew
and brush cutters. Plan of attack
was agreed on allowing for
circuitous route through Transects
to avoid impassible areas.

1225 MD item found while walking
Transect 12 directly behind
Ammunition Magazine. Both
SUXOS and myself inspected item,
determined it was safe to move
and locked it in Am Mag.

1700 Secure for Day. move to
Holiday Inn Express (HIE) to
Complete Daily Reports

1800 - END of Day



4 3/6/18

62732.06

Cloudy - Windy
42°/27°

0730- Safety Brief

0800-0830 Inspect Set-up of UTV
Towed Array (EM 61)

0830-1000 Begin search for suitable
location for Instrument Validation
Strip (IVS). I inspected 3 areas
using Schonstedt before locating
a "Clean" area. Once located
I completely swept area and
removed any anomalies located.

1000-1330 Zapata completes set-up of
Array and begins sweep of Array
Sends DATA upload & receives
OK for DGM ops.

1500-1700 Zapata finishes preparation of
equipment IOT begin beach ops
on 3/7

1700 End of Ops

~~Nothing Found~~

3/7/18

62732.06

Rain - Wind 5
47°/34°

Gusts to 40kts

0730- Safety Brief

0750- Zapata informs me that there
is a large anomaly w/in 10'
of End Stake in SE corner of
IVS that is interfering with
DATA Plots.

0800- Took Schonstedt and re-swept
IVS. Located anomaly and
went intrusive. Located
3/8" Steel cable w/ Splice knot.
Removed as much as possible &
informed Zapata of results.

0830 Met with Mike McGuire and
solidified Seeding plan for
DGM operation.

0845-1000- Mike McGuire, Suxas and I
Set Transect Boundaries for
Beach DGM Sweep.

1000-1045 Prepped and emplaced
SEED MRS1 EA001 at Coordinates
4228519.36m N by 486737.09m E

1100- Move to Transect 10 to QC
Brush Clearing crew.

1200 Dave King (USACE GIS)
arrives & meets w/ Zapata.

Rite in the Rain

6 3/7 (cont) 62732.06

1200-1325 - Zapata completes assembly of Man-Towed Array and begins calibration in IUS (MRS 1)

1325-1545. Continued observation of Dgm team. Man-Towed Array appears to be functioning w/in established parameters.

1545-1630 Moved back to area of Brush Clearing team. Team had cleared Transect 8 & 9 per SOP and transitioned to Transect 10.

1630-1700 Team flagged clear portion of 10, then moved to Rally Point to secure for Day

1700 Cease Ops and move to HIE to complete Daily Reports

1800 End of Day

~~Nothing Found
Run off
7 MAR 18~~

3/8/2018 62732.06 Low WIND 47°/33° Clear

0700 - Arrive at RP

0800 - Safety Brief

0830 Move to WORK SITES

0830 Coordinate with Mike McGuire for placement of SEEDS for today

0830-1000 - Oversee Brush Clearing team
Vehicle Inspections as they finish TRANSECT 10.

1015-1130 SUXOS, NPS Rep and I move to MRS 3 to inspect Ammunition Magazine. Magazine is listing 20° to Starboard due to erosion from NORTHEASTERN 10 Days prior. Ground Strap is still in place. Rough Terrain FORKLIFT will need to be employed to upright mag.

1110 Received call that possible MD find in Transect 15.

1130 Move to Transect 15 to inspect possible MD. SUXOS and I agreed it was scrap pipe.

1130-1330 Emplaced 2 Seeds:

SEED MRS EA002 at Coordinates
4228684.51m N by 486814.75 E
at 10" Depth, East-West orientation

Return to the Rain.

8

- 3/8 (cont) 62732.06
 Emplaced SEED MRS 1 EA003
 at Coordinates 4229013.46m N
 by 486862.52m E at 12"
 depth, EAST-West orientation
 1330-1555 Move to Brush Clearing
 Area Vicinity Transect 4.
 Team finished clearing
 Transect 4 to the agreed
 clearance of NMT 6" above
 ground by 1m wide x 2m tall.
 1600-1645 Moved w/ Brush Clearing Team
 to North end of Transect 12 to
 investigate and mark best
 ingress point.
 1645- Move to Area Vicinity DGM
 1730 Team working Sand Dune area
 in Transect 15.
 1730 Cease Ops and move to HIC
 for Daily Reports
 1830 End of Day

~~Nothing Follows~~
 Rm 16 8 Mar 18

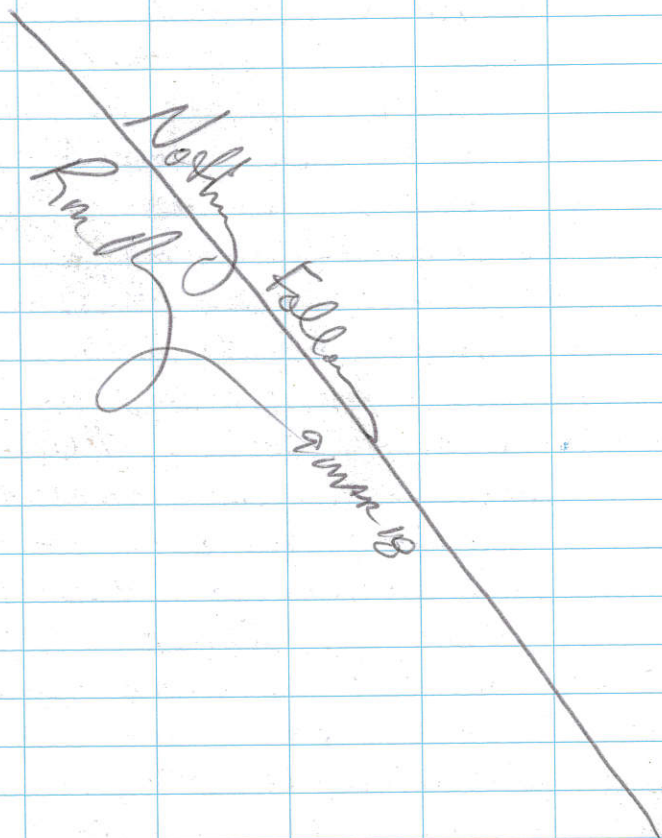
3/9/2018 62732.06 Clear 470/3109

- 0600 - Arrive @ RP
 0630 - Safety Brief
 0730 - Zapata arrives on-site
 0800-0930 Zapata is having issues w/
 proprietary software. They are
 modifying their work-plan around
 the issue and are switching to
 Man-Towed ARRAY and will
 work Marsh Areas IVJ Transect
 10.
 1030 - USACE Reps Depart for Day
 0930-1100 Zapata completes configuration
 of MAN-TOWED ARRAY
 1100-1200 Zapata runs MAN-TOWED
 ARRAY through IJS.
 1200-1300 - Move w/ DGM Team to
 vicinity Transect 9 (Marsh)
 1300-1500 Mike McGuire and I
 emplace SEED MRS 1 EA004
 at COORDINATES 4222896.01m N
 by 486244.77m E, depth 12"
 East-West orientation
 1400-1600 DGM Team completes mapping
 of Transect 10. Move to Rally
 Point.
 1400 - EA Secures for Day and Departs

Rite in the Rain

3/9 (cont) 62,732-84

1600-1630 Cease Ops & Secure Gear
for weekend - Move to
HIE to complete reports
1730 End of Day



3/12/2019 62732-86 Cloudy/Rain 44° 36" 13

0600 - Arrive on-site
0700 - Safety Brief
0730-0815 - Move to work sites. Brush
Team is working to finish
Transect 11.
0826-1030 Mike McGuire and I emplaced
two seeds -
1. MRS 1 SEED EA 005 at
Coordinates 4228722.98m N by
486175.98m E, at depth 12",
North-South orientation
2. MRS 1 SEED EA 006 at
Coordinates 4229147.95m N by
486491.76m E, at depth 16",
East-West Orientation
1030-1300 Move to area Ivo Brush
Clearing Team. New personnel
acclimating well to safety &
QC plans. No issues to report.
1300 - Conor O'Hare and I depart Rally
Point en-route to MRS 3 to
layout boundaries on beach
Transects
1345-1530 - EA F-250 becomes
stuck @ midway Point between
OSV gate & green-Run Campground

Rite in the Rain

3/12/18 (cont) 62732.06

We were able to extricate vehicle with no issues, accidents or injuries.

1530 - Move to New Transect 15b to see progress. Mike McGuire asked for additional Transect due to perceived gap in coverage. Brush clearing Teams are doing great job.

1540 Rain begins in earnest.

1600 - Zapata ceases operations due to completing all Marsh areas and accessible beach areas. Unable to begin wooded Transect areas due to not having correct modem cable for Man-Portable ARRAI. They hope to have correct cable by lunch 3/13. Mike McGuire made the request that they do additional beach Sweeps at Low Tide (approx 1130 3/13).

1700-1730 Brush Clearing team ceases ops for day and returns to RP.

1800 End of Day

Cloudy

3/13/2018 62732.06 44°/36° 13

0600 Arrive On-Site

0700 Safety Brief

0800-0930 - Inspect DGM progress & Brush cutting team.

0950 - Move to MRS 3 and locate MRS 3 beach boundaries, Target farm boundaries, and locate suitable area for IVS IVO Survey Marker

1400 - 1800 - Inspect DGM & Brush cutting areas for conformance to SOP.

1800-1830 - Complete Daily Reports

1830 - End of Day

~~Noel
Rising
Felling
13 Mar 18~~

3/14/18 62732.86

Clear - Windy
46°/29°

0700 - Safety Brief

0715-0800 - Meeting with Zapata,
Mike McGuire, LEXO QCS, SUXOS
to plan ops for today. Down
team will complete MRS1
today - as will Brush Clearing
Team.

0900-1130 Implanted 2 seeds:

MRS1 SEED 5A007:

Coordinates 4229284 N by
486871.51 E, Depth 11"
East-West Orientation

MRS1 SEED 5A008:

Coordinates 4228911.29 N
by 486951.85 E, Depth 14"
East-West orientation
Elevation: -1.76 m

1330 - Zapata team using UTV.
Towed ARRAY are heading to MRS3
to see if they can pick up Bate
station from present location
in MRS1.

1130-1400 Walked Transects 11 & 12 to
inspect brush cutting. No issues
found.

62732.86

1400-1700 - Observe & inspect Transects
for conformance w/ QAPP.

1700-1730 Afternoon Safety Brief
& Daily Reports

1730 - End of Day

*Following
Down
Main
Hollows
3/14/2018*

16 3/15/18 62732.06 Clear - Windy
46°/33°

0700 - Safety Brief

0730 - Move to OSV gate to prep
for Movement to MRS 3.

0900 Inspect road access IVO
Transect 7. DGM team will
have to work around gate
access denial cables and
note anomalous readings given
off by cable.

0915 Zapata informs me that they
have to re-work marsh area
because the data was corrupted.
This will delay them moving
to MRS 3.

1145 Brush Clearing in MRS 3 is
moving slower due to very
heavy & dense brush area.

1500 - NPS, Zapata & I scouted
1600 locations for Remote IVS and
further located a survey marker
suitable for a Base Station.

1600-1700 Movement back to Rally Point

1800 End of Day

~~Nothing~~
~~Fallen~~

3/16/18 62732.06 Clear - Windy
44° - 33° 17

0700 - Safety Brief

0730 - 0830 Zapata is taking down the
Base Station to move it to MRS 3.

Assembling MAIN-TOWED ARRAY.

0930-1030 DGM Team performs IVS
check with both ARRAYS.

1030-1100 - DGM Team breaks
down Base Station

1100-1200 - Move to MRS 3

1200-1230 - Set up Base Station
on New Control Point in MRS 3
& Verify UTV-Towed ARRAY

1230-1400 - Locate, Sweep & Clear
Remote IVS

1400-1500 - Place Seed ~~MRS 3~~ 009
Coordinates 4214951.71 N
by 482178.66 E

GLVD .45m Depth 11"

EAST-WEST ORIENTATION

1500-1600 Movement to RP.

1600-1630 Re-set Base Station &
Re-Calibrate UTV ARRAY over
IVS

1630-1730 - Daily Reports

1730 - END of Day

3/19/18 62732.06

0700 - Safety Brief

0730-0800 Discussion w/ Suroz & Zapata about work plan today especially w/ bad weather coming in tomorrow.

080-0900 - Movement to MRS 3. Set up Brush Team & observe DGM team calibrate systems.

0900-0930 Movement to Rally Point w/ NPS Officer Chase.

0930-1200 - Safety - Related Duties

1200-1230 - Movement to MRS 3

1430-1530 - Emplace Seed MRS3 EA030 at Coordinates 4215018.28N by 482020.83E, Depth 12" Orientation North-South

1530-1630 Emplace Seed MRS3 EA011 at Coordinates 4215086.60N by 482263.09E

1635 Transect 6 & 7 completed.

1730 DGM Team secures for Day

1800-1830 Movement to Rally Point

1830-1900 Daily Reports

1900 End of Day

~~Nothing Follows~~

3/20/18 62732.06 Rain - Wind 44° / 30°

0630 - Arrive on site. met with Park Service Officer Chase - moved to beach entrance - Driving Rain & Strong winds - Tide is way up. Conditions expected to deteriorate throughout day. Unsuitable and dangerous work conditions. Made call to cancel work for today. Will attempt to work tomorrow even though snow is expected.

0800 - Secured for Day

~~Nothing Follows~~
3/20/18

20

3/21/18

62732.06

RAIN - Wind - Tide
34° - 31°

0600 - Arrive on-site

0700 - Safety Brief

0730-1300 - Safety Duties

No BC work today

1300-1330 Daily Reports

1330 - End of Day

~~Nothing
to
Follow
3/21/18~~

3/22/18

62732.06

Clear - Cold 21
39° - 30°

1000 - Arrive on-site

NO WORK TODAY - Met with

1400 NPS & monitored Park Conditions

AT 1412 OSV re-opened.

~~Nothing
to
Follow
3/22/18~~

3/23/18 62732.06 Clear - W WIND
42° - 36°

- 0700 - Safety brief
 0730 - 0830 Move to MRS 3
 0830 Inspected & re-swept
 remote IUS. All items still
 there but with an additional
 1 1/2" of sand. Zapata will
 need to re-calibrate.
 0930 Emplaced Seed MRS 3 EA012
 at coordinates 4213598.42N
 by 481399.18 E - Corrected
 Depth: 11" Orientation E-W.
 1030 Re-verified North Boundary
 of MRS 3.
 1100-1330 Verified Trusscut
 access and brush cutting
 were per SOP
 1400 Emplaced Seed MRS 3 EA013
 at Coordinates 4214851.86N
 by 483148.74 E Depth 14"
 Elev 1.19 m Orient N-S
 1450-1800 Continued monitoring Brush
 Cutting & Dem Teams to ensure
 adherence to QAPP SOPs.
 1830-1915 Movement to Rally Point
 1930 - End of Day

3/24/18 62732.06 Clear - Cold
37° - 33°

- 0630 - Safety Brief
 0700-0800 Movement to MRS 03.
 0815 Emplaced SEED MRS 3EA014
 at Coordinates 4214247.64N
 by 481803.21 E, Depth 13"
 Orientation East-West Elev 1.19m
 0900-1135 Monitor Brush Cutting
 1135 - Zapata arrives on-site
 1135-1235 - QC Dem Base Station
 emplacement and UTV-Towed
 ARRAY Calibration to ensure
 compliance with SOP.
 1235-1800 Monitor Dem teams &
 Brush Cutting teams to ensure
 compliance with QAPP.
 1830-1915 Movement to Rally Point
 1930 - End of Day

~~Nefin
 Reg. File
 3/24/18~~

24 3/26/18 62732.06 Cloudy 42°-36°

0630 - Safety Brief

0645-0730 Movement to MRS 3

0730-0830 Zapata sets up Base station & calibrates Em61

0900 - Zapata sets up MAN-Portable

1000 Em61 & calibrates it.

1000-1500 - Tide's not allowing excursion to surf's edge. Tide table shows tomorrow at noon will be optimum time to run UTV.

Zapata use Man-Portable Array to run Transects 8, 9 & 11.

1500-1530 - Zapata Re-checks Em61

⊙ IVS for End of Day check

1530-1615 Movement to Rally Point

1700 End of Day

~~Rafael
3/26/18~~

3/22/18 62732.06 Partly Cloudy Calm 42°-28° 25

0700 - Safety Brief

0730-0800 Movement to MRS 3

0800 - Open fence at Am Mag for Forklift entry

0815-0845 Return to Rally Point to retrieve Zapata Equipment

~~1000~~ 1130 - Re-acquire Seeds EA009, EA010 and EA011 IAT collect Corrected Coordinates

0900 - Emplace Seed MRS 3 EA 0

Corrected COORDINATES

4214964.79 N

481653.15 E

Depth 10" ORIENTATION 10"

Elev 0.75m

1315 - Emplaced SEED

MRS 3 EA016

CC - 4214728.07 N

482103.84 E

Depth 8" ORT - N-S Elev 0.26m

1445 - Emplaced Seed MRS 3 EA017

CC 4215014.48 N

482141.71 E

Depth 10" ORT E-W Elev. 4.37m

1445 - Zapata Re-calibrates Em61

UTV & MAN

3/27/18 (cont) 62732.06

- 1515-1600 Movement to Rally Point
 1600-1630 SIXOS Brief
 1630-1700 Daily Reports
 1700 End of Day

Nothing to report
 3/27/18

3/28/18 62732.06 51° - 44°

- 0700 - Safety Brief
 0715-0730 - SIXOS Brief focused on
 Re-sweep of Dunes AREA
 and Southern end of Transects
 445 on MRS 3

0730-0815 Movement to MRS-3

- 0815-~~0830~~ DGM Team Sets up
 -1000 Base Station, Em 61's and
 performs Calibration using
 IVS.

1150 - DGM completes sweep
 of Transects 445 on
 Southern Peninsula. They
 used the Man-Portable Array
 and used a meandering path

- 1400 - DGM team completes
 Re-sweep of Dunes & Sweep
 of Transects 445.

1400-1445 Re-calibrate. Break Down
 Base Station, Secure equipment

1445-1530 Movement to Rally Point

1530-1600 Secure Equipment

1600-1630 Daily Reports

1700 End of Day

Nothing to report
 3/28/18

3/29/18

62732.06

Clear-Cool
53°-44°

0700 Safety Brief

0130-0930 Calibrated RTK w/ Survey
markers to assure horizontal
vertical accuracy and
determine deflection between
TK and RTK corrected and
uncorrected.

0930-1400 - Re-acquire all 9 Blind
Seeds in MRS 1 IOT called
Corrected Coordinates with RTK

1400-1500 Daily Reports

1500 End of Day

~~Ruthy
Fellows~~

Rain-Cold

4/2/18

62732.06

42°-48°

0700 - Safety Brief

0800-0900 Emplace IVS

0900-1000 Reports 1252 SEED EA07 15-116

1000-1630 Monitor UXO team and
investigate anomaly acquire;
Worked with RTK operator to
Reacquire and Flag DEM points

1530 For Dig Team SEED EA005 8-82

1630-1700 - Reports

1700 End of Day

~~Ruthy
Fellows~~

30

4/3/18

62732.06

Cloudy-Cold
44°-38°

- 0630 - Safety Brief
 0700 - IVS Check
 0715-1100 - Dig teams working IVS
 Transects B, 13, 14 and 15
 1110 - Received call to check item
 in T-15. Underground utility.
 1145 - Notified by Dig team of
 MD. SUXOS & I verified
 objects were MD. Moved
 items to Ann May.
 1230-1700 Worked w/ RTK operator
 working anomaly machine.
 1700-1730 SUXOS Debrief
 1730-1800 Daily Reports
 1800 - End of Day

~~Nothing Follows
 Ram Mong 4/3/18~~

4/4/18

62732.06

Cloudy-Windy
59°-58°

- 0630 Safety Brief
 0700 - Observed Dig team check
 0730 instruments on IVS and
 RTK Operator check RTK
 at Survey Markers
 0730 - Begin BC of Transects
 1400 05-25, 07-41, 07-42, 08-84
 08-47, 04-19, B-152, 04-24, 08-47
 04-17, 04-22, 05-78, 04-21, 05-27
 04-18, 04-16, 04-20, 05-26, 03-74
 1400-1700 - Monitor Safety & Observe
 Dig team.
 1700-1730 - SUXOS De-Brief
 1730 - End of Day

~~Nothing Follows
 Ram Mong 4/4/18~~

- 4/5/18 62732.06 Clear-Cool
48°-36°
- 0630 Safety Brief
- 0700 Observe RTK & Schensted
calibration procedures at
Survey Marker & IUS
respectively
- 0800 Begin QC inspections
12-114 (Shows Not Done), 12-90
Ipad not updated. Can't
edit nor pick points for QC.
- 1030 Attempted to acquire B-156
at surf's edge - Unable to
- 1045 dig due to tide. ^{SEED} EA002 @ B-183.
- 1400 QC holes 11-58, 13-86, 13-67
08-09, 08-45, 9-49, 13-69,
11-59, 10-129, 9-50.
Verify ^{SEED} EA004
was located at 08-09.
- 1700 Surfos sur-brief IUS Sweep
- 1730 End-of-Day

~~Nothing Follows~~
~~Ruby 4/5/18~~

- Assateague Islands FIDS USACE
- 4/6/18 62732.06 Clear-Cool
- 0630 Safety Brief
- Observe IUS Sweep procedure
and RTK Set-up.
- Assist RTK Operator with
anomaly re-acquire.
- Dig team recovered 11 pcs
of m.d. from 9 locations
in North End of Transect 15
- QC'D Beach Transect points
B-213, B-215, B-202, B-212,
B-198, B-208, B-192, B-186,
B-205, B-191, B-187, B-206
- Assisted RTK operator with
flagging points.
- 1130 Observed IUS Sweep and
RTK calibration End-of-Day Check
- 1200 End-of-Day

~~Nothing Follows~~
~~Ruby 4/6/18~~

ASSATEAGUE Islands FUDS - USACE

62732.06

4/9/18

Cloudy - Cold
45° - 36°

0630 Safety Brief

0700 Observe RTK calibration on
Survey Marker & Dig
TEAM Sweep IVS.0730 Begin QC IVD Transects
13-156 - 15-301, 13-88,
15-102, 15-103, 14-281, 14-279,
15-272, 15-104, 14-280.Note - 15-289 not entered,
Flag not Bent. - Checked
with Dig team - waiting on
sump pump.0900 BLIND SEARCH MASTERS 9-11
Spent rest of Day monitoring
Dig team and RTK team.1645 Observed RTK calibration
and IVS Sweep by Dig Team
for End-of-Day check.

1700 Suxes Out-brief

1730 End-of-Day

~~Nothing Follows
Ran May 4/9/18~~

ASSATEAGUE Islands FUDS - USACE

62732.06

4/10/18

PC - Cool -
53° - 42°

0630 Safety Brief

0700 QC Check RTK Calibration
on Survey Marker & IVS
Sweep w/ H4's0730-1000 - Assist RTK OPERATOR
with Flagging Anomalies

Checked TL Logbook

QC'd Following Points: 6-32,
6-79, 6-35, 6-36, 6-37, 6-34,
6-1, 6-28, 6-39, 6-40, 6-30,
6-31, 6-33, 6-291400 Five pieces of mid located
in Transect 15 (Safe to Move)
Observed End-of-Day RTK
Calibration and IVS Sweep.

1715 Suxes Out-Brief

1730 End-of-Day

~~Nothing Follows
Ran May 4/10/18~~

Assateague Island FUDS - USACE

62732.04

4/11/18

Clear - Mild

57° - 30°

0630 - Safety Brief

0700 Observe RTK Calibration at
Survey Marker and IVS
Sweep by Dig Team0815-0930 - Observed excavation on
15-289. Team used water
pump to help displace water.Team worked diligently to
try to recover item. I made
the call as Safety Officer to
cease operations. Item was
non-recoverable and non-identi-
fiable.1030 Received call from Team 1
about 5 items recovered from
Transect 14. SUXOS and I
inspected items and determined
they were expended 205"
rocket motors safe to move to
storage area.1310 Received call from Team 1
to meet on beach to review
excavation. Holes were too

Assateague Island FUDS - USACE

(cont)

62732.04

deep to continue. Met with
SUXOS, PM & NPS to discuss
possibility of bringing in
mini-excavator.QC'D 05-1116, 06-1129, 15-289,
07-1293, 05-1121, 06-1128,
05-1123, 07-71, 05-1124, 15-290,
07-1290, 07-73, 07-72, 07-1134,
06-1130, 12-15, 11-1169, 11-1168,
12-85, 11-55, 12-65, 12-64Observed End-of-Day RTK
Calibration and IVS Sweep.

1700 SUXOS Outbrief

1715 End-of-Day

~~Nothing
Ran M₂ Follow
4-11-18~~

ASSATEAGUE Islands FUDS - USACE

4/12/18

62732.06

54°-42°

0630- Safety Brief

0700 Observe IVS Sweep. RTK
Operator will calibrate RTK
on Survey Marker in MRS3.

0730- Observed Team 2 all day.

1700 Team tried 2 excavations
on Beach. Both excavations
had to be halted due to
safety concerns.

TL turned in 2 seeds:

B-248 - Seed MRS 167003

B-302 - Seed MRS 164002

Sukos, PM, NPS Rep and I
agreed we needed a mini-
excavator to help with
anomaly investigations on Beach.

1700- Observe IVS Sweep for
END of Day Checks.

1730 End of Day

~~Nothing Follows~~
Rn Mj 4/12/18

ASSATEAGUE Islands FUDS - USACE

4/13/18

62732.06

Clear - Warm

0630 Safety Brief

0700 RTK Calibration and IVS
Check for Start of Day

0730 Team 1 sets up Grid and
begins Mag & Flag Operations
in Grid 2.

Due to area IVD Grid 1 &
2 being used for Group Camp
area, Sukos made the call to
complete Dig on Grid 2 and
Remove Flags on Grid 1 after
RTK operator uploads GPS into.

0850 Team leader, during investigation
of first 6 Beach flags made a
discovery of a large anomaly
on B-253. Anomaly measured
20' in diameter and below
4' depth. Sukos made call to
halt and re-investigate after
we get a mini-excavator.

RE of GRID 2 showed B. anomalies
remain.

1200- RTK Calibration and IVS
Sweep for End-of-Day checks

1230- End-of-Day. Nothing Follows

40 ASSATEAGUE Islands FUDS - USACE
4/16/18 62732.06 Rain-Wind

0630 - Safety Brief
01030 - SUXOS called halt to work
activities due to weather.
1030 - End-of-Day

~~Nothing Followed
R. May
4/16/18~~

41 ASSATEAGUE Islands FUDS - USACE
4/17/18 62732.06 PC - Mild

0630 - Safety Brief
0700 - RTK Operator will calibrate
on Survey Marker in MRS 3.
Team 1 performs IVS
Sweep for Start-of-Day.
0745 - Team 1 and RTK and
SUXOS move to MRS 3 to
begin anomaly investigation
on Beach Transect.
0730 Begin QC of Beach Transect
in MRS 1. QC'd these
points: B-219, B-296, B-239
B-220, B-285, B-161, B-147,
B-140, B-230, B-133, B-153,
B-162, B-232, B-221, B-143,
B-245, B-174, B-154, B-257
1000-1100 Move to MRS-3.
QC'd following points:
B-115, B-116, B-121, B-122,
B-4, B-5, B-181
Team 1 turned in 6 Seeds: EA011(B)
EA009(B-2) EA010(B-155) EA013(B₂₃) EA014
1630 - Movement to MRS-1. EA016
1715 - SUXOS Out-Brief
1730 END-of-Day

ASSATEAGUE Islands FUDS - USACE

4-18-18

62732.06 Mild-Clear

0630- Safety Brief

0700 Observe RTK Calibration and
IVS Sweep.0730 Excavator Operator and Safety
Training0830 Movement to Dunes to begin
Excavation on the following
points: B-253, B-174, B-245 and
B-257 (MD)1100 Removed 14 items of MD
from B-245. SUXOS and el
verified non-hazardous.1330 Removed 4 items from B-243.
Verified safe to move1400 Possible Pit at B-242. Took
GPS Coordinates and notified USACE1430 Removed 2 from B-295. One
more still close by, but not
cost-effective to remove.1630 Checked 8 points in surf. All
8 were 4' below water line and
non-recoverable.298, 157, 260, 159, 155, 178,
156 and 180

1700- IVS Sweep, RTK Calibration

ASSATEAGUE Islands FUDS - USACE

4-18-18 (cont) 62732.06 Clear-Breezy

1715- SUXOS Out-Brief

1730- End-of-Day

Reggie
Dun
Rolling
4-18-18

44 ASSATEAGUE Islands FUDs - USACE
4-19-19 62732.86 Partly Cloudy - M. 16

0630 Safety Brief
0700 IUS Sweep
0730 Movement to MRS-3.
RTK Calibration

Team 1 turned in SEED5A012
found on Flag B-95.

1615 Team 1 sweep remote IUS.

No QC on points today due
to issues with iPad.

1645 Movement to Rally Point
1730 End-of-Day

~~Nothing Follows
Run May 4-19-19~~

45 ASSATEAGUE Islands FUDs - USACE
4/20/18 62732.86 PC - Breezy

0630 Safety Brief
0700 Movement to MRS-3
0845 Team 1 Sweep remote
IUS, RTK Operator calibrated
RTK on Survey Marker in
MRS-3.

0900- QC'D The following points:
1400 B-183, B-182, B-98, B-133, B-106,
B-103, B-125, B-95 (SEED), B-127,
B-147, B-149, B-126, B-101, B-99,
B-105, B-100, B-124, B-104.

1430 IUS Sweep and RTK
Calibration for End-of-Day.
1445 - Movement from MRS 3 to
Rally Point
1530 - End-of-Day

~~Nothing Follows
Run May 4/20/18~~

46 ASSATEague Island FUDS - USACE
4/23/18 62732.06 Clear - Warm

- 0630 - Safety Brief
0700-0900 - New Team Member/
Leader Training covering
QAPP and AHA's, as well
as QC Failure Criteria.
0910 - Movement to MRS-3
1000 - Observe IVS sweep at
remote IVS and RTK
Calibration at both start
and End-of-Day.
QC'd following points:
B-219, B-200, B-201, B-203,
B-208, B-202. All Clear.
1630 SURS Out Brief
1645 Movement to Rally Point
1730 End-of-Day

~~Nothing Follows
Rally 4/23/18~~

47 ASSATEague Island FUDS - USACE
4/24/18 62732.06 Cloudy - Mild

- 0600 - Safety Brief
0630 Movement to MRS-3
0715 - Calibration of RTK and IVS
Sweep.
0730-1400 - Dig team worked
Transects 7 and 8 and Beach
at QC'd the following points
4-12, 5-9, 4-10, 4-11, 4-13, 4-15,
4-14, 7-67, 7-62, 7-66, 7-61,
4-37.
All points clear, Dig Team
reported zero MW found today.
1600 SURS Out Brief
1615 - Movement to Rally Point
1700 - End-of-Day

~~Nothing Follows
Rally 4-24-18~~

ASSATEAGUE Island FUDS - USACE
4/25/18 62732.06 Cloudy - LT Rain

- 0600 - Safety Brief
0630 - Movement to MRS 3
0715 IVS Sweep and RTK
calibration for start of ops.
0855 TM 1 notified QC of Seed
Recovery SEED EAD17 on
point B-D3
1015 TM 1 recovered SEED 15 on 7-186
QC'd following points:
11-43, 11-42, 11-155, 7-186
1600 - IVS Sweep & RTK
calibration at end-of-day.
1615 - SUXOS OUT-BRIEF &
1700 Movement to Rally Point
1700 End of Day

~~Nothing Following
4/25/18~~

ASSATEAGUE Island FUDS - USACE
4-26-18 62732.06 Warm-Mild

- 0600 - Safety Brief
0630 - Movement to MRS 3.
0730-0830 - Movement of Annals
& fencing to MRS 1
1000 - Meet up with USACE
DESS Ricky Whitten. Mr.
Whitten, with me accompanying,
performed a Quality Assurance
inspection of Transects 3, 4, 6,
7, 8, 15 and 15a, Dunes area at
North end of MRS 1, 5 15'
Beach Transects of 1,000 ft long,
and a 70% sweep of Grid #2.
He also inspected the MPPEH,
MDAS in the Safe Storage Area,
the MD in the shipping barrels,
and the MDA3 in the concrete
box. Once he was satisfied
with MRS 1 we moved to
MRS 3 and reviewed the
areas we had completed. Mr.
Whitten was satisfied that no
MD was evident within MRS 3.

Continued on Next Page

ASSATEAGUE Island FUDs - USACE
4-26-18 02732.06 Warm-Mild
(cont.)

- 1400 - Returned to MRS 3 upon
completion of USACE Inspection
1600 Observed IDS Sweep and RTK
Calibration at End of Day
1615 SUXOS Out-Brief and
movement to MRS-1.
1700 End-of-Day

~~Nothing Followed
4-26-18~~

ASSATEAGUE Island FUDs - USACE
4/27/18 02732.06 Rain-Lightning

- 0600 - Safety Brief
0630 - Movement to MRS 3.
Beach become impassable
at 25.3 (Location of Ammo
Magazine). SUXOS make
call to return to rally
point.
0800 - Work halted due to
Lightning and impassable
road.

~~Nothing Followed
4-27-18~~

ASSATEAGUE Island FUDS - USACE
4-30-18 62732.06 Mild-Clear

0630- Safety Brief

0700 - Movement to MRS 3

0830 Observe RTK Calibration
and JVS Sweep for Start
of Operations

QC'D following points:
8-174, 7-186, 7-188, 7-187,
7-189, 7-185, 8-175

1600 Observed RTK Calibration
and JVS Sweep for End of
Day and completion of RT.

1630 Movement to Rally Point

1715 SIX03 Out Brief

1730 End of Day

~~Nothing Fellows
Rally 4-30-18~~

ASSATEAGUE Island FUDS - USACE
5-1-18 62732.06 WARM-Clear

0600- Safety Brief

0630- Begin processing MD for
disposal. As of close of
business 742 lbs of
munitions debris have
been certified as Material
Documented as Safe and
placed in containers for
shipping. 1348a-1's will
be completed tomorrow.

1700 End of Day

P.S. 1 ea MK 23 practice
bomb recovered.

~~Nothing Fellows
Rally~~

ASSATEAGUE Island FVDS - USACE
 5-2-18 62732.06 Clear - W. end
 0530 - Safety Brief
 0600 - Processing of MV

	SEAL #	Weight
Barrel #1	102095	365
#2	102092	412
#3	TBS 102091	364
#4	TBS 102093	355
#5	102094	507
#6	102097	241

All Flags & Ribbons Removal
 Restoration Complete.

62732.06 gty - ~~525~~ 165
 1723
 USACE gty ~~1800~~ 165

~~2660~~ 165

Total 2248 lbs

1630 - END of PROJECT

~~Nothing Follows~~

Assateague FUDS
Safety Log



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Address ASSATEAGE Island
National Seashore, MD
FYDS

Project ASSATEAGUE Island - FUDS
USACE . Contract # 62732.06



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US Pat No. 6,863,940
11-16

3/5/18

Clear & Windy

47/26

62732.86

0730 - Jobsite meeting between
John Monk and myself to
discuss Job Particulars, Roles
& Responsibilities

0800 - Safety Brief initial with
Brush cutting team

0830 Move to Visitor Center
for Kick-off meeting

1130 Break for Lunch

1200 Move to MRS 1 for Scouting
Transects

1225 MD located in Transect 12
immediately behind Am Mag
in MRS 1

Continue Transect Scouting
and formulate Plan of Attack

1700 Secure for day. Move to
HIE (Ocean City) to complete
Daily Reports.

1800 End of Day

3/6/18

Cloudy - Windy³

62732.86

42/27

0730 - Safety Brief

0800-1100 - Inspect Brush Cutting
Team to ensure PPE is being worn
& work is progressing safely

1100 Break for Lunch

1130-1700 Inspect both Zapata
Team (EM61) and Brush cutting
Team. Everyone is cognizant
of Safety.

Nothing significant to Log.

1700 - End of Ops - Move to HIE
to complete reports.

1800 - End of Day

3/7/18

62732-86

Rain - Windy

47-34

0730 Safety Brief - New Personnel
Mike McGuire (EA)

0800 - 1100 - Constant move between
Brush Clearing & DGM teams
inspecting and overseeing for
safety.

No incidents or accidents.

1100 Break for lunch

1130 - 1700 Spent majority of Afternoon
on QC duties and observing
Safety as time permitted.
Nothing significant to report.

1700 Cease Ops & move to HIE
to complete Daily Reports

1800 End of Day

3/8/18

62732-86

0730 Safety Brief - New
Personnel Dave King (USACE)

0800 Move to work sites

0800 - 1000 Oversee DGM & Brush
Cutting

1000 - 1100 Move to MRS 3 to
inspect Ammunition Magazine.
Magazine is listing 20° to
Starboard due to erosion from
Northeastern. Ground wire is
still secure.

1110 - Received call that possible
MD found in Transect 15.

1130 - SUXOS and I inspected item -
determined Scrap pipe NOT
MD

1145 - 1215 Lunch

1215 - 1415 - QC Duties

1415 - - Move to area of Brush
1630 Clearing for Safety & Health
check. Nothing significant
to report

1730 Cease Ops - Move to HIE
to complete Daily Reports

1800 - End of Day

Rite in the Rain.

6 3/12/18 62732.06 Clear - Windy
47-31

- 0630 - Safety Brief - EA Personnel
0730 - Safety Brief - Zapata
0800 - 1200 Oversee both teams
No Safety issues. All personnel are following safety guidance
1200-1230 Lunch
1230-1430 QC Duties
1400 - EA Personnel depart for Day
1430-1630 Oversee Zapata Team (DGM)
1630 - Secure Gear for weekend
Move to HIE to complete Daily Reports
1730 End of Day

3/12/18 62732.06 Cloudy Windy
43/41

- 0700 - Safety Brief - New Personnel - Neil Hallowell (EA)
Patrick Propst / Terry Farmer (Zapata)
0730 - Move to work sites - Begin Ops
0800-1000 QC Duties (Seeds)
1000-1200 - Over see DGM & Brush Clearing - Checking new arrivals for proper safety.
1200-1230 Lunch
1230 - Move to Onshore Vehicle gate & prepare for move to MRS 3. Safety inspection - Tires @ 20 psi, Shovels and boards onboard. Tow Strap ready, 4WD engaged.
1330-1345 Movement down beach
1345 Got out of ruts, truck slowed & lost traction. Got stuck. Initiated call to SUXOS. SUXOS and NPS Rep Jonathan Chase were able to extract vehicle. No injuries or accidents.

3/12/18 (cont) 62732.06

- 1530 Move to New Transect 15b
to inspect Brush Clearing
- 1600 Rain begins in earnest.
- 1615 Brush cutters move to far
North end of Transect ~~15b~~ 13.
- 1645 SUXOS inquired as to team's
willingness to continue working
in rain. Team is good to go.
- 1645 Zapata secures for day-
equipment issue.
- 1730-1800 Brush Clearing team secures
gear for End of Day
- 1800-1830 Daily Reports
- 1830 End of Day

3/13/2018 62732.06

Cloudy, Windy
44°/136°

- 0600 - Arrive On-Site
- 0700 - Safety Brief - New Personnel
John Hayes (EM).
- 0720 - Notified by Cmor O'Hara
that he contracted poison ivy.
Have sent for Calamine lotion
and we will need to sanitize
all brush cutting tools.
- 0730-0930 - All teams (Brush & DGM)
are working their respective missions.
No Safety Issues.
- 1000-1330 - OFF-Site @ MRS3 as Q.C.
- 1330-1730 - Move back and forth between
DGM & Brush teams. Brush teams
are following safe practices
following Poison Ivy report.
- 1730-1800 Complete Near Miss report
on Allergic reaction to Neoprene
& Daily Reports
- 1830 - End of Day

10 3/14/18

62732.06 Clear Windy
42°/29°

- 0700 Safety Brief - Focus on UTV Operation & Beach driving
- 0730-0930 - Move between Brush & Team Teams to observe for safety and QC. No issues to report.
- 0930-1130 - On beach performing QC duties
- 1130-1730 - Observation Activities
- 1330 Zapata UTV team moves to MRS 3. I inspected their vehicle and confirmed they have proper equipment and skills to perform mission.
- 1420 Brush team member reported a raccoon acting strangely to NPS personnel. NPS shot & removed raccoon for safety reason.
- 1430-1700 - Brush Team, completed all areas of MRS 1 to standard safety.
- 1730 - END of DAY

3/15/2018

62732.06 Clear - Windy
46°/33° 11

- 0700 Safety Brief - Emphasized wild animal contact due to raccoon incident yesterday.
- 0730 Move to OSV gate and prep vehicles for movement to MRS 3
- 0800-0900 Move to MRS 3
- 0900-1145 Monitoring brush cutting. I will make recommendation to use battery-operated hedge trimmers because brush is dense and springy.
- 1145-1600 - Monitoring Brush Clearing Team has requested battery-operated hedge trimmers.
- 1600-1700 Movement To Rally Point
- 1700 - Complete Reports
- 1800 - End of Day

~~Nature's Toll~~

3/16/2018 62732.06 Clear - Windy
44°/133°

0700 - Safety Brief

0730 - Steve Yankay tells me his Carpal Tunnel in his right hand is flaring up. He is treating w/ ibuprofen and will inform me this weekend should he seek medical treatment.

0800-0900 - Brush Team and SUXOS move to MRS 3

0900-1100 DGM Team Assembles
MAN-TOWED APPAR & perform
IVS check and AMCS.

1100-1200 - Movement to MRS 3

1200-1510 - Monitor DGM Team

1515-1600 Move to Rally Point

1600-1700 - Daily Reports & Close-out

No Safety issues. However,
NPS J. Chase and I agree
that we will need to come up
with a better emergency medical
plan for EVAC from MRS 3.

1700 End of Day

~~Nothing Fall
Kenny & I~~

3/19/18

62732.06 Clear - Calm
51-41

0700 - Safety Brief - focused on
possibility of severe weather for
Tuesday-Wednesday. Also
mentioned updated Emergency
Response plan due to working
in hazardous environment
(danger from falling trees).

0730-0800 - QC.

0800-0900 - Movement to MRS 3 - QC

0900-0930 - Movement to Rally Point

0930 - Meeting with Walt West (Chief
Ranger) on need to modify
Safety Management Plan to
include pre-stage of a litter,
locating and marking a
Helicopter Landing Zone and
providing LZ coordinates to
Law Enforcement.

1045 1115 - Meet with Jack Kunen
(Protection Officer) to seek
emergency log cutting equipment
for staging in MRS 3.

1115-1230 - Equipment Run

1230-1300 - Movement to MRS 3

1300-1430 - Locate, Mark and provide
coordinates for LZ to Chief West

Rite in the Rain.

14 3/19/18 (cont) 62732.06

1430-1730 QC Duties
1800-1830 Movement to Rally Point
1830-1900 Daily Reports
1900 End of Day

Note: Extreme weather moving into area. Will make call about work after review of site on Tuesday Morning.

~~Nothing Follows
3/20/18~~

3/20/18 62732.06 Rain - Strong Wind 44° - 31° 15

0630 - Arrive on-site with SUXOS
Met with Park Service Ranger
Jonathan Chase. Moved to
OSV area. Tide is surging.
Wind is driving rain
sideways across island.
Wind is extremely dangerous
in dead forest. Working
conditions are too dangerous
in such a remote location.
I made decision to cancel
work for today. We will
try again tomorrow.
0800 End of day.

~~Nothing Follows
3/20/18~~

3/21/18 02732.06

RAIN - WIND - Tide
39° - 31°

0600 Arrive on-site

0700 Safety Brief - Dangerous tides and wind. I will move down beach to ascertain ability to work in present conditions

0730-0900 - NPS officer, Chase, myself & 2 Zapata Contractors move to MRS 3 to gauge beach condition and move 2 pieces of DDM equipment to safer location.

Beach conditions are too hazardous to permit work parties to move down range. NPS is closing on shore vehicle access.

0900 - Movement back to Rally Point. Brief Suxos that no work will be today.

1000 - Meeting with NPS Chief

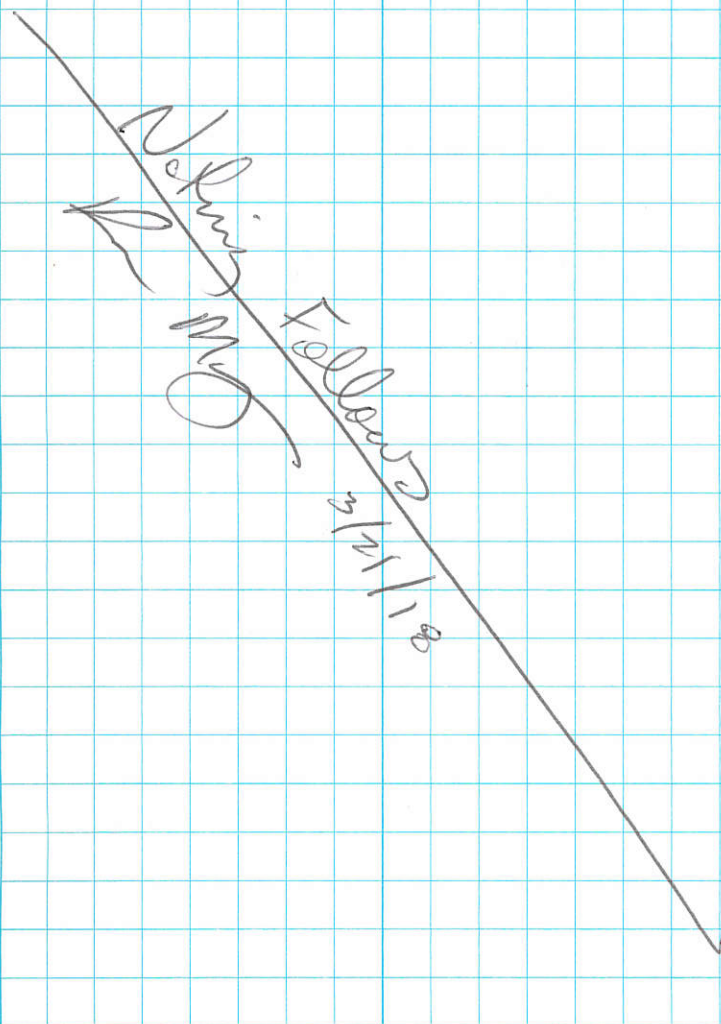
1015 Ranger West, Suxos, UXO QCS, and NPS Ranger Chase. I presented draft SOP 21 to Chief West and Suxos covered work plan and calendar.

3/21/18 (cont) 02732.06

1250 - Brief team on plan

1300-1330 Daily Repts

1330 - End of Day



18

3/22/18 62732.06

Clear - Cold
39° - 30°

1000 Arrive on Site

No Work Today - Met with
NPS & monitored Park Conditions
1415 - Shore is opened for driving
End of Day

Nothing
Running
3/22/18

3/23/18 62732.06

Clear -
42° - 36°¹⁹0700 - Safety Brief - Covered new
Air Medevac procedures. All
team members acknowledged and
are comfortable with plan

0730 - 0830 Movement to MRS 3.

During drive down the beach I
observed several Ship's Timbers
which will impede progress of
Transect. These will have to
either be recovered or turned
parallel to UTV-track.

0830 - 1400 No Safety Issues noted.

1400 - 1500 O.C. Duties

1500 - 1800 Observe BTR teams to
ensure compliance with Safety
Standards. No issues to report

1800 - 1900 Movement to Rally Point

1900 - End of Day

Nothing
Running
3/22/18

3/24/18 62732.06 Clear - Cold
37° - 33°

0630 Safety Brief - Two areas of emphasis

1. Working in Dead Forest today. Emphasized PPE and EVAC procedures, Dedicated Overhead Watch

2. Sub-surface hazards in beach which could damage vehicle and/or cause personal injury

0700-0800 Movement to MRS 3

0815-0900 AC Duties

0900-1130 Monitor Brush Clearing team for safety protocols. No issue

1135 Zapata 2-man team arrives.

I gave them the Safety Brief.

1200-1800 Observed both teams to monitor safe practices.

No issue noted.

1800-1900 Movement to Rally Point

1930 End of Day

~~Udell
Rm
3/24/18~~

3/26/18 62732.06 Cloudy
42° - 36°

0630 Safety Brief - Sub-surface hazards, Over-head Watch, EVAC Procedures

0645-0730 Movement to MRS 3

0730-0900 - Vehicle Inspections

0900-1515 - Monitored weather and forest - All personnel safe and working safely.

1530-1645 Movement to Rally Point

1700 - END of Day

~~Udell
Rm
3/26/18~~

3/27/18 62732.06 CAUM 42° - 28° Partly Cloudy
 0700 Safety Brief - No Brush Cutting. Focus on Overwater for DGM Team. Monitor Trans mission temperatures - Read SOP 21

0730-0800 Movement to MRS-3

0845 - Tailgate Safety Brief for DGM Team

0900-1430 - QC Duties

1430-1515 - Monitoring Safety
 No Issues To Report

1515-1600 Movement to Rally Point

1600-1630 SUXOS Brief

1630-1700 Daily Reports

1700 End of Day

~~Nothing Follows
 RMO
 3/27/18~~

3/28/18 62732.06 51° - 44° Cloudy - Rain

0700 - Safety Brief - Sub-surface hazards, speed limits, PPE

0730-0845 Movement to MRS 3

0900-0930 As Acting SUXOS and Safety I scouted a trail to the Southern Riverbank in MRS 3 seeking a safe route to and gauge best way to collect data on Transects 4-5.

1000 - DGM Teams commence

1400 Split Ops w/ 1 two-man team using Towed Array in Dunes and the other 2-man team used SKIRT ARRAY with 2 Safety observers.

1445-1530 - Movement to Rally Point

1600-1630 Daily Reports

1700 End of Day

~~Nothing Follows
 RMO
 3/28/18~~

24

3/29/18 62732.06

Clear - Warm
55° - 44°

- 0700 Safety Brief - No Dcm
No Brush Cutting - focus
on safe movement through
Transects for Re-acquies.
- 1430 - Completed work for today
No accidents/injuries
- 1500 End of Day

~~Nothing to
Log~~
Tollan
3/29/18

4/2/18 62732.06

Rain - Wind
42° - 48°²⁵

- 0700 - Safety Brief - New personnel
Dane McCarthy, James Higgins,
Jett Day, Trent Harvorn coming
on board for R.I. Safety brief
focused on MEC safety procedure
- 0800 - UXO team emplaced 105 then
moved to Transect 5 to begin
anomaly investigations
- 1030-1700 UXO team worked in
Transect area w/out incident.
- 1700 - End of Day

~~Nothing to
Log~~
Tollan
4/2/18

4/3/18 62732.04 Cloudy-Cold
44° 38°

- 0630 Safety Brief
0700-1230 Monitor Dig team &
Re-acquire team to ensure
safe work practices.
1230-1700 Worked w/ RTK Operator
on anomaly reacquiring.
1700-1730 Six03 Debrief
1730-1800 Daily Reports
1800 - End of Day

~~Nothing Follows
Run 4/3/18~~

4/4/18 62732.04 59° - 59°²⁷

- 0630 - Safety Brief - focused on
tick Safety. I found a tick
on my neck after work. Completed
Near Miss Report.
0700 - 1400 QC Duties
1400-1700 - Monitor Dig team & RTK
Team for remainder of day.
Thunderstorms in area so I
maintained a lightning watch.
No lightning w/in 7 miles.
1700-1730 Six03 Debrief
1730 End of Day

~~Nothing Follows
Run 4/4/18~~

4/5/18 48° - 36° Clear Cold
62732.86

0630 - Safety Brief - Working
Beach Dunes Transect today
50 emphasis on exclusion
zones on safety of civilians
Had three (3) pauses in
digging due to people who 100
feet off dig site.
Team continued monitoring
for ticks due to warmer
weather.

1700 - Suxos Out-Brief

1730 End-of-Day

~~No King
4/5/18
Fellers
Rings~~

4/6/18 62732.06 Clear - Cool 54° - 42°
0630 Safety Brief - MEC

Safety procedures, work stoppage
for civilian safety, Ticks!

11 pcs of MD recovered safely
from 9 locations in North
End of Transect 15,

0900-1100 - Work w/ RTK Operator
setting points.

1130-1200 Suxos Outbrief - Weather
Safety Brief.

1200 - End-of-Day

~~No King
4/6/18
Fellers
Rings~~

62732.86 - ASSAT. ISL. FIDS - USACE
4-9-18 62732.86 Cloudy - Cold
45° - 36°

0630 Safety Brief - Cold weather
warning. Beach work - MEC
precautions - Work Stoppage

Good observations throughout
day. No safety incidents
or concerns.

1730 - End of Day

~~Nothing
Rainy
Followed
4/10/18~~

ASSATEAGUE Island FIDS - USACE 31

62732.86
4/10/18 Clear - Cool
52° - 42°

0630 - Safety Brief.
MEC Precautions, Work
Stoppage, Beach work around
tourists, Tick Avoidance

1700 - Swims Outbreak

1730 - End of Day

~~Nothing
Rainy
Followed
4/10/18~~

62732.06

4/11/18

Clear - Cool

55° - 38°

0630 - Safety Brief - MEC
 Precautions, Wild Horse
 avoidance (New colt born
 on 6 APR) Beach work
 precautions.

0815-0930 Observed excavation in
 15-289 using water pump and
 shovels. Hole got too deep and
 restrictive, I made the call
 to cease operations for safety
 reasons.

1310 Received call from Team 1
 to meet on Beach. Team had
 started excavating three
 locations in Target Area and
 were down below 4'. As I felt
 it was unsafe I stopped the
 excavation.

1700 Sixes Out Brief

1715 End-of-Day

~~Nothing Follows~~
 Rn Mr
 4-11-18

62732.06

4-12-18

Clear

54° - 42°

0630 Safety Brief - FIRE HAZARD

Crowd Control - Spl. Ops

Observed Dig Team (Team 1)
 at several points in Dunes
 area. Had to stop excavation
 on two points because they were
 going too deep.

Re-emphasized to Dig team
 that 4' is maximum depth
 for hand excavation.

No other safety concerns for
 the day.

1715 Sixes Out Brief

1730 End-of-Day

~~Nothing Follows~~
 Rn Mr
 4/12/18

34 ASSATEAGUE Island FUDs - USACE
4/13/18 62732.06 Clear - Warm

0630 - Safety Brief - focused on use of Sunscreen, Hydration and Work stoppage.

0700-1200 Spent the day working with Dig Team on Grids 1 & 2 as BC-50. No issues or concerns.

1215 SUXOS Outbrief

1230 End-of-Day

~~Nothing Followed
Run Mugs 4-13-18~~

35 ASSATEAGUE Islands FUDs - USACE
4-16-18 62732.06 Rain - Wind

0630 Safety Brief - Lightning

1030 w/in 4 miles - Driving Rain and 30 knot winds.

1030 SUXOS called halt due to weather.

~~Nothing Followed
Run Mugs 4-16-18~~

36 ASSATEAGUE Islands FUDS - USACE

4/17/18 62732.06 PC - Mild

0630 - Safety Brief - focus on Beach Driving, Protection of Wildlife nesting areas, Sunscreen.

0700 Team 1 & RTK Operator perform calibration prior to moving to MRS3.

0700-1700 No Safety issues or concerns to report.

1730 - End-of-Day

~~Nothing
To
Follow
4-17-18~~

37 ASSATEAGUE Islands FUDS - USACE

4-18-18 62732.06 Clear - Mild

0630 Safety Brief - focus on Excavator Training and Safety. Open Pit Ingress/Egress, Working in loose soil conditions, Sunscreen usage, MEC Precautions. Team worked with mini-excavator all day with zero safety incidents. Not all done!

1715 - Snacks out - Brief

1730 - End-of-Day

~~Nothing
To
Follow
4-18-18~~

ASSATEAGUE Islands - FUDs - USACE
4-19-18 62732.06 Cloudy - LR

0630 Safety Brief - focused on beach driving, hidden snags in the surf, Rally Point, MEDEVAC (SOP 21), hydration and Tick avoidance.

0700 Movement to MRS-3.

0800-1630 - No safety concerns, no illnesses, no injuries.

1630 SURGS Outbrief

1645 Movement to Rally Point

1730 End-of-Day

~~Nothing Follows
Rally 4-19-18~~

ASSATEAGUE Islands FUDs - USACE
4/20/18 62732.06 Clear - Mild

0630 - Safety Brief. Focused on Beach Driving, protection of nesting birds, Tick avoidance, emergency evacuation procedures.

0700 Movement to MRS-3

0800-1430 No safety issues or concerns. Teams are executing flawlessly.

1430 - SURGS Out-Brief

1530 End-of-Day

~~Nothing Follows
Rally 4/20/18~~

ASSATEAGUE Islands FUDS - USACE
4/23/18 62732.06 Clear-Warm

0630 - Safety Brief - One Near Miss Report generated due to employee removing Tick from his person Friday evening. Safety Brief focused on use of Permethrin and Buddy system, Beach Driving, Wildlife protection, working in/around Dead Forest.

0800 Movement to MRS 3

- 1600 Observation of Dig Team and RTR Operator

1630 Suxos Out Brief
No Safety issues to report

1645 Movement to Rally Point

1730 End of Day

~~Nothing Followed
Ran by 4/23/18~~

ASSATEAGUE Islands FUDS - USACE
4/24/18 62732.06 PC - Mild

0600 - Safety Brief - Ticks, Beach Driving, Wildlife, Nesting areas, Dead Forest, 58P 21

0630 - Movement to MRS 3

1020 - Called halt for lightning within 7 miles.

1051 - off Lightning Hold

1600 - SUXOS OUTBRIEF

1615 - Movement to Rally Point

1700 - End-of Day

~~Nothing Followed
Ran by 4/24/18~~

42 Assateague Island FUDS - USACE

4/25/18 62732.06 Rain-Mild

0600 - Safety Brief - focused on
Beach Driving, Nesting
bird sanctuary, Tick avoidance,
Dead Forest overwatch.
No Safety issues today.

1615 Suxos Outbrief

Movement to Rally Point

1730 End of Day

~~Rallying
Run 4/25/18~~

43 Assateague Island FUDS - USACE

4/26/18 62732.06 Clear - Warm

0600 - Safety Brief. Focused on
Safe Beach Driving, Nesting
bird sanctuary protection,
Dead Forest safety, Tick &
Mosquito avoidance.

0630 - Movement to MRS 3.

Disassembled Safe Storage
Area and safely moved
fencing and Ammunition
Magazines to MRS 1.

1600 ~~Movement~~ Safely completed
investigation of remaining
anomalies in MRS 3.

1615 Suxos Outbrief & movement

1700 End of Day

~~Nothing
Run 4-26-18~~

ASSATEAGUE Island FUDs - USACE
4-27-18 62732.06 Rain-Lightning

- 0600 - Safety brief - focused on Beach Driving, Nesting Bird Sanctuary, Lightning abatement.
- 0630 - Movement to MRS-3.
Due to high tide and storm surge, road is impassable at 25.3 (location of Ammo Magazine). Lightning off beach to east within 4 miles. SIX03 made call to return to Rally Point. More storms coming in with lightning. SIX03 called halt at 0800.
- 0800 - End of Day.

~~Nothing Follows
Ra Mrg 4-27-18~~

ASSATEAGUE Island FUDs - USACE
4-30-27 62732.06 Clear-Mild

- 0630 - Safety Brief - focused on Fire Prevention, Wildlife protection, Beach Driving, Over-Watch.
- 0700 - Movement to MRS-3.
- 0715-1600 Completion of Remedial Investigation with geo safety incidents.
- 1000 Movement to Rally Point
- 1715 - SIX03 Outbrief
- 1730 - End of Day

~~Nothing Follows
Ra Mrg 5/50/18~~

ASSATEAGUE Island FUDS - USACE
5-1-18 62732.06 Warm-Clear

0600- Safety Brief - focused in
Safe Handling & Storage of
MDAS, processing MDAS
safely, wearing of proper
PPE, tick avoidance and
Hydration

1645 - SIX03 Outbrief Team
processed 742 lbs of
MDAS safely.

1700- End of Day

~~Nothing Follows
Rainy 5-1-18~~

ASSATEAGUE Island FUDS - USACE
5-2-18 62732.06 Warm-Clear

0530 - Safety brief - focused in
Safe processing of MD for
shipping, PPE, Hydration
and Tick avoidance

1630- Project Complete with
only 2 Near Misses for
tick sightings.
END - of - Project

~~Nothing Follows
Rainy 5/2/18~~

ASSATEAGUE
ISLANDS FUDS
TEAM LEADER



Rite in the Rain.

ALL-WEATHER
FIELD BOOK

Nº 350

No. 350 Field - Polydura - 4 3/4" x 7 1/2"



ISBN 978-1-932149-41-8

PAGE	REFERENCE	DATE
	<u>TEAM #1</u>	
	T3 - TRENT HARVIN	
	T2 - DANE MCCARTHY	
	T2 - JOHN HAYES	
	T1 - JEFF DAY	
	T1 - JAY HUGGINS	
	<u>Sc</u>	
#	293115 - TURNED IN	
	334125	
	275828	
	<u>WHITE</u>	
	52446331005 E43A	



Pg. 1
2 ASSATEAGUE ISLAND TM#1 02 APR, 2018

- 0630 - MEET AT VISITORS CENTER
- 0700 - MORNING MEETING WITH SUXOS, SO, PARK RANGERS. JOB INDOC, SAFETY PLAN, AHA, WORK PLAN, WEATHER: HIGH OF 50°, WINDY, 20% CHANCE OF RAIN. ALL PERSONNEL PRESENT.

- 1030 - TM#1 DEPARTS TO SET UP IVS WITH SO/QC. CHECK EQUIPMENT - TEST SAT

- 1040 - TAILGATE SAFETY BRIEF BY TL

- 1045 - BEGIN INTRUSIVE OPS IN MRS01

- 1200 - LUNCH

- 1630 - TM#1 DEPARTS CAMPSITE TO BEACH - FRONT AREA

- 1730 - SECURE INTRUSIVE OPS, DEPART FOR IVS, TO TEST EQUIPMENT - TEST SAT

- 1800 - EOD / NO REPORTABLES

MRS01

FLAGS = 32

MD = 0

NOTHING FOLLOWS
with 1

Pg. 2
ASSATEAGUE ISLAND TM#1 03 APR, 2018

- 0630 - MEET AT OFFICE

- 0700 - MORNING MEETING WITH SUXOS, SO, PARK RANGERS. WEATHER: HIGH OF 43°, 20% CHANCE OF RAIN. ALL PERSONNEL PRESENT.

- 0715 - TEST EQUIPMENT IN IVS - TEST SAT

- 0930 - BREAK

- 1230 - LUNCH

- 1645 - SECURE INTRUSIVE OPS ON TRANSECT 10, DEPART FOR IVS TO TEST EQUIPMENT - TEST SAT.

- 1715 - DEBRIEF BY SUXOS, SO

- 1730 - EOD / NO REPORTABLES

MRS01

FLAGS =

MD = 4 (2) 2.25 ROCKET MOTORS (1) ^{MISC} MOTOR

NMRD =

NOTHING FOLLOWS
with 1

Rite in the Rain.

4 ASSATEAGUE ISLANDS

TM#1

Pg. 3
04 APR 2018

-0630 - MORNING SAFETY BRIEF BY SUXOS, SO, PARK RANGERS. WEATHER: HIGH OF 53°, WINDY, 50% CHANCE OF RAIN, T-STORMS POSSIBLE. ALL PERSONNEL PRESENT.

-0645 - TM#1 DEPARTS FOR IVS - TEST SAT

-0650 - TAILGATE SAFETY BRIEF BY TL

-0700 - BEGIN INTRUSIVE OPS IN MRSOI, TRANSECT #10

-0930 - BREAK

-1245 - LUNCH

-1603 - SECURE INTRUSIVE OPS, DEPART FOR TRANSECT #13 TO COLLECT MD FROM AREA

-1645 - DEPART FOR IVS - TEST EQUIPMENT - TEST SAT

-1700 - EOD/NO REPORTABLES

MRSOI

SEEDS = 2 (EA-07, EA?)

FLAGS =

MD = (2) ROCKET MOTORS

NMRD =

Nothing Follows

ASSATEAGUE ISLANDS

TM#1

Pg. 4
05 APR 2018

-0630 - MORNING SAFETY BRIEF BY SUXOS, SO WEATHER: HIGH OF 45°, WINDY 5% CHANCE OF RAIN. ALL PERSONNEL PRESENT. VEHICLE INSPECTIONS.

-0650 - TEST EQUIPMENT IN IVS - TEST SAT

-0700 - BEGIN INTRUSIVE OPS

-0930 - BREAK

-1200 - LUNCH

-1603 - SECURE INTRUSIVE OPS, DEPART FOR IVS

-1645 - TEST EQUIPMENT IN IVS - TEST SAT

-1700 - EOD/NO REPORTABLES

MRSOI

FLAGS = 39

MD = 0

NMRD = 38

SEEDS = 1

FLAGS COMPLETED = 19, 23, 35, 36, 37, 38, 39, 40, 63, 75, 76, 77, 78, 79, 80, 122, 123, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 195, 196, 200, 201, 202, 205, 206, 207, 209, 210, 211, 214.

Nothing Follows

Rite in the Rain.

Pg. 5
6 ASSATEAGUE ISLAND TM #1 06 APR 2018

- 0630 - MORNING SAFETY BRIEF BY SUXOS, SO.
- WEATHER: HIGH OF 50°, 5% CHANCE OF RAIN. ALL PERSONNEL PRESENT.
- 0650 - TM #1 DEPARTS FOR IVS
- 0700 - TEST EQUIPMENT IN IVS - TEST SAT.
- 0715 - BEGIN INTRUSIVE OPS
- 0930 - BREAK
- 1145 - SECURE INTRUSIVE OPS, DEPART FOR IVS.
- 1200 - TEST EQUIPMENT IN IVS - TEST SAT
- 1230 - EOD

MRS01

FLAGS=20

MD=11 (2.25 ROCKET MOTORS)

NMRD=8

SEEDS=0

FLAGS=291, 279, 280, 281, 103, 104, 102, 271, 272
171, 147, 133, 141, (114), 273, 270, 301, 104,
290, 274

NOT IN TABLET

~~Nothing Follows~~

Pg. 6

ASSATEAGUE ISLAND TM #1 09 APR 2018

- 0630 - MORNING SAFETY BRIEF BY SUXOS, SO.
- WEATHER: HIGH OF 45°, 10% CHANCE OF RAIN. ALL PERSONNEL PRESENT.
- 0650 - TM #1 DEPARTS FOR IVS, TEST-SAT
- 0700 - BEGIN INTRUSIVE OPS
- 0930 - BREAK
- 1230 - LUNCH
- 1645 - SECURE INTRUSIVE OPS, DEPART FOR IVS - TEST SAT
- 1700 - EOD

MRS01

FLAGS=41

MD=0

NMRD=40

SEED=1 (EA06) FLAG#11

FLAGS: 107, 108, 8, 10, 13, 11, 12, 127, 128, 1194, 1188,
1189, 1187, 70, 131, 132, 1192, 1168, 1169, 1141, 1139, 1134,
71, 72, 73, 1293, 1290, 999, 1128, 1129, 1130, 143, 163, 160
134, 135, 142, 161, 162, 146, 115.

~~Nothing Follows~~

Rite in the Rain

8 ASSATEAGUE ISLANDS TM#1 10 APR, 2018 B.M

-0630-MORNING SAFETY BRIEF BY SUXOS, SO.

WEATHER: HIGH OF 53°, 5% CHANCE OF RAIN. ALL PERSONNEL PRESENT.

-0650-TM#1 DEPARTS FOR IVS-TEST SAT

-0700-BEGIN INTRUSIVE OPS

-0930-BREAK

-1230-LUNCH

-1645-SECURE INTRUSIVE OPS, DEPART FOR IVS-TEST SAT

-MD TO STORAGE AREA

-1700-EOD

MRSO1

FLAGS=38

MD=(5) 2.25 ROCKET MOTORS

NMRD=32

SEEDS=0

FLAGS=(1126, 1123, 1121, 1120, 1116, 1115, 1105, 1114, 1109, 1113, 1143, 1144, 1159, 1153, 92, 3, 4, 6, 5, 91, 287, 7, 1161, 1170, 111, 1183, 1177, 15, 265, 264, 266, 267, 268, 269, 93, 124, 125, 85)

Nothing Follows

ASSATEAGUE ISLANDS TM#1 11 APR, 2018 Pg. 8

-0630-MORNING SAFETY BRIEF BY SUXOS, SO.

WEATHER: HIGH OF 55°, 5% CHANCE OF RAIN. ALL PERSONNEL PRESENT. PM WILL BE ON-SITE SOME

TIME TODAY, SUXOS WILL NOTIFY TM.

-0650-TM#1 DEPARTS FOR IVS-TEST SAT

-0700-BEGIN INTRUSIVE OPS

-0900-SO CALLED OUT TO FLAG #15-289 FOR

-0930-SO CALLS FLAG #15-289 UNSAFE DUE TO WATER AND CAVE-INS, USED SUBMERSIBLE PUMP TO NO PROGRESS.

-0945-BREAK

-1200-LUNCH

-1645-SECURE INTRUSIVE OPS, DEPART TO IVS-TEST SAT

-1700-EOD

MRSO1

FLAGS=35

MD=5(2.25 ROCKET MOTORS)

NMRD=30 (INCLUDE N/C + UNRECOVERABLE)

SEEDS=2(002, 003)

FLAGS(245, 276, 277, 278, 219, 221, 239, 224, 292, 284, 244, 297, 248, 289, 302, 182, 181, 247, 249, 231, 295, 242, 243, 240, 241, 226, 217, 136, 282, 223, 253, 144, 154, 227)

Nothing Follows

Rite in the Rain.

10 ASSATEAGUE ISLAND

TM #1

12 APR 2018

- 0630 - MORNING SAFETY BRIEF BY SUXOS, SO.
WEATHER: HIGH OF 61°, WINDY IN PM, ALL
PERSONNEL PRESENT, PM STILL ON-SITE.
- 0650 - TM #1 DEPARTS FOR IVS-TEST SAT
- 0700 - BEGIN INTRUSIVE OPS ON BEACH
- 0930 - BREAK
- 1200 - LUNCH (PM DEPARTS)
- 1645 - SECURE INTRUSIVE OPS, DEPART FOR IVS-TEST
SAT
- 1700 - EOD

MRSOI

FLAGS = 39

MD = 14 (2.25 ROCKET MOTORS)

NMRD = 22

SEEDS = 0

FLAGS (^{MD}250, ^{MD}251, ^{MD}286, ^{MD}285, ^{MD}145, ^{MD}176, ^{MD}144, ^{MD}167, ^{MD}168, ^{MD}293, ^{MD}285,
^{MD}294, ^{MD}235, ^{MD}216, ^{MD}228, ^{MD}300, ^{MD}246, ^{MD}168, ^{MD}151, ^{MD}150, ^{MD}259, ^{MD}256, ^{MD}296,
^{MD}255, ^{MD}254, ^{MD}252, ^{MD}230, ^{MD}220, ^{MD}223, ^{MD}245, ^{MD}299, ^{MD}237, ^{MD}234, ^{MD}218, ^{MD}236,
 238, 257.

NOTHING Follows
 WLT

ASSATEAGUE ISLAND

TM #1

13 APR 2018

- 0630 - MORNING SAFETY BRIEF BY SUXOS, SO. WEATHER:
HIGH OF 68°, SUNNY, ALL PERSONNEL PRESENT.
CORE REP TO BE ON SITE TODAY.
- 0650 - TM #1 DEPARTS FOR IVS-TEST SAT
- 0700 - BEGIN MAG + FLAG MRSOI-B-1G, 2G -
TM DEPARTS FOR FLAG #253 TO RE-INVESTIGATE
HIT WITH TM JEFF DAY. SO ASSUMES
RESPONSIBILITY AS TL
- 0845 - TL RETURNS TO TEAM AT MRSOI-B-1G
- 0915 - BREAK
- 1200 - SECURE INTRUSIVE OPS, DEPART FOR
IVS-TEST SAT
- 1230 - EOD

MRSOI

FLAGS = 104

MD = 3 (2.25 ROCKET MOTOR)

NMRD = 101

* FLAG #253 - NEED MINI-EX

FLAGS (^{MD}225, ^{MD}143, ^{MD}144, ^{MD}153, MRSOI-B-2G)

ASSATEAGUE ISLAND

TM#1

16 APR, 2018

- 0630 - MORNING SAFETY BRIEF BY SUXOS, SO.
WEATHER: RAINY, HIGH WINDS, LIGHTNING
IN THE AREA. ALL PERSONNEL PRESENT.
- 0640 - SO CALLS LIGHTNING HOLD, LIGHTNING
WITHIN 4 MILES.
- 0915 - SECURE OPS DUE TO WEATHER
- 0930 - EOD

NOTHING FOLLOWS
[Signature]

ASSATEAGUE ISLAND

TM#1

17 APR, 2018

- 0630 - MORNING SAFETY BRIEF BY SUXOS, SO.
WEATHER: HIGH OF 51°, WINDY. ALL PERSONNEL
PRESENT. VEHICLE INSPECTIONS, BEACH DRIVING
TRAINING, PARK RANGER BIRD TRAINING
- 0700 - TM#1 DEPARTS FOR IVS-TEST SAT
- 0715 - TM#1 DEPARTS FOR BEACH ENTRY TO GET
TO MRS03
- 0930 - BREAK
- 1200 - LUNCH
- 1620 - SECURE INTRUSIVE OPS, TM#1 DEPART
FOR IVS, TEST SAT
- 1700 - EOD

MRS03

FLAGS = 38

MD = 0

NMRD = 22

N/C = 10

SEEDS 6 (16=181, 14=173, 2=09, 119=11, 13=123,
10=155)

- FLAGS (155, 99, 121, 122, 116, 115, 123, 4, 5, 112, 120, 117, 114, 113,
118, 111, 110, 109, 3, 119, 144, 139, 140, 146, 147, 148, 100, 101,
150, 151, 2, 152, 91, 184, 173, 181, 183, 182)

14 ASSATEAGUE ISLANDS

TM#1

Pg. 13
18 APR 2018

- 0630 - MORNING SAFETY BRIEF BY SUXOS, SO.
WEATHER: HIGH OF 53°, WINDY. ALL PERSONNEL PRESENT. PM WILL BE ON-SITE TODAY.
- 0650 - TM#1 DEPARTS FOR IVS-TEST SAT.
- 0700 - MINI-EX ON SITE, VEHICLE(EQUIPMENT) INSPECTIONS. TRAINING WITH JOHN H, DANE M.
- 0830 - BEGIN INTRUSIVE OPS ON BEACH
- 0930 - BREAK
- 1200 - LUNCH
- 1645 - SECURE INTRUSIVE OPS, TM#1 DEPARTS FOR IVS-TEST SAT.
- 1700 - EOD

MRS01

FLAGS=15

MD=6

N/C=8

NMRD=1

FLAGS = 245 (MINI-EX=14 2.25 ROCKET MOTORS), 257 (2.25 ROCKET MOTOR), 253 (MINI-EX-TARGET L-I-P), 174 (ROCKET MOTOR), 243 (4) 2.25 ROCKET MOTOR, 242 4 (ROCKET MOTOR), 295 (2) ROCKET MOTORS, 298=N/C, 157=N/C, 159=N/C, 155=N/C, 178=N/C, 260=N/C, 156=N/C, 180=N/C

NOTHING Follows
[Signature]

ASSATEAGUE ISLANDS

TM#1

Pg. 14
15
19 APR 2018

- 0630 - MORNING SAFETY BRIEF BY SUXOS, SO.
WEATHER: HIGH OF 54°, WINDY 50% CHANCE OF RAIN. ALL PERSONNEL PRESENT
- 0645 - TM#1 DEPARTS FOR MRS03
- 0720 - CHECK EQUIPMENT IN NEW IVS-TEST SAT.
- 0725 - BEGIN INTRUSIVE OPS
- 0930 - BREAK
- 1200 - LUNCH
- 1645 - SECURE INTRUSIVE OPS, TEST EQUIPMENT IN IVS-TEST SAT.
- 1650 - DEPART FOR TIRE AIRING STATION AND DEBRIEF
- 1730 - EOD

MRS03

FLAGS=3

MD=0

NMRD=14

N/C=16

FLAGS (154, 42, 127, 104, 132, 149, 137, 133, 136, 103, 98, 102, 138, 157, 158, 35, 159, 130, 95, 106, 105, 124, 45, 162, 44, 94, 125, 107, 96, 43, 161)

SEEDS=1 (#95)

NOTHING Follows
[Signature]

Rite in the Rain.

16 ASSATEAGUE ISLAND TM#1 20 APR, 2018

-0630 - MORNING SAFETY BRIEF BY SUXOS, SO, PARK
RANGER. WEATHER: HIGH OF 51°, HIGH WINDS.
ALL PERSONNEL PRESENT

-0650 - TM#1 DEPART FOR IVS ON MRS03

-0730 - TEST EQUIPMENT IN IVS - TEST SAT

-0745 - BEGIN INTRUSIVE OPS IN MRS03

-0930 - BREAK

-1445 - SECURE INTRUSIVE OPS, TM#1 DEPARTS
FOR MRS03 IVS

-1455 - TEST EQUIPMENT IN IVS - TEST SAT,
DEPART FOR TIRE AIRING STATION

-1530 - EOD, TL TRENT HARVIN DEPARTS SITE.
MRS03

FLAGS = 30

MD = 0

NMRD = 28

SEEDS = 0

N/C = 2

~~NOTHING FOLLOWS
WILL I. A~~

ASSATEAGUE ISLAND TM#1 23 APR 2018

0630 - Morning Safety Brief By SUXOS + SSHO/QC
Weather High 51° Moderate winds

All personnel present

0730 IUS Tests complete all
Inst. ✓ out

0800 Begin Intrusive Digs

07-63 wire 20" Long 4" Deep

07-62 Pipe 6" 4" Left in place

07-61 Metal Flake 3" 4"

60 wire fencing 8" 10" Left in place

59-46 Rebar Left in place per park service

58 No Contact

47 No Contact

46 No Contact

56 Nails wire 6" 24"

57 Metal Plate 30" 18"

55 Rusted wire 6 14

54 Rusted wire 6 12

53 Rusted wire 6 12

52 Rusted wire 6 12

51 Rusted wire 6 8

50 Nothing Found

49 Multiple Nails 3 12

06-215 Bolt 8 14

04 219 Can 8 0

04 218 No Contact

Rite in the Rain.

18 Assateague Island TM #1 23 APR 2018

Continued.	Length	Depth
04-12 Nothing Found		
13 Nails	12	3
14 5 Nails	6	2
10 Lg Chain Left in place	16	24
11 wire	4	0
15 Rebar	12	6
37 Steel chunks	8	12
16 Nothing Found		
17 Abandon due to water		
36 Lg Metal Rod	24	12
35 Metal Bar	12	12
18 Metal Bar	12	12
34 Bolt	8	12
20 Bolt	8	12
19 Metal Bar	10	8
21 Metal Chunk	12	12
1645 Debrief		
1730 END of Day		

NFE

SMB
23 APR 2018

Assateague Island TM #1 24 APR 2018¹⁹

0600 - Morning Safety Briefing		
Weather: Cold windy poss.ble thunderstorms		
0700 IUS Check of Instruments all ✓ out		
0730 Tailgate Safety Brief / Begin Intrusive ops		
1021 Lightning Hold		
Completed Flags:	<u>L</u>	<u>D</u>
05-09 Board w/nails	60"	0"
06 No Contact		
07 No Contact		
08 Bolt	6	8
04-22 Brick	6	12
23 Lg Bolt	10	12
33 No Contact		
24 4x Flat Metal	8	12
25 Metal Bar	14	18
26 Bolt	8	13
32 Bolt	8	6
31 Bolt	10	8
30 5x Nails	4	18
28 No Contact		
29 No Contact		
27 Bolt	8	6
06-38 Board w/nails L.I.P.	54	36
39 Nothing Found		
1051 Resume Work		
1200 Lunch		

Rite in the Rain

Continued

Flags Dug:

B-87 Pipe Left in Place (LIP)

77 Concrete Foundation LIP

86 Concrete Foundation LIP

85 Tile Floor LIP

84 Tile Floor LIP

83 Tile Floor LIP

82 Concrete/Rebar LIP

88 Concrete LIP

129 No Contact

128 Tile/Concrete LIP

92 Tile/Concrete LIP

89 Concrete Pier LIP

153 Concrete LIP

90 Flag Pole LIP

1 Below 4ft

78 Lg Timber LIP

80 Concrete LIP

81 Concrete Pier LIP

75 Reinforced Concrete LIP

74 Reinforced concrete LIP

76 Cable LIP

1700 END OF DAY

NFF

SME

24 APR 2018

0600 Morning Safety Brief

Weather Fog Rain H64 L49

0650 Tailgate Safety Brief

0700 IUS Checks Complete all good

0730 Intrusive Ops Commence

Flags Dug:

✓ 11-41 No Contact

✓ 11-40 No Contact

✓ 12-160 Rebar

✓ B-131 No Contact

✓ 73 No Contact

✓ 108 Metal Fencing

✓ 135 Metal Chunk

✓ 97 No Contact

✓ 93 SEED EA 017

✓ 141 Metal Fencing LIP

✓ 142 No Contact

✓ 143 No Contact

✓ 145 Pipe Left in Place

✓ B113 50' x 50' Grid 16 Hits 15/16s

✓ 07185 Metal Chunk

✓ 187 Board w/nails

✓ 186 SEED EA 015

✓ 08171 Nail

✓ 170 Nail/Bolt

✓ 169 Metal Can

L D

12 18

34 6

6 8

8 8

10 6

24 0

8 10

6 2

4 10

6 12

Rite in the Rain.

22 ASSATEAGUE Island TM #1 25 APR 2018 Cont.

Continued From Previous Page L D

08 172 Bolt 8 12

✓ 174 NO Contact

✓ 173 metal 16 12

1500 Lunch

1530 Resume Intrusive ops

1615 Debrief

1700 END of Day

NFE

[Signature]
25 APR 2018

ASSATEAGUE ISL TM I

26 APR 2018

0600 Morning meeting Safety Brief

0700 Move meal of magazine / IUS ✓ OK

0730 Intrusive ops Begin

Anomalies Investigated L D

07 88 NO Contact

189 Metal Bolt 16 10

70 NO Contact

71 NO Contact

72 NO Contact

69 NO Contact

68 Trash pit Left in Place

176 NO Contact

06 216 Board w/ Nails LIP

198 Bolt 6 10

08 175 Rebar 15 24

168 Board w/ Metal Plate + Bolt 26 8

177 Bolt 12 10

09 180 Board w/ Nails LIP 5

179 Scrap metal 8 8

10 163 Car Part 10 8

164 NO Contact

165 Dutch oven 14 8

166 Abandon due to water

167 NO Contact

9 178 NO Contact

12 156 NO CONTACT

Rite in the Rain

24 ASSA Teague ISL IM #1 26 APR 2018 Continued

1324 Lunch
1400 Begin Intrusive OPS
1650 Debrief
1700 END of Day

NFE

SM
26 APR 2018

ASSA Teague ISL Trt #1 30 APR 2018 25

0600 Morning Safety Brief
0730 IUS Check of all Instruments
0745 Intrusive ops Begin

Anomalies Dug:		L	D
05-07	NO Contact		
08 174	NO ^{Scrap} Contact Plate Metal	9	10
12 154	NO Contact		
B 41	NO Contact		
B 73	SEED EA 014	8	10
B 126	NO Contact		
7 47	NO Contact		
7 48	NO Contact		
7 50	Metal Scrap	4	12

1200 Lunch
1230 Begin Removal of Flags +
Flagging Ribbon
1730 Debrief + END of day

NFE

SM
30 APR 2018

ASSATEAGUE ISLAND RI

FUDS - WORCESTER Co. MD



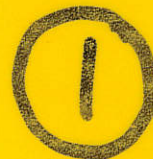
Rite in the Rain®

ALL-WEATHER

FIELD BOOK

Nº 350

FIELD SURVEY



2 ASSATEAGUE ISLAND COORDINATE SYSTEM

SYSTEM UTM
 ZONE 18N
 DATUM NAD83
 ALT MSL
 UNITS M

KEYNET: VSR CMRX
 DECLINATION: -12.88°
 (WEST)

TRIMBLE GEO 7X SEED FILE NAMES
 BSEED 031418 → CURRENT DATE

SEED FILE NAMES MRS01 (03) SEED EA #
 (ENTER AS CODE)

- POINT NAME "7001 +"
- MEASURE FOR 4-5 EPOCHS

POINT CODES:

6000 - 7000 QC / CONTROL POINTS (5 EPOCHS)
 7001 - 8000 SEED POINTS (45 EPOCHS)
~~8001 - 9000~~ MISC (IUS)
 9000 - 9999

RON MORGAN EMAIL: aubieron@gmail.com

3 BLIND SEEDS - ALL VRS

MRS	#	TRAVERSE	DATE
03	015	7	3/27/18
03	Rev01	11	
03	Rev01	BEACH	
03	Rev01	BEACH	
03	016	BEACH	
03	017	DUNES	
01	001A	BEACH	3/29/18
01	002A	"	
01	007A	15B	
01	003A	8	
01	004A	7	
01	006A	9	
01	008A	UNABLE TO LOCATE (SIDE)	
01	005A	" " " "	

* 005 From QC Loc Back 4228722.98 m N
 (CORRECTED) 486175.98 m E

4 29 MAR 18 26.75
THURS DAY 1.95m

0609- SCY ONSITE

0700- TAILGATE MEETING

0736- SET-UP RIO AND GEO 7x

0822- QC CP-R141X (N. MRSOI) (6001)
H 0.005m V 0.007m

0841- QC NORTH BEACH 2 (S. MRSOI) (6002)
H 0.008m V 0.015m

0926- MRSOI SEED REACQUIRE

MRSOI SEED EA 001A (7000)

MRSOI SEED EA 002A (7001)

1004- MRSOI SEED EA 0005 IN SURF
ZONE AND INACCESSIBLE

1044- MRSOI SEED EA 007A (7002)

1102- MRSOI SEED EA 003A (7003)

1116- MRSOI SEED EA 004A (7004)

1137- MRSOI SEED EA 006A (7005)

1240- MRSOI SEED EA 008A - IN SURF

1333- QC ZOLOASIS006 (6003)

H 0.005m V 0.008m

1407- DOWNLOAD DAILY DATA

1520- SCY OFFSITE

SCY

South Pt 0859 LT

5

02 APR 18

(BATHING BRIDGE) 1436 HT

MONDAY

OCEAN 0829 LT

0611- SCY ONSITE

1355 HT

0700- TAILGATE MEETING

0746- SET-UP RIO

- QC ZOLOASIS006 (6004)
H 0.006m V 0.008m

0759- TEAM 03 POINT NOT IN RIO

0822- PT 1104 (TR04) IN ROAD → IN WOODS ON
MAP

↳ USE UXO ASSA FILE

0846- BEGIN TR 04 BEGIN

POINTS: 16, 24, 17, 18, 19, 20, 21, 22

SKIP: 23 (CAMPER)

0855- TR 03 BEGIN

POINTS: 74

0930- TR 05. BEGIN

POINTS: 7 (IN MARSH), 27, 26, 25

1000- TR 06 BEGIN

POINTS: 28, 29, 30, 31, 32, 33, 34, 2, 1

SKIP: 35 (CAMP), 36 (CAMP), 37, 38, 39, 40

1024- TR 07 BEGIN

POINTS 41, 42, 43, 44, 14

SKIP: 72, 73, 71, 80

SCY

Rite in the Rain.

6 1051-BEGIN TROB

POINTS 81, 82, 83, 84, 47, 45, 9

1154-BEGAN DUNE

POINTS 149, 152

1241 TR 13: 88, 87, 101

1312 TR 14: 99, 98, 100, 126, 106, 105, 97

1320 15: 121, 96

1419 - SCY UPDATING IPADS

1528 - 50 MRSOI ANOMALIES FLAGGED

1547 - QC 2010 ASIS 006 (6005)

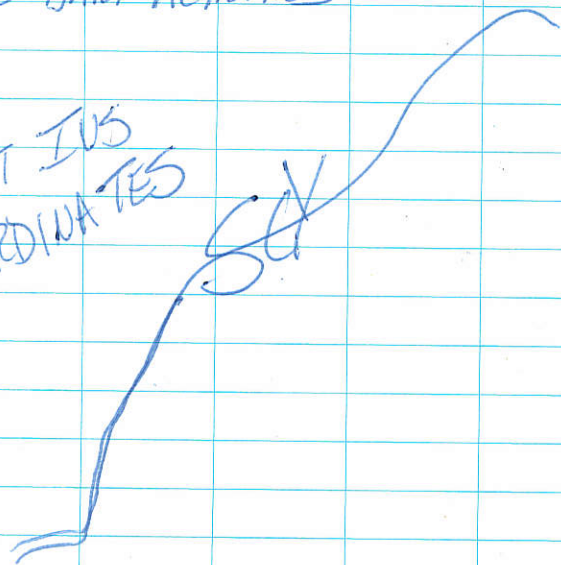
H: 0.005m V: 0.008m

1658- SCY OFFSITE TO BUY FIELD SUPPLIES

1726- @ H-D

1819- END DAILY ACTIVITIES

* GET IUS
COORDINATES



COMPLETE

TR:
4/2

4/3

03	04	05	06	07	08	DUNE	13
74	16	7	28	41	81	149	88
	24	27	29	42	82	152	87
	17	26	30	43	83	158	101
	18	25	31	44	84	194	
	19	78	32	14	47		
	20	10	33	80	45		
	21		34		9		
	22		2				
	23		1				
	75		35				
	77		36				
			37				
			38				
			39				
			40				
			79				
			SKIP				
	23	78	35	72			
	76		36	73			
			37	71			
			38	80			
			39				
			40				
			71				

Rite in the Rain.

MRSO1

COMPLETE

14	15	15b	12	BEACH
99	121	120	89	139 150
98	96	119	113	138 151
100	95	118		140 179
126		117		137
106		116 (Suez)		165
105		93		166
97				164
				148
				170
				145
				172

09	10	11	12	13
48	107	55	130	132
49	108	56	112	131
50	129	59	60	70
8	54	58	61	86
	53	109	62	69
	52	110	15	68
	51	57	85	67
			65	66
			64	

03 APR 2018

TUESDAY

0605 - SCV ON SITE

0630 - TAILGATE SAFETY MEETING

0703 - IPAD TRAINING FOR QC/TZ

0832 - QC CHECK 2010A575006 (6000)

H: 0.005m V: 0.011m

0847 - IVS SURVEY

MRSO1 IVS - 03 APR 17 (9000)

4228740.679m N

486356.633m E

1.220m

0929 - BEGIN TR 15-95,94

TR 15b - 120, 119, 118, 117, 116, 93

*MRSO1-15-93 → OLD METAL SWARE

1002 - TR 12 - 89 (TELEPHONE POLE/WIRE), 113

1026 - BEACH - CENTER

139, 138, 140, 137, 165, 166, 164, 148, 170

145 (METAL PAIL), 172, 150, 151, 179

1211 - TR 07 - 80

1220 - TR 05 - 78, 10 (FAR MARCH)

1236 - TR 06 - 35, 36, 37, 38, 39, 40

1246 - TR 09 - 48, 49, 50, 8

1306 - TR 10 - 107, 108, 129, 54, 53, 52, 51

1411 - CHANGE RIO BATTERY

SA

Rite in the Rain

1413 - QC @ 2010 ASIS 006 (6007)

H: 0.005m V: 0.012m

1440 TR11 - 55, 56, 59, 58, 57, 109, 116, 57

TR12 - 130, 112, 60, 61, 62, 15, 85, 65, 64

TR13 - 132, 131, 70, 86, 69, 68, 67, 66

1651 - QC @ 2010 ASIS 006 (6008)

H: 0.006m V: 0.009m

1732 - SCY OFFSITE

1802 - DAILY IPAD SYNC

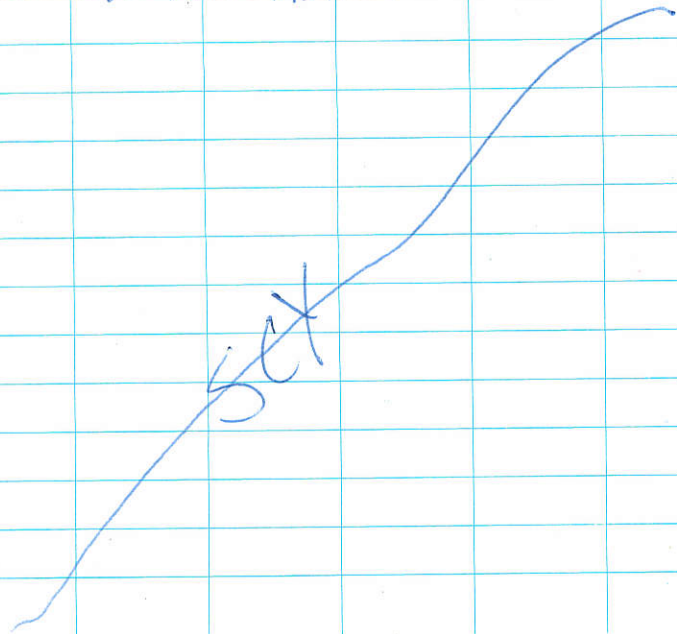
WH004215 40 TEAM LEADER

WH004116 0 QL

1950 - IPAD RECONCILED w/M. DARUV

1955 - REINSTALLING BASEMAPS

1926 - END DAILY ACTIVITIES



COMPLETE		RAY		RAY		RAY	
15	11	10	12	09	08	13	
125	115	5	114	13	12	287	
124	6	127	111 (EMWA)	11 (NEED)	46		
123	3	128	261	"			
122	4		262				
102	92		90				
103	91		263				
104			288				
289			63				
301							
270							
271							
272	290						
273	274						
14	156	HDA-2					
291	264	213 (ROADWALK)					
275	265	198					
276	266	212					
277	267	197					
278	268	214					
279	269	204					
280	94	203					
281		199					
		4700					

04 APRIL 2018

WEDNESDAY

0606 - SEX ON SITE

0630 - DAILY TAILGATE MEETING

0650 - QC 2010 ASISCOG (6009)

H: 0.006m V: 0.009m

0735 - TR 15-125, 124, 123, 122, 102, 103, 104

TR 11-115, 6, 3, 4, 92, 91 289

TR 10-5, 127, 128 391

TR 12-114, 261, 262, 90, 263, 288. 276

TR 09-13, 11 277

08-12 272

13-287 273

14-291 (IN ASPHALT-OFFSET 2'E)

275, 276, 278, 279, 280, 281

290, 274 ←

1150 - LUNCH ON SITE

1220 - TR 156: 264, 265, 266, 267, 268, 269

1238 - QC CHECK 2010 ASISCOG (6010)

H: 0.006m V: 0.009m

1256 - HDA #2: 213, 198, 212, 197, 214, 204, 203, 199

1340 - TR 04: 23

1403 - TR 10: 107, 108

1536 - TR 4: (75, 77) → Dig

SKIP 76

MISSING on 7 (80, 71, 72, 73)

TR 9 CHECK 81

TRANSECT #	TOTAL DIGS	4/4 TETAS
✓ 3	1	1
✓ 4	12	9+12
✓ 5	6	6
✓ 6	16	15+16
7	9	6
✓ 8	9	8+9
✓ 9	6	6
✓ 10	10	10
✓ 11	13	13
✓ 12	19	18+19
✓ 13	12	12
✓ 14	15	15
✓ 15/156	31	30+31

1603 - TR 12: (63) → Dig
 TR 06: (79, 37, 38, 39, 40) → Dig

REMAINING DIGS: TR 12-63 TR 04-75
 TR 06-79 77
 " 37
 " 38
 " 39
 " 40

Rite in the Rain.

REMAINING TR DIGS TO FLAG

TR04-76

TR11-57

TR07-71

" 72

" 73

1637- QC 2010ASIS006 (6011)

H: 0.009m Vi 0.014m

~~1638- SCY~~

1715- SCY OFFSITE

1748- DAILY IPAD SYNC

WH004215 38 TEAM LEADER

WH004116 19 QC

1812- SYNC COMPLETE

SCY

05 APRIL 2018

THURSDAY

0600- SCY ONSITE

0632- TAILGATE MEETING

QC 2010ASIS006 (6012)

H: 0.006m Vi 0.008m

0750- BEGIN HDA #2

0946 - COMPLETE STAKE-OUT IN HDA #2

HDA #2

201 215

188 191

183 189

184 193

185 195

207 196

206 200

190 210

196 209

187

211

202

205

192

208

(156) - SURF
→ RESET

SKIPPED

Rite in the Rain

16 1126 SCY AND JT OFFSITE TO GET TAX
FORMS

1232- ONSITE

1244- LUNCH ONSITE

1349- SYNCING IPAD WHODANG (QC)

1410- REMOVED AND REINSTALLED BASEMAP
ON IPAD 4116

- ALL DATA INTACT w/ DATA LABELED

1439- QC NORTH BEACH 2 (6013)

H: 0.008m V: 0.019m

1530- CONVERTING MRSC1 SEED LOCATIONS
TO LAT/LONG

001	38.204525	-75.15148
002	38.206017	-75.150599
003	38.206351	-75.157888
004	38.208543	-75.157114
005	38.206357	-75.157897
006	38.210186	-75.154293
007	38.211433	-75.149963
008	38.208062	-75.149038

VERIFY NAME
↓

* 005 IN TR08/003 IN OCEAN

1637 IPAD SYNC

4215

41

TEAM LEADER

4116

10

QC

1740- SCY OFFSITE

17

1853- REMOVED AND BEGAN
NEW MAP DOWNLOAD

1920- DOWNLOAD COMPLETE - END
DAILY ACTIVITY

SCY

Rite in the Rain.

06 APRIL 2018

FRIDAY

0620 - SCV ONSITE

0628 - TAILGATE MEETING

0650 - QC RIHIX (6014)

H: 0.005m V: 0.008m

0659 - BEGAN BEACH POINTS IN N. MRSOI

NE MRSOI - BEACH (B-SERIES)

MAY BE
15-121

8167.	133.	147.	✓ 141.	DATA IN BAD
169.	175.	161.	171.	
168.	134.	162.	163.	
177.	142.	160.	143.	
176.	135.	146.		

1016 - SCV SET-UP 2 SETS OF AUTO TIRE

DEFLATORS @ OSV

1120 - QC 2010 ASIS006 (6015)

H 0.006m V 0.009m

1655 - DAILY IPAD SYNC

WH004116	12	(Q)
WH004215	21	(TEAM 1)

1715 - END DAILY ACTIVITIES

SCV

09 APRIL 2018

MONDAY

0623 - SCV ONSITE

0630 - TAILGATE MEETING

0700 - QL 2010 ASIS006 (6016)

H: 0.006m V: 0.009m

0720 - BEGAN NEW MRSOI POINT

0723 - TR04: ~~1105~~ BEGIN

0731 - TR05 BEGIN

04	05	06	07	08	10
1105	1116	1128	999 1290	1153	1161
1109	1120	1124	1139 1293	1159	
1113	1121	1130	1141 71		
1114	1123		1143 72		
1115	1126		1144 73		

0755 - TR06 BEGIN

0815 - TR07 BEGIN

* (1134) → IN ROAD - OFFSET FLAG
6 FT N

0840 - TR08 BEGIN

0908 - TR10 BEGIN

0915 - TR11 BEGIN (1177 → FRONT END LOADER ~ 4')

0932 - TR12 BEGIN

0950 - TR13 BEGIN

11	12	13
1168	1183	1192
1169	1187	1194
1170	1188	
1177	1189	

1110 - ENTERED GRID CENTER POINTS TO RIO

1125 - STAKED GRID CENTER-POINTS w/ORANGE STAKES

• MRSOI-B-61 (9001)

• MRSOI-B-62 (9002)

1220 - QC COMPLETED DIG VS. STAKEOUT TABLE

TR-03-74 } WRONG POSITION ON MAP
TR-09-48 }

1400 - QC 2010 ASIS006 (6017)

H: 0.007m V: 0.015m

1446 - SCY OFFSITE - END FIELD ACTIVITIES

1729 - DAILY IPAD SYNC

WH004215 42 TEAM 1

WH004116 9 QC

1751 - END DAILY ACTIVITIES

~~SCY~~

10 APRIL 2018

TUESDAY

0630 - SCY ON SITE

0631 - TANGATE MEETING

0701 - QC 2010 ASIS006 (6018)

H: 0.007m V: 0.009m

0750 - BEGAN STAKING CMUA

CMUA

219	244	295	256	250	228
221	259	293	296	249	294
239	247	248	258	247	235
224	284	255	286	231	216
229	292	254	251	300	236

223	257	237
220	253	234
230	245	
252	232	
173	218	

1011 - RELOCATED TRCS-07

1043 - CHECKING STATES ON TR14

275 - ND

278 - ND

276 - ND

277 - ND

TR15-289-DUG?

NOT BENT

1/35- REMAINING HDZ POINTS

B-180 (S, HDZ)

B-181 } ACCESS FROM SNACK SHACK

B-182 } " " " "

B-302 " " " "

1219- SURF POINTS

B-180 } HDZ

B-156 }

1340- QC 2010ASIS006 (2019)

H: 0.005m V: 0.012m

1445- SCY OFFSITE- END FIELD ACTIVITIES

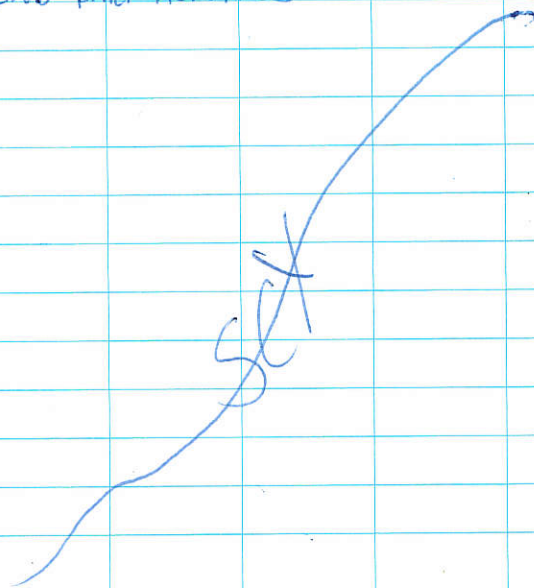
1600 - FORMATING DAILY QC/PROGRESS TABLE

1758- DAILY IPAD SYNC

WH004215 38 (TEAM 1)

WH004116 15 (QC)

1813 - END DAILY ACTIVITIES



11 APRIL 2018

WEDNESDAY

0605- SCY ONSITE

0630- TAILGATE MEETING

0718- QC 2010ASIS006 (6020)

H: 0.006m V: 0.007m

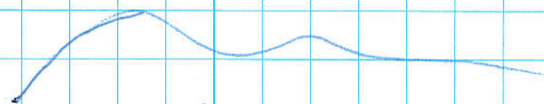
0736- BEGIN REMAINING HZ STAKEOUT

HDZ

302

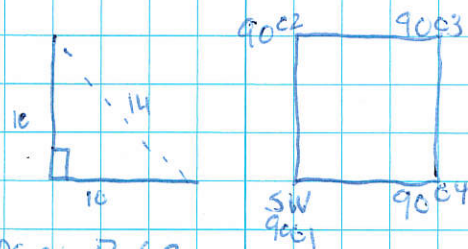
182

181



0838 - SET-UP MRS01-B-G1

50 X 50 GRID



0846- MRS01-B-G2

SW 9001

NW 9002

NE 9003

SE 9004

NO OBS METAL
OBJECTS

0954 - MRS01-B-G2

- 50x50 GRID - SHIFTED 29' NE
DUE TO SURFACE DEBRIS

- GRID ORIENTED - 23° FROM N

SW	9005	NW 9006	NE 9007
NW	9006	9009	
NE	9007		
SE	9008	SW 9005	SE 9008
REV_CP	9009		

1053 - BEGAN STAKING REMAINING CMVA

CMVA			
144	240	246	SURE
153	241	217	157
154	242	222 (SURFACE METAL)	180
174	243	227	156
136	238	226	260
			298
226	282		178
233			155
299			159
295 (SZ EDGE)			
283			

1236 LUNCH ON SITE

SA

1342-QC 2010 ASTISCOG (6021)

H: 0.009m V: 0.019m

1359-RECHECK B-159 (MISSING FROM QC TABLE) - SURE

1405-REPLACED B-220 FLAG

1416-SCY REMOVED FLAGGING TAPE + PIN FLAGS FROM CAMPING AREAS

1458-PHONE CONFERENCE TO 1526
NO HOURS

1540-LOADED MRS03 POINTS TO R10

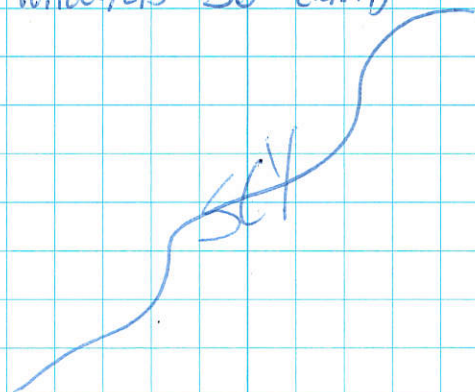
1610-DEFLATE & RETRIEVE METAL FROM CMVA BEACH AREA

1716-QC 2010 ASTISCOG (6022)
H: 0.009m V: 0.017m

1747-SCY OFFSITE

1820-DAILY IPAD SYNC

WH004116 22 (QC)
WH004215 36 (TEAM)



12
10 APRIL 2018

THURSDAY

0608- SCY ONSITE

0632- TAILGATE MEETING

- SCY/JC TO MRS03 FOR
FLAGGING

- Focus ON DUNES/TRII

- Avoid DENSE WOODS & OPEN
BEACH* Piping Plover, LEAST TERN,
OYSTERCATCHER

0706- DEFLATE @ OSV

0729- WAIT FOR NPS @ OSV

0826- @ MRS03 MAGAZINE - UNLOAD FROM

0840- NEAREST CP → GPS-13 (39)

@ 326m N IN RESTRICTED ZONE

0853- W/NPS - WALKING TO GPS-13 FOR
RECON

0902- QC CP-GPS-13 (6000)

- P @ N END OF MRS03

H: 0.006m V: 0.009m

0937- QC 2010 ASI SC09 (6001)

(VALENTINE ROAD)

H: 0.005m V: 0.008m

0950- BEGAN MRS03 STAKEOUT

~~SCY~~

11	B (VAL)				12
155	141	147	133	130	161
43	143	146	134	135	160
42	142	139	131	138	159
41	145	140	132	(33)	157
40	144	102	104	(Post w/ RAIL)	158
(5)	93 (SEED)	98	127		156
	99	103	108		(6)
	100	137	126		
	101	149	96		
	148	136	107		

1410- QC 2010 ASI SC09 (6002)

H: 0.009m V: 0.021m

1449- @ OSV - OUT OF MRS03

1517- PICK UP MD/SCRAP FROM MRS01
BEACH DIGS

1545- UNLOAD MD @ BOWEN RD

1617- DAILY IPAD SYNC

WH004215 (39) TEAM 1

WH004116 (0) QC

1637- RE INFLATE TIRES @ OSV

1720- COMPLETE IPAD DOWNLOAD

1737- SCY OFFSITE

Rite in the Rain

13 APRIL 2013

FRIDAY

0607-SCY ONSITE

0626-TARGET MEETING

0724-QL NORTH BEACH 2 (6023)

H: 0.006m V: 0.009m

0732-BEGAN MRSOI-B-G1

- POINT SERIES FOR ANOMALIES

FROM M/F 9010 - ~~9104~~ 9110
SW

0822-END G2 FLAG/SURVEY (100 PTS)

0826-BEGAN MRSOI-B-G1

- POINT SERIES FOR ANOMALIES

FROM M/F 9111 (SW) - 9285 (SE)

- 174 PTS

0950-END G1 FLAG/SURVEY

0955-BEGAN DIGGING ON G2 FLAGS

1133-COMPLETED DIGGING ON G2

→ ALL NMED

1138-SCY REMOVED MRSOI BOUNDARY FLAGS

1146-REMOVED ALL FLAGS FROM G1

- WILL REACQUIRE ON MONDAY A/H IF
NEEDED

1221-DAILY IPAD SYNC

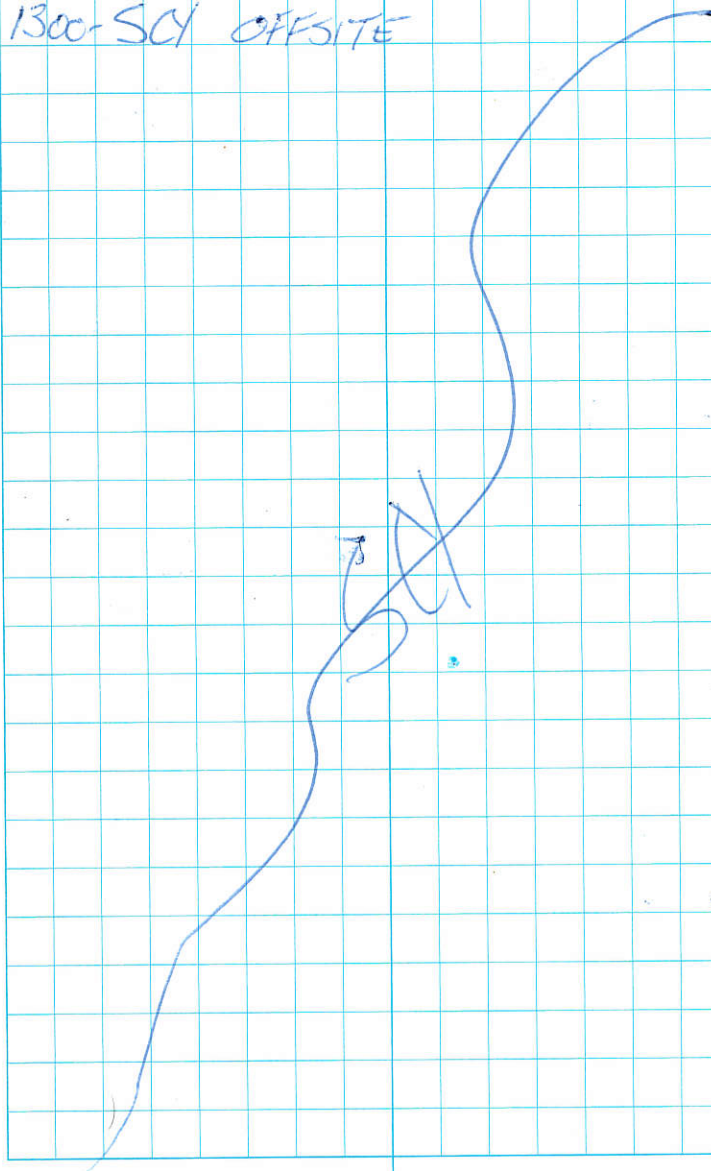
WH004215: 6 (TEAM 1)

WH004116: 0 (OC)

1227-QL 2010ASTIS006 (6024)

H: 0.006 V: 0.009

1300-SCY OFFSITE



Rite in the Rain.

16 APRIL 2018

MONDAY

* HEAVY RAINS/T-STORMS

0612-SCY ONSITE

0637-TAILGATE MEETING

-STAND BY UNTIL STORMS SUBSIDE

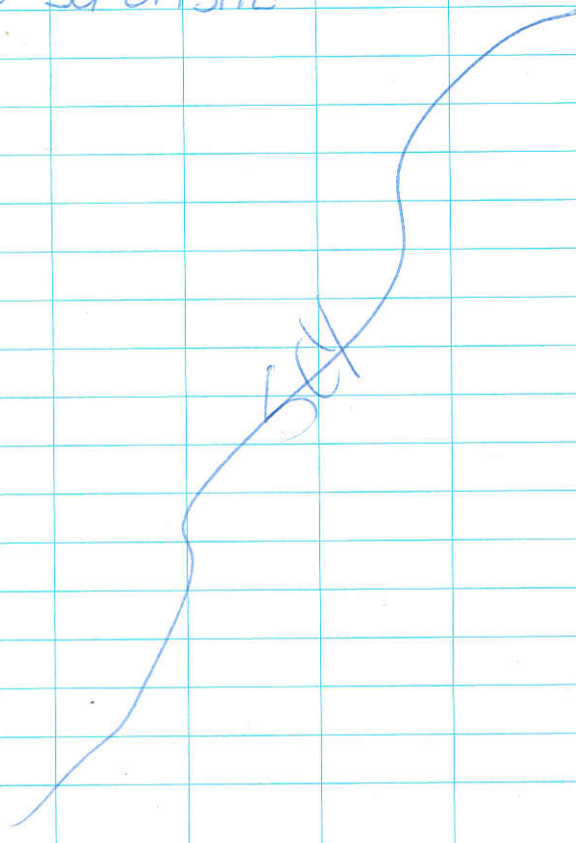
0756-DOWNLOADING & REFORMATTING

WH004215 FOR MRS03

1027-DOE TO HIGH WINDS-NO FURTHER

4/16 FIELD ACTIVITIES

1042-SCY OFFSITE



17 APRIL 2018

TUESDAY

0602-SCY ONSITE

0633-TAILGATE MEETING

0710-@ OSV

0806-@ MAGAZINE

0823-QC CP-GPS-13 (6003)

H: 0.006m V: 0.009m

0836-BEGAN REACH STAKEOUT-N. MRS03

REACH (N. MRS03)				SURF-NOT ACCESSIBLE
113 ✓	✓122 (N. SURF)	✓123 (SURF)	✓109	182
112 ✓	✓120	✓114	✓3	183
5 ✓	✓117	183 ✓	✓118 (BOARD W/ WAIL)	✓119
4 ✓	✓116	182 ✓	✓111	(20)
121 ✓	✓115	✓110		

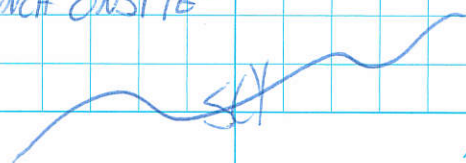
* RESTAKE 11-42

1013-QC 2010ASIS009 (6004)

H: 0.007 V: 0.011

1044-BEGIN STAKEOUT ON TROG 4

1225-LUNCH ONSITE



64	NUT ACCESSIBLE	BEACH
✓37	15	21
✓14	13	1501
✓16	10	151 ✓
✓17	11	181 ✓
✓36	12	152 ✓
✓18		73 (seed) ✓
✓35		184 ✓
✓34		91 ✓
✓19		
✓20		
✓21		
✓22		
✓33		
✓23		
✓24		
✓25		
✓26		
✓32		
✓31		
✓30		
✓29		
✓28		
22		
✓27		

Go BACK TO
B-97

1300 - CONVERTING MRSOS SEEDS TO LAT/LONG

	SEED	LAT	LONG
	015	010A	001
B-2	009A	38.08216	-75.203206
B-155	010A	38.0821639	-75.205007
B-119	011A	38.083373	-75.202242
B-736	015	38.082279	-75.209202
B-181	016	38.080155	-75.204057
B-93	017	38.082755	-75.203632
B-95	012	38.069968	-75.212065
B-123	013	38.099324	-75.192198
(B-173)	014	38.075826	-75.207475

1440 - QC 2010 ASIS 009 (6005)
H: 0.007m V: 0.013m

* ADD B-90 BACK TO TABLET
(ACCIDENTALLY DELETED)

1541 - DAILY IPAD SYNC
WH004215 39 (TEAM LEADER)
WH004116 19 (QC)

1726 - SKY OFFSITE

1801 - RE-DOWNLOAD WH004215 BASEMAP

* MAP WILL NOT RESET TEAM #1/3

1910 - END DAILY ACTIVITIES

4/13/13

WEDNESDAY

0607-SCY ONSITE

0650-TAILGATE MEETING

- EXCAVATION SAFETY FOR B-253

- DUNE EXCAVATION

- SURF POINTS IN P.M.

0713-MR501-REFLAGS ON BEACH/DUNES

247 - FLAG STILL IN PLACE

249 - FLAG STILL IN PLACE

231 - FLAG STILL IN PLACE

0756-QL 2010ASTS006 (6025)

H: 0.004m V: 0.007m

0830-* POSSIBLE 20MM ON SURFACE @ B-249

0913-POINTS TO REACQUIRE IN MR501

264 (B-137) RESOLVED

267 (B-140) RESOLVED

(B-105) MISSING RESOLVED

B-245 }

B-242 } BEACH REACQUIRE

B-243 }

1022-REACQUIRED B-245

1025- " B-242

1029- " B-243

* SURF ZONE POINTS

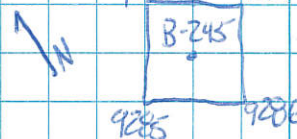
157, 180, 156, 260, 298, 178, 155, 159

1048-SURVEYED BOUNDARY OF POT.

DSP. PIT @ MR501-B-245

-POINTS 9285-9288

9288 9287



1132-RELOADED ARC COLLECTOR APP ON WH004215

1150-RELOADED MAPS ON WH004215

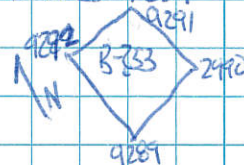
-ALL DATA INTACT

1206-LUNCH ONSITE

1232-SURVEYED BOUNDARY OF TARGET PIT

@ MR501-B-253

-POINTS 9289-9292



1242-BEGAN MR501 SURFZONE MARKOUT

SURF	
157	260
155	178
159	156
298	180

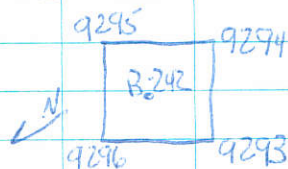
} HD 2

1335- RIO BATTERY CHANGE
1345-QC 2010ASTIS006 (6026)

H: 0.006m V: 0.013m

1355- SCY AIR DOWN AND DRIVE TO MRSOI
BEACH FOR DEBRIS CLEAN UP

1410- SURVEYED BOUNDARY OF POTENTIAL
PIT @ MRSOI-R-242-PIT
POINTS 9293-9296



1513- COMPLETED SURF ZONE STAKEOUT

1610-SCY @ OSU TO REMEDIATE

1629-QC 2010ASTIS006 (6027) 0005/0011

1640- @ BUNKYARD TO UNLOAD MD

1740-SCY OFFSITE

1925- DAILY IPAD SYNC

WH004116:15 (QC)

WH004215:0 (TEAM 1)

* IPAD DATA LOSS - CONTACTED
MIDARUN



19 APRIL 2018

THURSDAY

0610-SCY ONSITE

0633- TAILGATE MEETING

0658- @ OSU TO DEBATE

0740- QC 2010ASTIS009 (6006)

H: 0.007m V: 0.011m

0816- BEGAN MRO3 DUNE REACQUIRE

11	BEACH/DUNES	10	9	8
154	95 (SEED) 94	162	178	177
45	106			
44	105			
	124			
	125			

7	5	6			
217	190	191	196	201	206
		192	197	202	207
		193	198	203	208
		194	199	204	209
		195	200	205	210

1254- SYNC IPAD 4/16 - 16 ITEMS

1429- QC GP-GPS-15 (6007)

H: 0.010m V: 0.016m

211
212
213
214



1610 - QC GPS-15 (6009)

H: 0.007m V: 0.014m

1715 - @ OSV - REINFLATE

1742 - SCY OFFSITE

1801 - CREATED "TEST POINT" ON WH004215

→ TEST SYNC ON HOTEL WIFI

→ SUCCESSFUL

1806 - ADDING MRS03 MAPS TO WH004215

→ SUCCESSFUL

1810 - TEST SYNC ON HOTEL WIFI ON WH004116

→ FAILED

1817 - ADDING MRS03 MAPS TO WH004116

→ SUCCESSFUL

1822 - END DAILY ACTIVITIES



~~Download AND EMAIL MRS 01
PIT GPS POINTS FOR M.O.~~

20 APRIL 2018

FRIDAY

0610 - SCY ONSITE

0636 - TAILGATE MEETING

0655 - @ OSV

0741 - QC GPS-15 (6009)

H: 0.006m V: 0.010m

0811 - BEGAN TRO7

7			6	4
67	62	71	215	218
66	61	72	216	219
65	60			
64	59	* REBAR		
63	46	POUT REMOVED		
			10	9
58	*55	50	163	179
* 47	(PCR SAT SUEP LADGE AREA)	*54	49	
* 48		*53	68	
* 57		*52	69	
* 56		*51	70	

1126 - QC 2010 ASIS009 (6019)
H: 0.008m V: 0.011m

1310 - QC 182-183 - NOT ON MAP
- HAUD ENTER
4/20 YES - CLEARED

1430 - SCY @ OUS
1500 - SCY OFFSITE

21 APRIL

DAILY / PAD SWC

WH004116 16 (QC)

WH004215 30 (TEAM LEADER)

→ No ISSUES

SCY

23 APRIL 2018

Monday

0615 - TAILGATE MEETING

0706 - QC & SCY Took PICTURE OF
20mm @ MRS1-B-249-20mm (9298)

0810 - @ OSV

0916 - QC 2010 ASIS009 (6011)
H: 0.005m V: 0.009m

1010 - NEW TEAM LEADER IPAD TRAINING

* B-113 - REACQUIRE

1112 - RESUME R/A

6	5	4	7	9
39	9 (HAR)	10 (T2)	185	180
38	8	13 (T2)	186 (SEEN)	
	7	12 (T2)	187 (HARD LUNGS)	
	6	11 (T2)	188	
		15 (T2)	189	

1401 - QC 2010 ASIS009 (6012)
H: 0.006m V: 0.010m

8

172	174	176 (INSUR CHAIR)	170	168
173	175	171	169	

1526- QC COMPLETED DIGS w/ R/A

TABLE

1618- QC 2010 ASTIS 009 (6013)

H: 0.010m V: 0.022m

* 04-34 - POINT MOVED - NEEDS
REPLACED ON IPADS

1716- SCY @ OSV

1812- DAVID / PAD SYNC

WH004215 36 (TEAM1)

WH004116 6 (QC)

→ No Issues

* Per M. McGuire

- RECHECK PTS B-175, 176, 180

AS MAG/DIG

- REACQUIRE

- CHECK AREA OF PREV. MD FIND

N: 4217919.6

E: 483548.9 (9000)

(MRS03-PREV MD)

SA

24 APRIL 2015

TUESDAY

0620- TAILGATE MEETING

- LIGHTENING, TICKS, BEACH DRIVING

0653- SCY @ OSV

0733- QC GPS-15 (6014)

H: 0.006m V: 0.011m

0751- BEGAN GREEN RUN R/A

B (GREEN RUN)					B
86	85	80	75	129	97
87	84	79	74	153	
88	83	78	1	(22)	
89	82	77	92		
90	81	76	128		

0946- R/A B-113 - N. EDGE OF MRS03

BEACH @ Km POST 25

1000- FLAGGED PREV. MRS03 MD FIND

- ORANGE FLAG @ MAGAZINE LOCATION
IN N. MRS03

1028- LIGHTENING SHUTDOWN

1051- END LIGHTENING SHUTDOWN

1056- QC IPAD DATA VS. PROGRESS
MAP

POINTS (DUNES/BEACH) DUES REMAINING (FLAGGED)

B-73- B-135- B-97-
 B-108- B-93-
 B-131- B-141-
 12-160- B-142-
 11-41- B-143-
 11-40- B-145-

(12)

1127- POINT MRS03-B-90 NOT IN IPAD
 - MARKOUT W/RID AND CREATED NEW
 POINT

1225- LUNCH ONSITE

1311- QC GRS-15

H: 0.009m V: 0.018m

1439- DUE TO HIGH TIDE/SURF - END

DAILY ACTIVITIES

1526 SCY @ OSU

1550 SCY OFFSITE

1629 DAILY IPAD SYNC

WH004116:13 (QC)

WH004215:40 (TEAM LEADER)

→ NO ISSUES

25 APRIL 2018

WEDNESDAY

0600 - TAILGATE MEETING

- LIGHTNING

- HIGH SURF

0648 - @ OSU

0731- UNLOCK VALENTINE & GR. PUN GATES

0748- QC GRS-15 (6016)

H: 0.006m V: 0.011m

0759- BEGAN R/A MISSING POINTS

FROM DUNES/BEACHES @ MRS03

SCY

B-11-40 - FLAG IN PLACE / NOT BENT

PUN 11-40 - FLAG IN PLACE / NOT BENT

PUN 12-160 - FLAG IN PLACE / NOT BENT

PUN B-131 - FLAG IN PLACE / NOT BENT

B-73 - BEACH - FLAG MISSING - RENACED

PUN B-108 - FLAG IN PLACE / NOT BENT

B-135 - FLAG BENT

B-93 - FLAG IN PLACE / NOT BENT (SEED 017)

B-141 - FLAG IN PLACE / NOT BENT

B-142 - FLAG IN PLACE / NOT BENT

B-143 - FLAG IN PLACE / NOT BENT

B-145 - FLAG IN PLACE / NOT BENT

1020-RESUME R/A ON TR10

10

164

165

166

167

* HISTORICAL MD (ROCKET MOTOR) LOCATIONS
ROCKET MOTOR #21

N: 4214799.2893

E: 481728.1569

→ POINT ID MRS03-MD-G1 (9001)

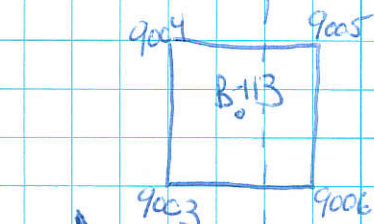
ROCKET MOTOR #22 (N. MRS03-NEAR MAG)

N: 4217919.5762

E: 483548.9574

→ POINT ID MRS03-MD-G2 (9002)

1036- ENTERED IN RIO

1106- SCY MET JC TO EVALUATE B-113 AND G2
GRID LOCATIONS- B-113 - NEST AREA N - 50 FT GRID
CENTERED @ 113 IS OK- G2 - NO NEST IMPACT - 50 FT GRID
CENTERED @ G2 IS OK1123- SCY LAID OUT MRS03-B-113-G3 (50x50)
GRIDMRS03-~~MD~~-113-G3

9003 - E

9004 - N

9005 - W

9006 - S

MAG/FLAG SERIES

9007-9022

-23 ANOMALIES

1342-MARKED CENTERPOINT OF MRS03-MD-G1

1415- QC GB-15 (6017)

H: 0.005 m V: 0.009 m

1613- @ OSV

1738-DAILY IPAD SYNC

WH004116 6 (QC)

WH004215 1 (TEAM 1)

→ FULL FILE COPIED TO GKS
DIRECTORY

26 APRIL 2018

THURSDAY

0602- TAILGATE MEETING

- BUGS

- SUN EXPOSURE

- OSV SPEED < 25

0639- @ OSV

0721- @ MRS03 MAGAZINE

- Break Down FENCE &

REMOVED GROUNDING RODS

0824- @ OSV

0837- UNLOAD FENCE @ BONEYARD

0839- IPAD SYNC FROM 4/26

WH004215: 32 (TEAM 1)

0850- @ OSV

0941- UNLOCK GREEN RUN/VALENTINE GATES

1000- LOAD UP MRS03 MD DROM

1045- DOWNLOADED ALL FILES FROM MRS01 & MRS03
FROM THE RIO

1350- ALL DIGS @ MRS03 COMPLETE

1358- QC CHECK TABLE VS. IPAD

→ ALL POINTS COMPLETE

1459- SYX @ OSV

1600- SYX OFF SITE

1449- DAVE IPAD SYNC

WH004215 12 (TEAM 1)

WH004116 0 (CC)

~~SYX~~

30 APRIL 2018

MONDAY

0635- TAILGATE MEETING

- REACQUIRE B-73

0651- @ OSV

0739- QC GPS-15

(CCIE)

H: 0.105m V: 0.009m

- REACQUIRED B-73

0829- REMOVED FLAGS & TAPE FROM

MRS03-TR04-08 FROM GREEN

RUN SCOTH

* CHECK ON SEED 014 POINT 10
FOR MRS03

1040- SEED 014 @ B-73

1155- LUNCH ON SITE

1351- SURVEY FORMER ROAD B TN

MRS03-TR08/09

- RIO POINTS

"MRS03-ROAD"

(9023-9041)

1422- SURVEY GROUNDWATERS AROUND

ROAD GRID

"MRS03-ROAD-GRID" (9042-9047)

1445- SYX REMOVED FLAGS/FLAGGING ON

S. TR09-10 AND S. PENINSULA

1519- QC GPS-15

(6019)

H: 0.007m

V: 0.014m

Rite in the Rain.

1639 SCY @ BUNKER

1652 - LOAD SUPPLIES FOR WAREHOUSE

1726 - SCY OFFSITE

1920 - DAILY IPAD SYNC

WH004116

7

(QC)

WH004215

8

(TEAM 1)

APPENDIX A-4: Blind Seed Tracking Log

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Table A.4 Blind Seed Tracking Log

MRS	Seed ID	Number of Seeds Placed	Depth (inches)	Orientation	Date Placed	Date Recovered	X_UTM	Y_UTM
MRS 01	EA001	1	8	East to West	3/7/2018	4/5/2018	486737.4499	4228518.675
MRS 01	EA002	1	12	East to West	3/8/2018	4/11/2018	486814.8844	4228684.159
MRS 01	EA003	1	10	East to West	3/8/2018	4/11/2018	486176.7675	4228722.231
MRS 01	EA004	1	12	East to West	3/9/2018	4/2/2018	486244.9196	4228965.399
MRS 01	EA005	1	11	North to South	3/12/2018	4/2/2018	486863.2755	4229013.066
MRS 01	EA006	1	16	East to West	3/12/2018	4/9/2018	486492.2537	4229147.316
MRS 01	EA007	1	11	East to West	3/14/2018	4/3/2018	486871.515	4229284.959
MRS 03	EA008	1	14	East to West	3/14/2018	Not recovered due to being swept out to sea.	486951.9583	4228910.792
MRS 03	EA009	1	11	East to West	3/16/2018	4/17/2018	482178.9924	4214950.43
MRS 03	EA010	1	12	North to South	3/19/2018	4/17/2018	482021.1375	4215017.159
MRS 03	EA011	1	12	East to West	3/19/2018	4/17/2018	482263.847	4215084.8
MRS 03	EA012	1	11	East to West	3/23/2018	4/19/2018	481398.9208	4213599.352
MRS 03	EA013	1	14	North to South	3/23/2018	4/17/2018	483148.294	4216852.793
MRS 03	EA014	1	13	East to West	3/24/2018	4/30/2018	481802.9792	4214248.449
MRS 03	EA015	1	10	East to West	3/27/2018	4/25/2018	481653.1454	4214964.792
MRS 03	EA016	1	8	North to South	3/27/2018	4/17/2018	482103.8247	4214728.077
MRS 03	EA017	1	10	East to West	3/27/2018	4/25/2018	482141.7105	4215016.486

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APPENDIX A-5: USACE 948

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U.S. Army Corps of Engineers Baltimore District Ordnance and Explosives Safety QAR		
EA Engineering Science and Technology	DATE: 30 April 2018	TIME: 1100
Contract Number:	Project Location: Assateague Island National Park	
Delivery Order Number:		
DOCUMENT #: 1		
SUBJECT ITEMS (CHECK ALL THAT APPLY) <input type="checkbox"/> Work Plan <input checked="" type="checkbox"/> Quality Assurance <input type="checkbox"/> Safety Violation <input type="checkbox"/> Other: Quality Control <input type="checkbox"/> Safety Comments		
DESCRIPTION: The Government concurs with the information provided in the EA SUXOS Daily Report # 72 dtd 26 April 2018 Field work of MRS1 and MRS3 were completed on 30 April 2018. NAB OESS Ricky Whitten visited the site on 26 April 2018 to conduct Quality Assurance (QA) checks on the area. He reported no deficiencies or issues with the site. Mr. Whitten walked the transects and conducted QA of the areas that were geophysical mapped using both Schonstedt ferrous metal detector and a Vallons all metals detector to conduct the QA. No MPPEH/MEC or evidence of MPPEH/MEC were recovered during this QA inspection. All areas in both MRS's are deemed acceptable and accepted by the Government. The project was completed earlier than expected. The team on sight did an outstanding job. The project had many challenges and the EA team met them all and completed a very challenging task.		
<input type="checkbox"/> Prompt correction or compliance with contract specifications is requested <div style="text-align: center;">  Brian T. Steelman, CENAB OESS USACE Site Representative </div>		
RECEIPT ACKNOWLEDGED: Ron Morgan, UXOQCS		

Contractor's Representative

ACTION TAKEN:

**CENAB FORM 948
1 April 2003**

Appendix B - Photographic Log

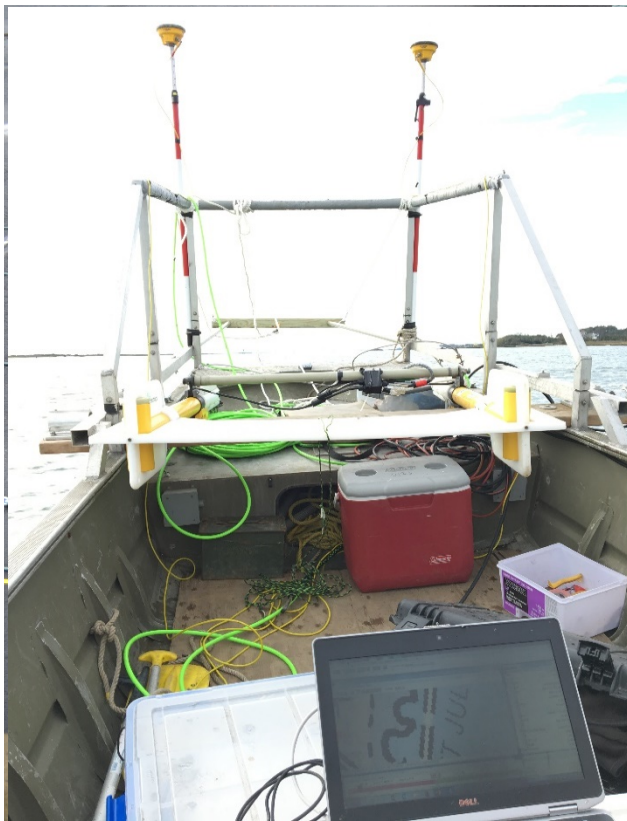
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MRS 01/03 – Water IVS Items prior to placement



MRS 01/03 – Water DGM collecting data on the IVS



MRS 01/03 – Shallow Water DGM system on boat and in water set for collecting data



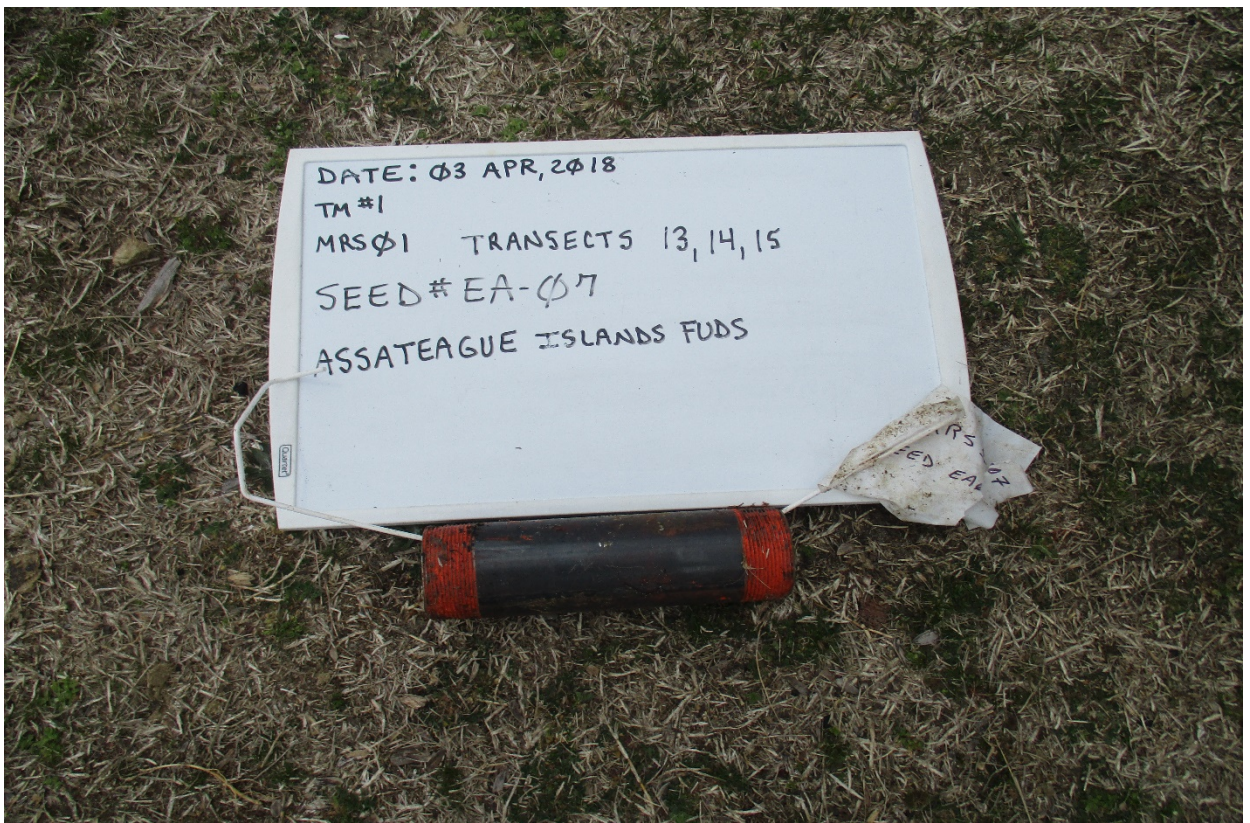
MRS 01 – Water DGM (back bay) collecting data (typical)



MRS 01/03 – Deep Water DGM system being prepared and in water set for collecting data



MRS 01 – Water DGM Ocean collecting data (typical)



MRS 01 – Land DGM example of blind seed



MRS 01 – Land Based DGM on the beaches of MRS 01



MRS 01 – Land DGM being conducted along low tide area and along the beach (typical)



MRS 01 – Land Based DGM in the marshes and on the dunes of MRS 01 (typical)



MRS 01 – Land DGM example of DGM being collected by cart (typical)



MRS 01 – Surf zone in MRS 01



MRS 01 – 20mm at surface in background near B-249 (flag in the foreground) – Facing West



MRS 01 – 20mm at surface near B-249



MRS 01 – Campground Intrusive Investigation – Facing East



MRS 01 – Back Bay/Marsh Intrusive Investigation – Facing North



MRS 03 – Beach Intrusive Investigation – Facing East



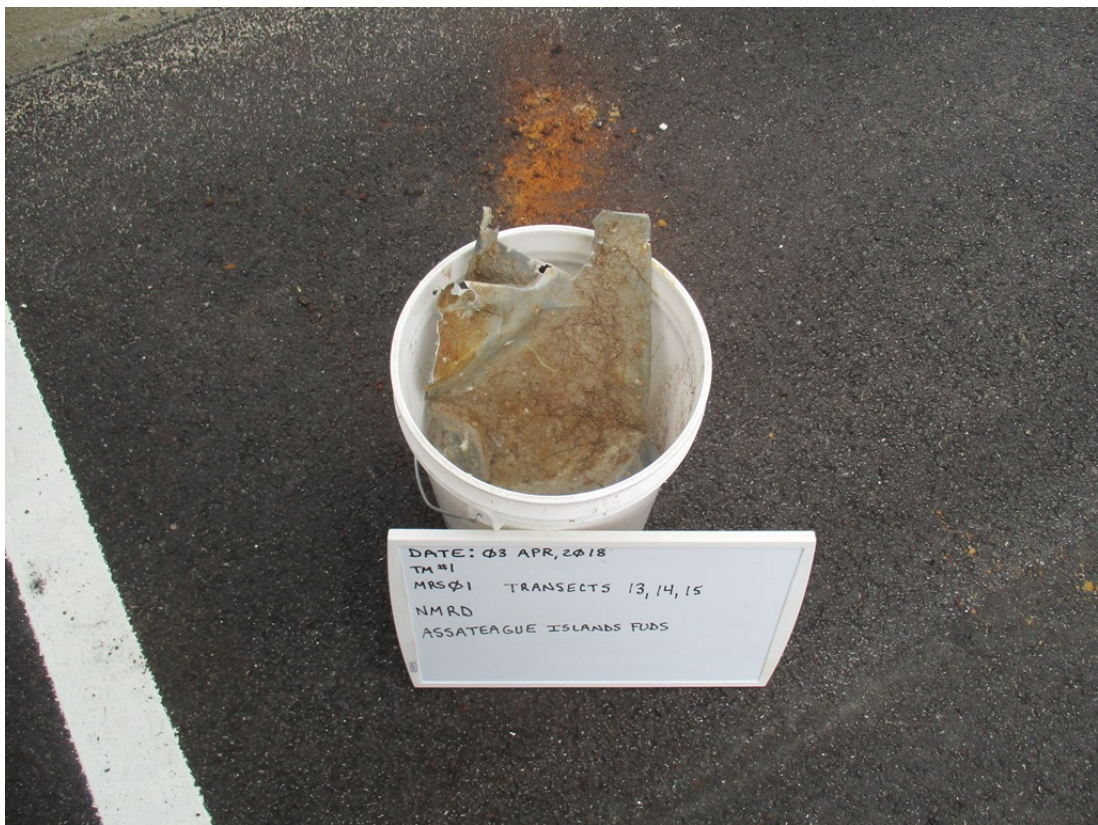
MRS 03 – Forest Intrusive Investigation – Facing West



MRS 01 – Beach Transect NMRD (typical)



MRS 01 – Beach Transect NMRD (typical)



MRS 01 – Transect NMRD (typical)



MRS 01-Transect 15 – MD – 2.25 Rocket Motors (empty)



MRS 01-Transect 15 – MD – 2.25 Rocket Motors (empty)



MRS 01-Dune/Beach Pits – MD – 2.25 Rocket Motors (empty)



MRS 01 – Former Target Area at B-245 – Facing West



MRS 01 – Excavating Former Target Area – Facing North



MRS 01 – NMRD from group campground grid exposed by shifting sands



MRS 01 – NMRD from group campground grid)



MRS 01 – Transect NMRD (typical)



MRS 01 – In-situ beach NMRD (typical)



MRS 03 – Transect 6 – Board with nails adjacent to anomaly – Facing NW



MRS 03 – Transect 7 – Trash Pits adjacent to anomaly – Facing SW



MRS 03 – Former Green Run Lifesaving Station - Flagpole



MRS 03 – Former Green Run Lifesaving Station – Foundation/Floor



MRS 01 – MK-23 Practice Bomb (found inside pile of rocket debris) on top of magazine



MRS 01 – Debris awaiting sorting in fenced in area with magazine (items determined to be MDAS)

**Appendix C - Instrument Verification Strip
Letter Reports and Preliminary
Characterization Memoranda**

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APPENDIX C-1: Marine Instrument Verification Strip Letter Report

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**REVISED DRAFT
INSTRUMENT VERIFICATION STRIP MEMORANDUM**

**MILITARY MUNITIONS RESPONSE PROGRAM REMEDIAL INVESTIGATION,
ASSATEAGUE ISLAND, MARYLAND**

November 20, 2017

1.0 Introduction

EA Engineering, Science, and Technology, Inc., PBC (EA) is performing a Military Munitions Response Program (MMRP) Remedial Investigation (RI) at the Assateague Island Formerly Used Defense Site (FUDS), Worcester County, Maryland. The purpose of this memorandum is to summarize the findings of the Marine-based digital geophysical mapping (DGM) at the Instrument Verification Strip (IVS). The IVS was conducted in accordance with the *Uniform Federal Policy Quality Assurance Project Plan for the Military Munitions Response Program Remedial Investigation, Assateague Island Formerly Used Defense Site Worcester County, Maryland, November, 2017* to evaluate functionality and deployment of the geophysical instruments based on the instrument response to various Industry Standard Objects (ISOs).

The site selected for the IVS was located in the shallow waters of the back bay (~2 to 3 meters depth) near the Ocean City Sunset Marina to facilitate beginning and end of day equipment testing (Appendix A, Figure 1). Survey control was established at the dock where the survey vessels were located using the real-time kinematic (RTK) global positioning system (GPS) (Table 1).

Table 1. Site Survey Control

Point ID	Point Type	Northing (m)	Easting (m)	Elevation (m)
CP-1	Survey Nail	4242286.91	490900.32	1.85

Notes: Survey Coordinates presented in UTM zone 18N in meters.

A background geophysical survey was performed to identify a relatively clean portion of the site as shown in Figure 2. After an appropriate area was identified, the IVS was established by placing four ISO items and a chain on the sea floor (Figure 2 and Table 2). This memorandum contains a summary of the field activities and results obtained from the data collected with the Geometrics G882 gradiometer.



Table 2. IVS As-Built Details

Point ID	ISO Type	Northing (m)	Easting (m)	Orientation	Water Depth (m)
ISO-1	5/8" x 2" bolt	4241215.55	490519.46	Across Track	2.5 – 3.0
ISO-2	1.5"x 6" black pipe	4241175.33	490491.04	Across Track	2.5 – 3.0
ISO-3	2" x 8" black pipe	4241199.15	490509.39	Across Track	2.5 – 3.0
ISO-4	2" x 8" black pipe	4241229.05	490530.77	Across Track	2.5 – 3.0
Chain-W	Zinc-plated chain	4241172.50	490477.66	Across Track	2.2 – 2.7
Chain-E	Zinc-plated chain	4241159.05	490490.33	Across Track	2.8 - 3.3

2.0 IVS Objectives

The primary objective of the IVS was to demonstrate the operating characteristics of the geophysical equipment, survey platforms, and detection capabilities within the site-specific environment to be encountered during the Geophysical Investigation. The IVS data were used to verify that the geophysical instruments meet the objectives identified within the work plan and to develop an anomaly selection criterion for use during the field investigation.

3.0 Geophysical Survey Equipment

Geometrics G882 Gradiometer

The Geometrics G882 gradiometer consists of two cesium vapor magnetometers spaced 1.0 meter apart. Magnetometers are passive sensors that detect anomalous distortions in the earth's magnetic field caused by concentrations of natural and anthropogenic ferrous materials. Magnetic anomalies resulting from submerged and/or buried objects, as well as nearby structures may range in intensity from five to several thousand nanoTesla (nT), depending on such factors as the mass of ferrous materials present, the distance of the mass from the sensor, and the orientation of the mass relative to the sensor.

Global Positioning System

Trimble SPS985 RTK GPS units are used to position the data collected during the Geometrics G882 gradiometer surveys. Two GPS antennas were placed at the front of the boat, one on each side (Photo 1), and connected to a laptop computer running HYPACK navigation and logging software. The Trimble SPS985 RTK units are integrated parallel channel GPS receivers with a built-in cellular-modem communication system that received precision position corrections from the regional KeyNetGPS virtual reference station (VRS) network to provide horizontal control at an accuracy of 2 centimeters (cm). Positional data were output to the HYPACK computer at 0.5-second intervals using a serial cable. HYPACK calculated gradiometer sensor positions using sensor/GPS antenna offsets measured on the survey vessel and transmitted them to the laptop computer running Geometrics MagLog software at a 1.0 second interval (Photo 2).

Survey Platform

Two survey platforms were utilized to carry out the DGM marine surveys, one vessel for the shallow water back bay portions of each MRS, and one vessel for the deeper water ocean portions of each MRS. The shallow water vessel consists of a small boat with the gradiometer



suspended from a rope/pulley system mounted at the front of the boat vessel on extension poles that allows the gradiometer to be lowered or raised depending on the water depth (Photo 3). The gradiometer is equipped with internal depth sensors and the survey boat is equipped with a water depth sensor (fathometer) so that the depth of the sensors can be compared to the depth of the water and adjustments made to keep the gradiometer between 0.5 and 1.0 meter above the sea floor. The deep-water vessel consists of a larger boat with the gradiometer mounted on a sled that is towed behind the boat along the sea floor providing a 0.4-meter sensor height above the sea floor (Photos 4 and 5). The sled layback is typically 3 times the water depth, with a minimum distance behind the boat of about 60 feet. The boat fathometer and the gradiometer depth sensor readings were monitored real-time to ensure the sled stayed in contact with the sea floor. The large boat and survey sled are equipped with a Ultrashort Baseline (USBL) system that allows HYPACK to calculate the position of the survey sled and gradiometer sensors while it is underwater.

4.0 Instrument Verification Strip Installation

Prior to emplacements of the IVS seeds, a suitable area was identified through the process of running the gradiometer configured on the shallow vessel around the intended IVS area to locate a relatively quiet area. Once this was done, gradiometer data was collected over the identified area, approximately 5 meters by 100 meters. Data was processed and locations were identified for seed emplacement which were away from anomalous areas. Each of the seeds items was affixed to the center of 30-meter long lead cables with anchors, cinder blocks, and buoys attached at the ends (Photo 6). Temporary buoys were also attached to the seed items to facilitate post-emplacement GPS positioning. The lead lines with the seed attached were placed on the sea floor by dropping one end using the shallow water boat and laying out the lead line so that the seed was approximately at the intended location. Due to difficulties in placing the ends of lines at exactly the correct location, the seeds ended up being slightly offset from their intended locations (Figure 2). Several attempts were made to drag the lines one way or the other to get all seeds in the correct location with only some success.

Once the seeds were installed, the shallow water boat was used to guide a GPS operator to each of the seed buoys. However, due to a strong current, it was impossible to keep the extended survey pole directly on top of each seed item and capture an accurate position. An alternate method was carried out in which one person on the boat and underneath one of the boat GPS antennas grabbed the seed buoy while the boat driver attempted to navigate the boat such that the buoy was directly over the seed, and an RTK position was recorded on HYPACK. It is likely that the recorded seed positions may have some errors due to the inability to accurately position the GPS antenna over the seed item, but the amount of error is not known. DGM positional accuracy is discussed later in this memorandum. Once the survey point was recorded at each seed buoy, the buoy was removed so that it would not interfere with the boat during IVS surveys.



5.0 Digital Geophysical Mapping of IVS

After the IVS was installed, the seed item locations were used to create an IVS survey path within HYPACK for boat navigation. Prior to IVS data collection, static and reference item tests, and GPS position checks were conducted to verify the proper function of the DGM equipment. Plots of the gradiometer static test data are included in Attachment C. Once the equipment was verified by the data acquisition specialist to be operating properly, the IVS survey was conducted by recording gradiometer data while driving the survey boat back and forth along the IVS survey path created in HYPACK. The initial survey included approximately 11 individual passes over or adjacent to the seed items, and one noise line pass approximately 10 meters to the west of the IVS survey path. The gradiometer survey data is presented in Figure 3. The gradiometer sensors were approximately 1.7 meters above the sea floor during the initial IVS survey. Due to the lack of obvious real-time responses observed in the gradiometer data, the sensor was lowered to an altitude of 1 meter above the sea floor and the IVS rerun with six passes along the IVS survey path and one noise line pass. The gradiometer data for this IVS survey is presented in Figure 4. After completing daily static, response, and position checks, the IVS was rerun the following day with the sensors at 1.0 meters above the sea floor and the data is presented in Figure 5.

After the back-bay surveys were completed at MRS 01 and MRS 03, the deep-water boat was configured with the DGM equipment, and following daily static, response and position checks, the IVS was run using the gradiometer sled and deep-water boat. The IVS results are presented in Figure 6.

6.0 DGM Data Processing

The gradiometer data recorded in Magmap was downloaded daily to a field processing computer and imported to Geosoft Oasis Montaj, ver. 9.2.3 mapping software. The major processing steps included:

- Coordinate conversion from WGS84 latitude and longitude to WGS84 UTM Zone 18N coordinates.
- Latency correction using the chain as a reference. A 0.25-second latency correction was used to line up the data properly.
- A 150-sample median filter was applied to remove longer period magnetic field variations
- Gridding of leveled gradiometer data using a 0.2-meter grid cell size and a blanking distance of 2 meters.
- Calculation of analytic signal using a 0.3-meter grid cell, a blanking distance of 1 meter, and a smoothing factor of 2.

All processed maps are presented in Appendix A Figures.



7.0 IVS Results

Seed Detection-All seed items were detected when the gradiometer was 1.0 meter above the sea floor, but only two were detected when it was 1.7 meters above the sea floor. The interpreted target locations and analytic signals for the seed items for the two IVS runs with a 1 meter altitude are presented in Table 3. The results with the gradiometer run at a 1.7 meter altitude is not presented due to lack of detection of all seeds.

Table 3. IVS Seed Responses

Seed	Interp Easting (m)	Interp Northing (m)	Offset (m)	Analytic Signal (nT)
11/11/17				
ISO-1	490520.7	4241215.3	1.0	13.9
ISO-2	490492.7	4241175.6	1.6	48.2
ISO-3	490508.4	4241199.3	0.2	751.2
ISO-4	490531.5	4241227.8	1.4	396.7
Chain	490484.1	4241169.3	2.2	91.4
11/12/17				
ISO-1	490520.3	4241215.3	0.7	28.7
ISO-2	490491.9	4241175.6	0.86	192.7
ISO-3	490509.3	4241198.4	0.72	1127.0
ISO-4	490530.0	4241227.2	1.9	510.9
Chain	490484.4	4241169.2	2.5	80.2
11/16/17				
ISO-1	490520.7	4241216.1	1.3	85.7
ISO-2	490491.3	4241174.1	1.3	265.1
ISO-3	490509.9	4241199.0	0.45	1884.8
ISO-4	490531.2	4241226.9	2.2	1079
Chain	490485.9	4241169.0	2.5	55.8

Gradiometer Response- The gradiometer response for the seed items is generally highly variable. There are several explanations for this including horizontal and vertical sensor offset from the seed item, and variability in analytic signal calculations that are based on 2-dimensional coverage over a seed item. The response from the sled mounted gradiometer was significantly higher (2 to 3 times) than the shallow boat platform due to the lower sensor altitude above the sea floor (0.4 meters versus 1 meter).

Gradiometer Positioning- The interpreted locations of the seed items are also generally variable, again likely due to the horizontal and vertical offsets of the sensors relative to the seed location. The accuracy of the seed locations is also a factor in the interpreted location offsets. Some of the offsets presented in Table 3 above are likely due to the probable inaccurate survey positions of the seeds. It should be noted that for seeds 1, 2, 3, and the chain, the interpreted locations are relatively close to each other (< 1.0 meter), providing added confidence in the accuracy of the DGM positioning. The sled mounted gradiometer uses a USBL mounted on the sled to calculate



sensor positions. The USBL does not function optimally under shallow water conditions (<3 meters) with long horizontal offsets (>20 meters). It is designed to operate better when depths exceed 5 meters. During testing, it was determined that raising the boat engines when in shallow waters reduced the propeller backwash and improved the USBL performance and sensor positioning. It should also be noted that the gradiometer will respond to ferrous metal from significant distances away from survey transects depending on the size of the item and these offsets will not be known until after they are intrusively investigated. Due to inherent difficulties in the positioning of sensors in a marine environment and the detection of objects offset from survey transects, it is typical that intrusive dive operations include a 3-meter radius search of reacquired target locations. The accuracy of the gradiometer system at the IVS has demonstrated accuracies well within this search radius.

Gradiometer Noise- Gradiometer system noise during the IVS survey for the shallow water platform was low, with a standard deviation less than 1 nT. However, noise will increase with increased wave action due to sensor “bouncing”, which causes a rapid change in elevation. With the magnetometers about 1 meter or less from the sea floor, small changes in elevation can cause changes in the magnetic response depending on the magnetic susceptibility of the sediments. The standard deviation noise for the sled platform was approximately 2 nT.

8.0 Recommendations

The objective of the target selection criteria is to identify items representing potential Munitions and Explosives of Concern (MEC) similar to or larger than a 20mm projectile at a depth < 1 foot (30.5 cm) without including targets that are related to noise or items smaller than a 20mm projectile.

The data along the noise line were evaluated to determine noise levels for the shallow water gradiometer platform. Based on a 1 nT standard deviation of the shallow platform data at the IVS, a background noise was calculated using 3 times the standard deviation under low wind conditions, or 3 nT. The profiles for the noise lines can be seen in Attachment A. For the deep water sled platform, 3 times the standard deviation is 6 nT. The ISO representing a 20mm projectile, a 5/8” x 2” bolt, provided a 13.9 nT and 28.7 nT response for the shallow water system, and 85.7 nT for the sled mounted system. These responses represent a signal-to-noise ratio (SNR) of between 4.5 and 10 for the shallow water platform and 15 for the sled platform. A selection criteria of 2 times background (SNR=2) yields 6 nT for the shallow water platform and 12 nT for the sled platform. Because the ISO representing the 20mm projectile was on the sea floor, and not buried, it is recommended that the selection criteria be set as low as the noise levels permit, 6 nT in quiet areas within the back bay (e.g., low wave action), and higher (e.g., 2 times background noise) where noise levels increase. For the deeper water sled platform, it is recommended that the selection criteria be set to 12 nT due the increased background noise. The 85.7 nT response for the 20mm ISO on the surface at the IVS is 7 times greater than a 12 nT selection criteria. A selection criteria of 12 nT should be more than sufficient to detect 20mm projectiles at 1 foot depth.



9.0 Instrument Quality Control

Prior to performing the IVS survey, several instrument function and QC tests were performed. These tests included static instrument noise tests, static reference item tests, and static GPS position tests. These tests were performed once at the start of day and once at the end of the day. In addition to analysis of the IVS amplitude responses, these data were reviewed for sample spacing and velocity. These instrument function tests are provided in Attachment C. These tests show that the static response and reference item response were well within the UFP-QAPP data quality metrics.



Appendix A

Figures



Figure 1. IVS and Control Point Location

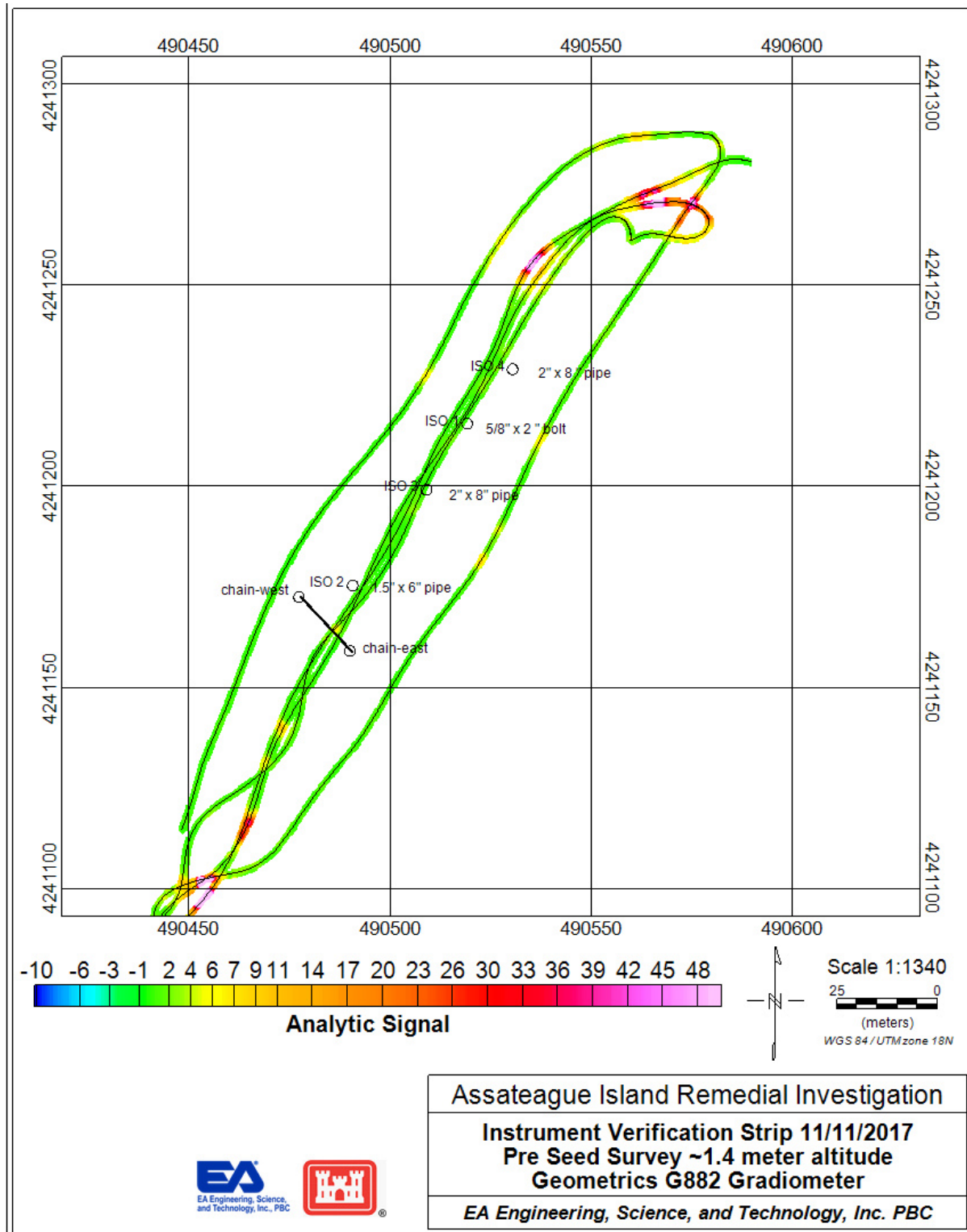


Figure 2. IVS Pre-survey

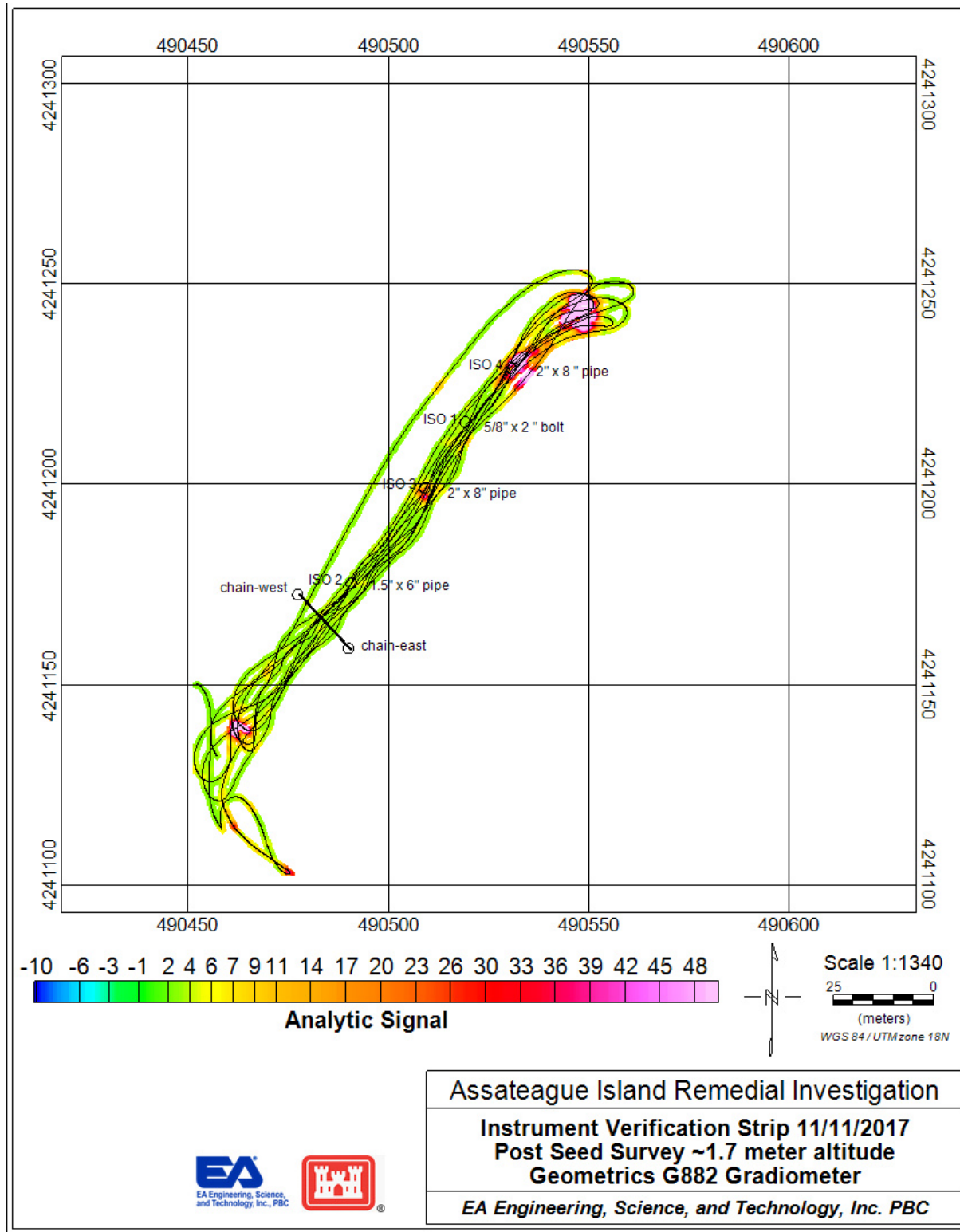
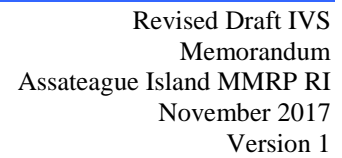


Figure 3. IVS Post-Seed Survey, 1.7 Meter Altitude



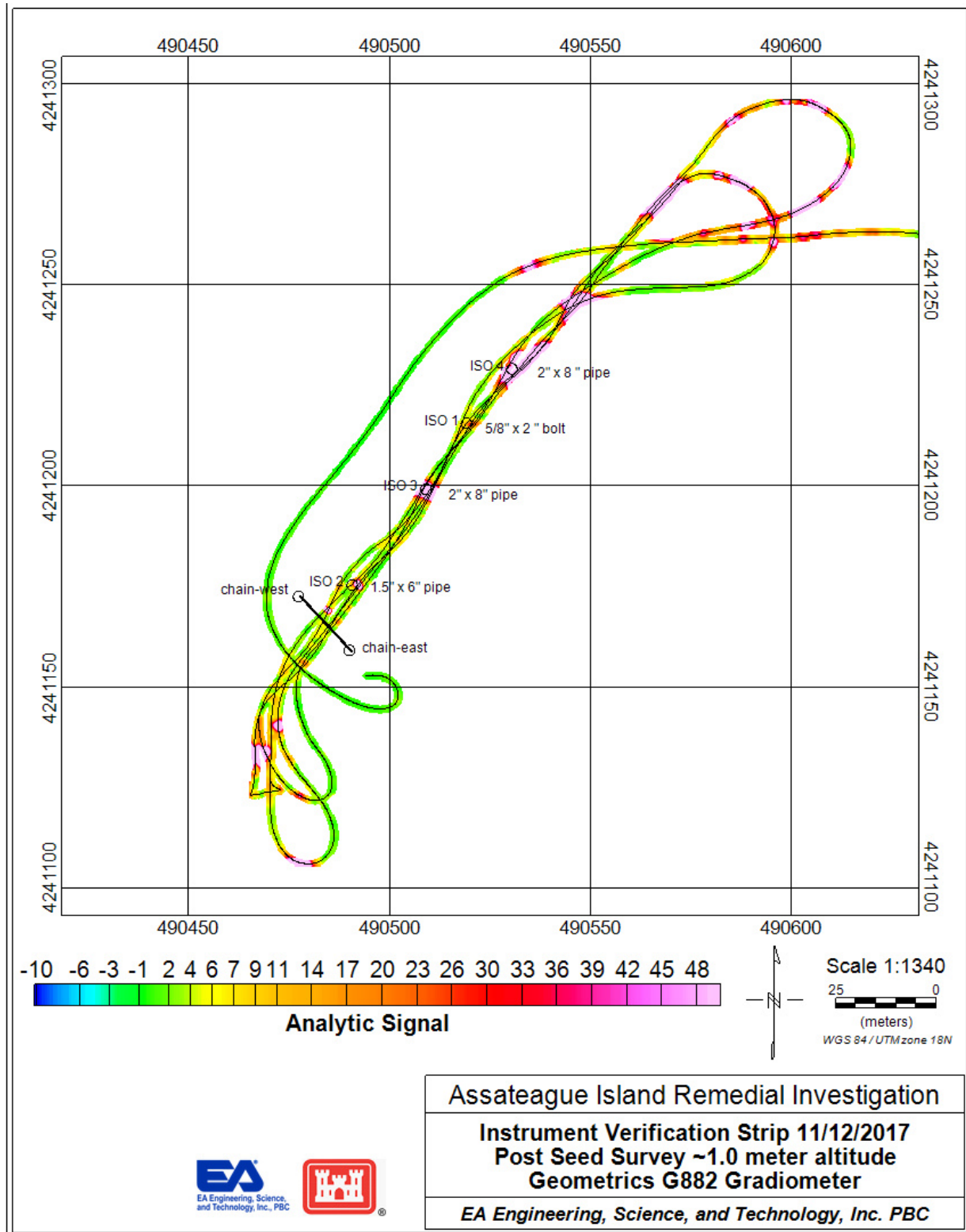


Figure 5. IVS Post-Seed Survey, 2nd Run at 1.0 Meter Altitude

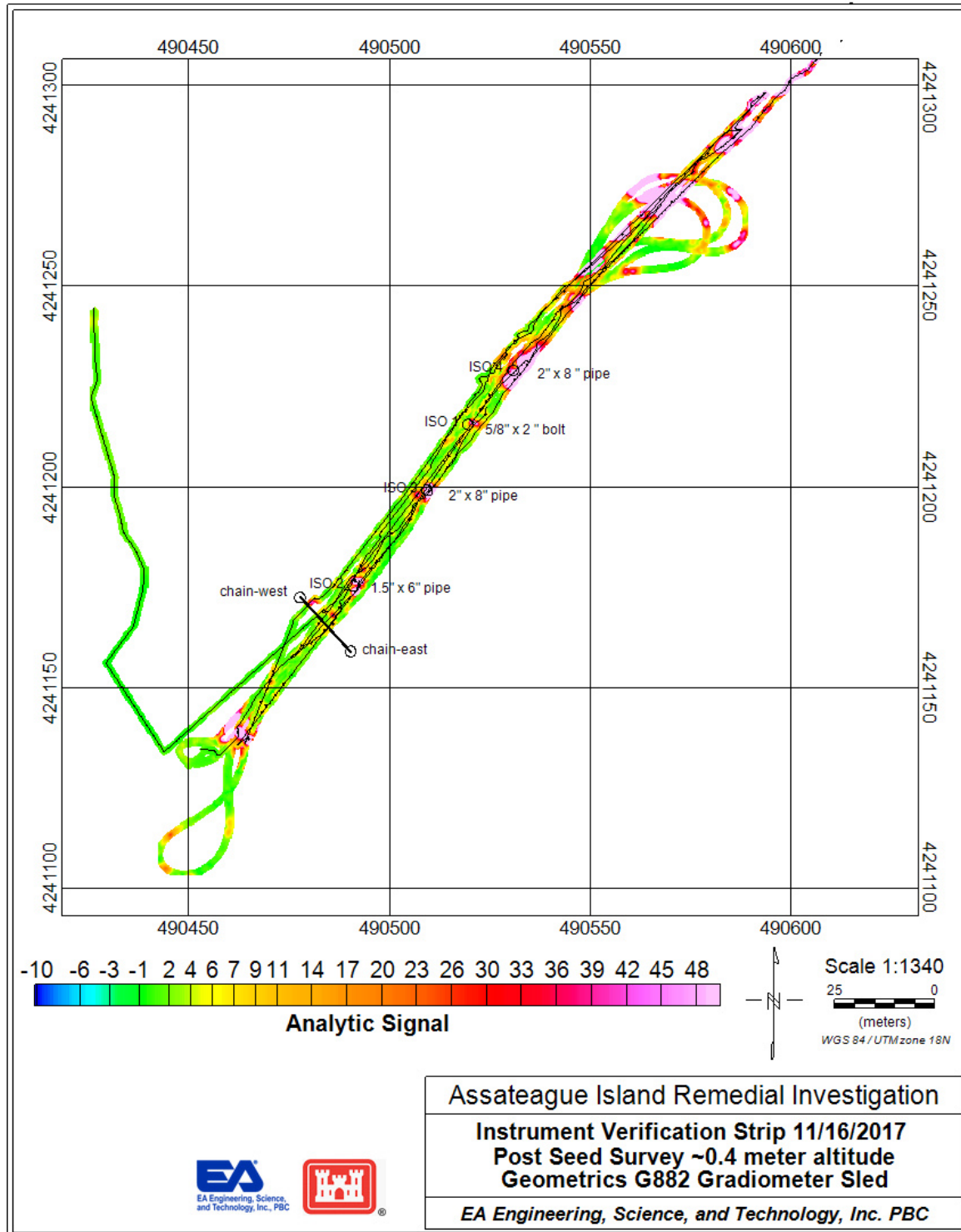


Figure 6. IVS Post-Seed Survey with Gradiometer Sled, 0.4 Meter Altitude



Appendix B

Photographs



Photo 1. Shallow Boat GPS Antennas

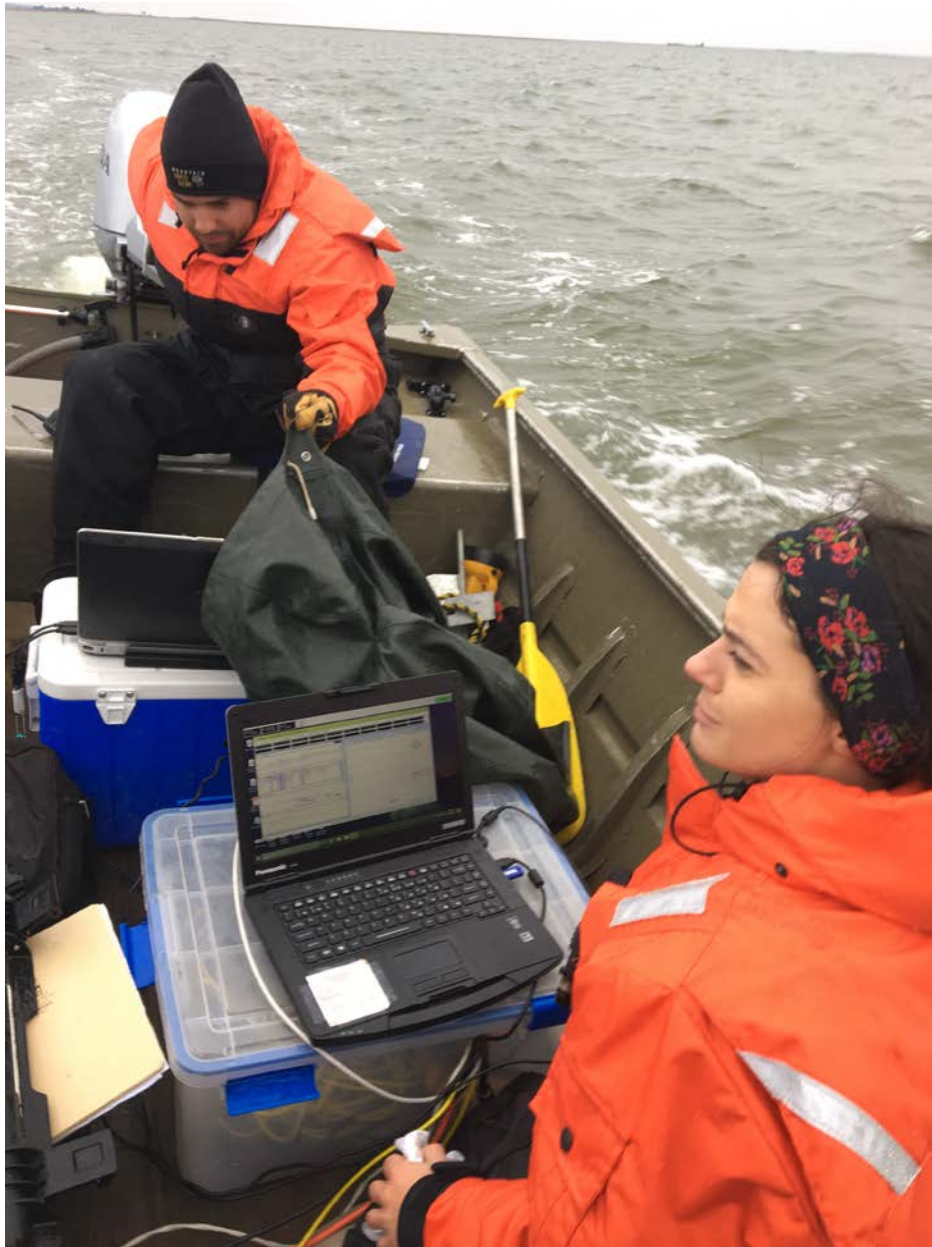


Photo 2. HYPACK Navigation and MagLog Data Logging

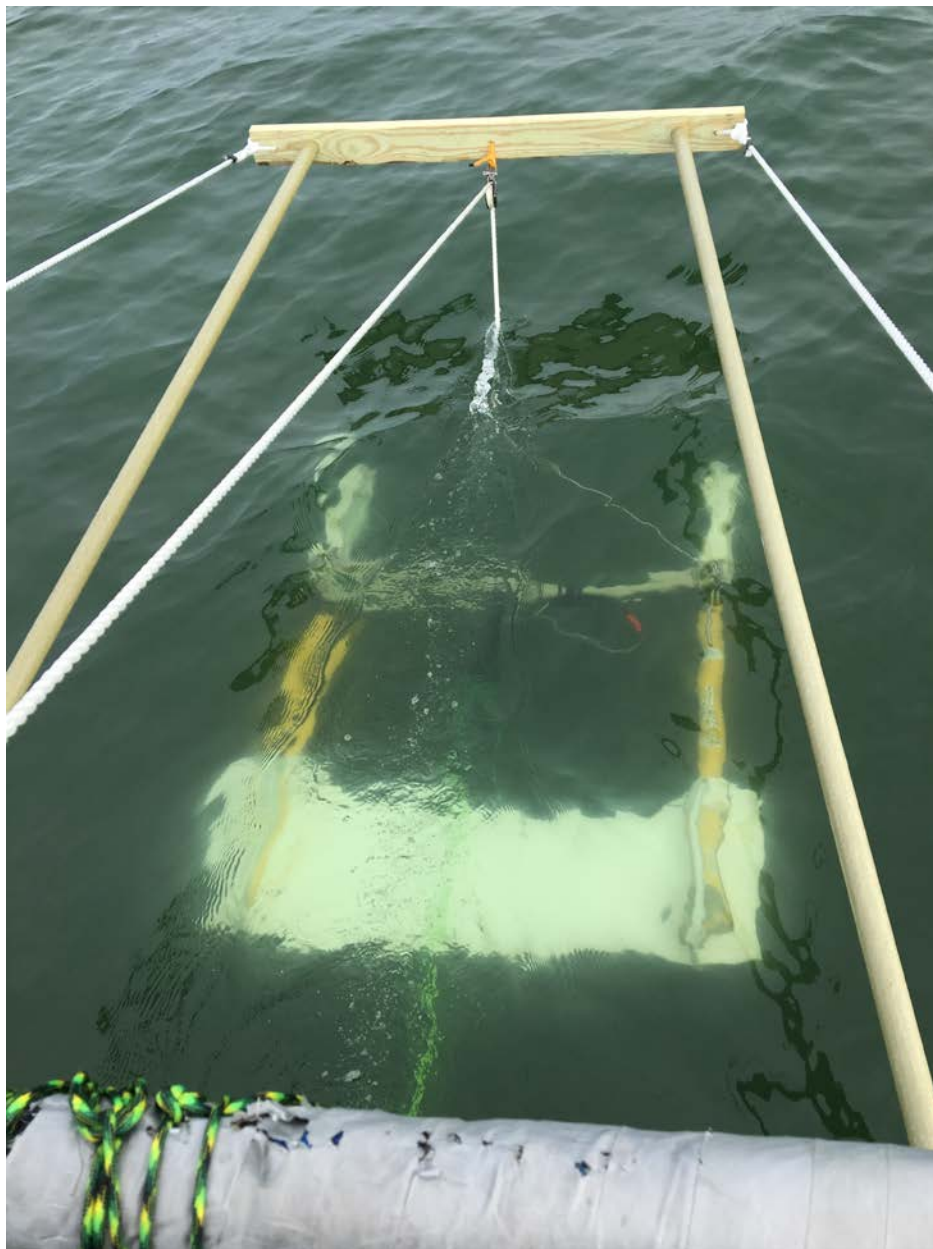


Photo 3. Gradiometer in Front of Shallow Boat



Photo 4. Deep Water Survey Boat



Photo 5 Gradiometer Sled for Ocean Survey

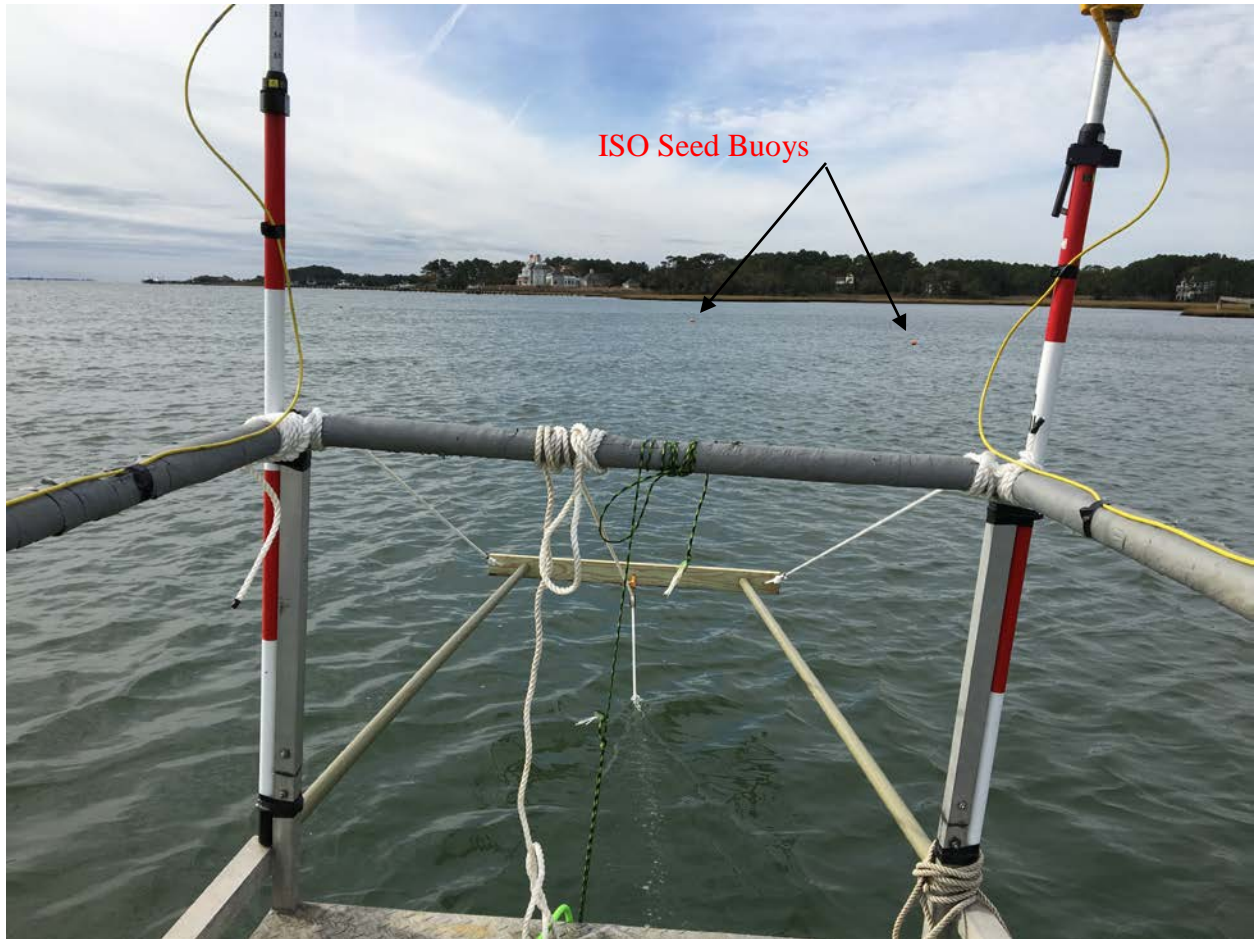


Photo 6. IVS ISO Seed Buoys



Appendix C

IVS Quality Control Tests

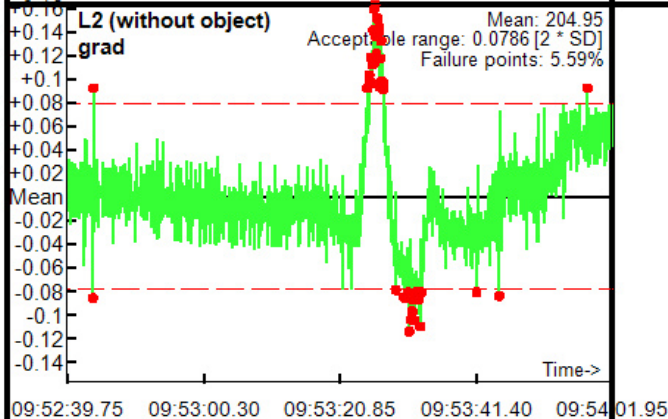
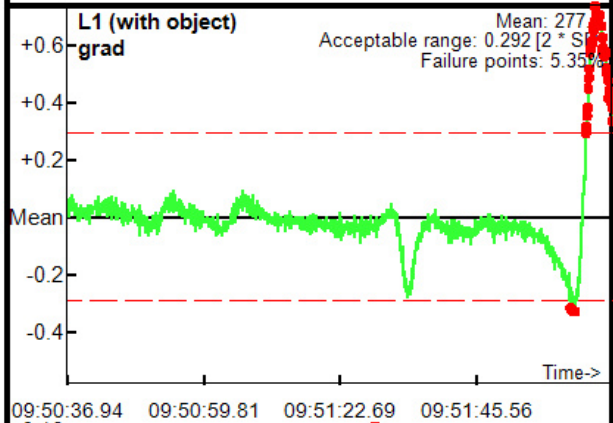
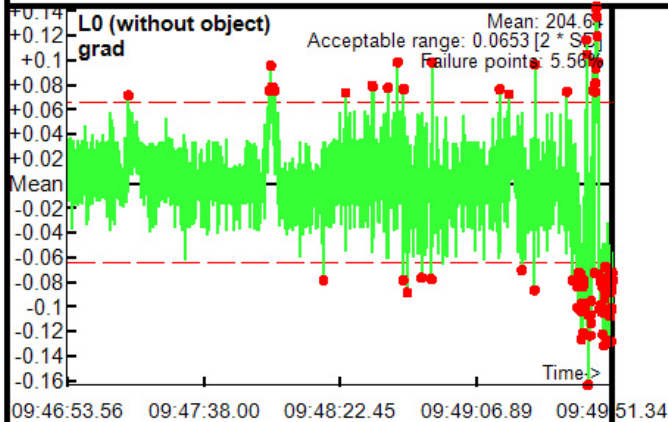


Static Calibration Test

Project: Assateague Island RI
Equipment: Magnetometers
Grid/Location: IVS

Allowable failure (%): 10%
● Outside range
— Acceptable limits

AM test
Operator: M. McGuire
Date: 11/15/2017



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Page: 1

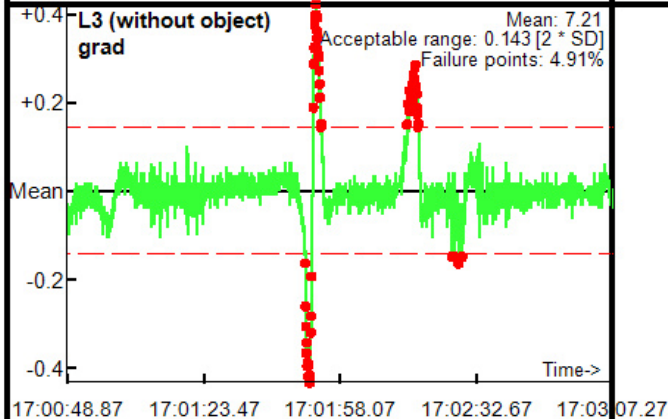
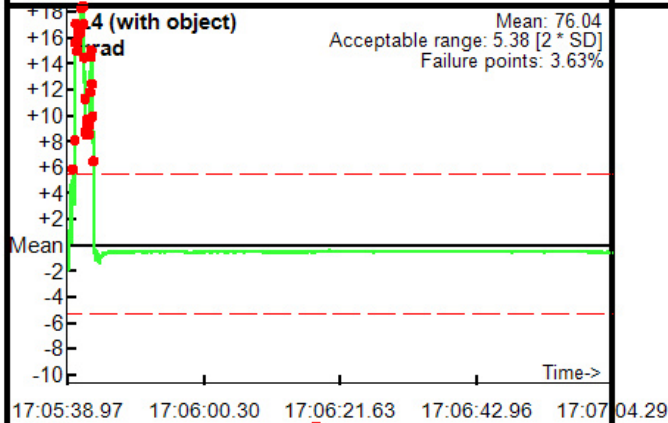
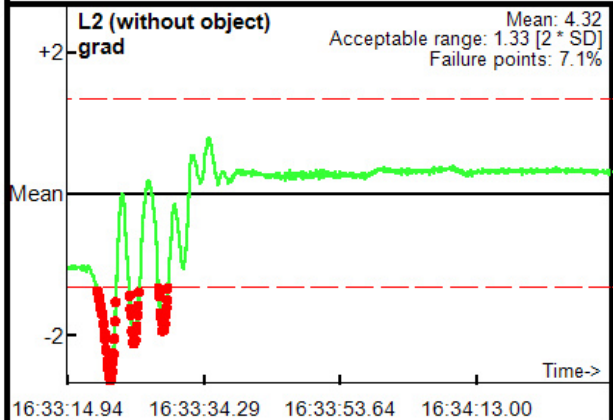


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Equipment: Magnetometers
Grid/Location: IVS

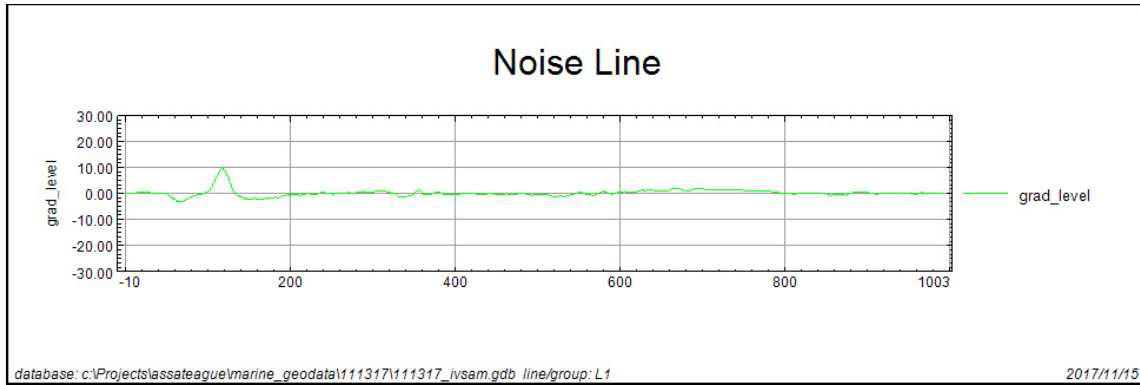
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— Acceptable limits

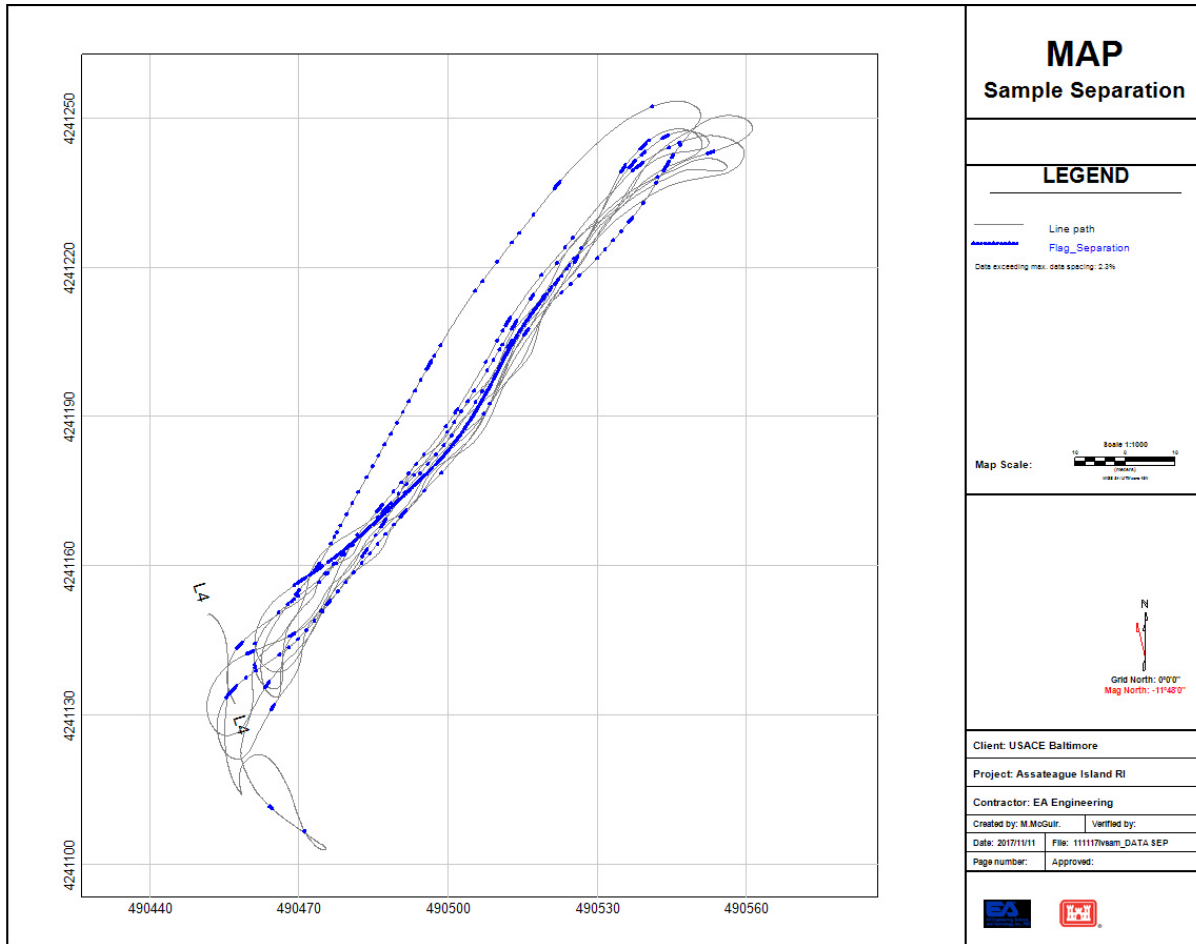
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Operator: M.McGuire
Date: 11/15/2017



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Page: 1





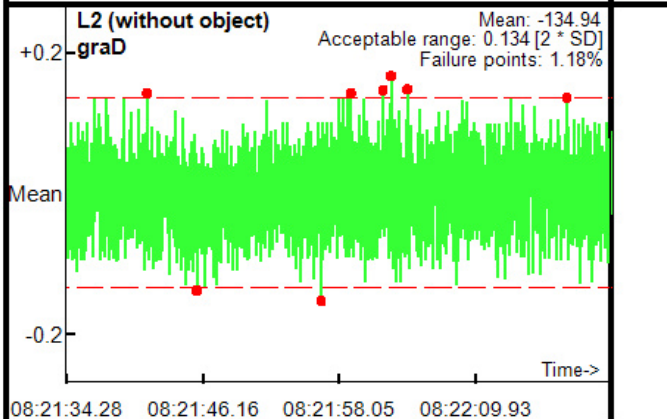
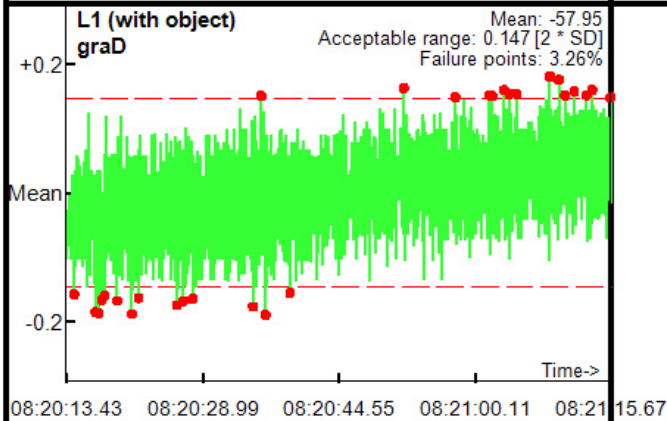
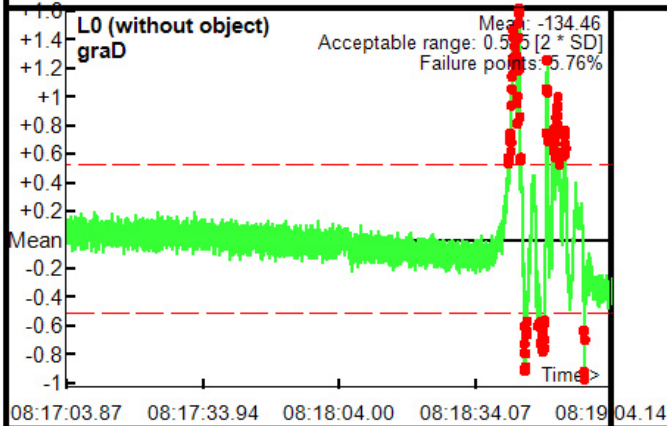


Static Calibration Test

Project: Assateague Island RI
Equipment: Magnetometers
Grid/Location: IVS

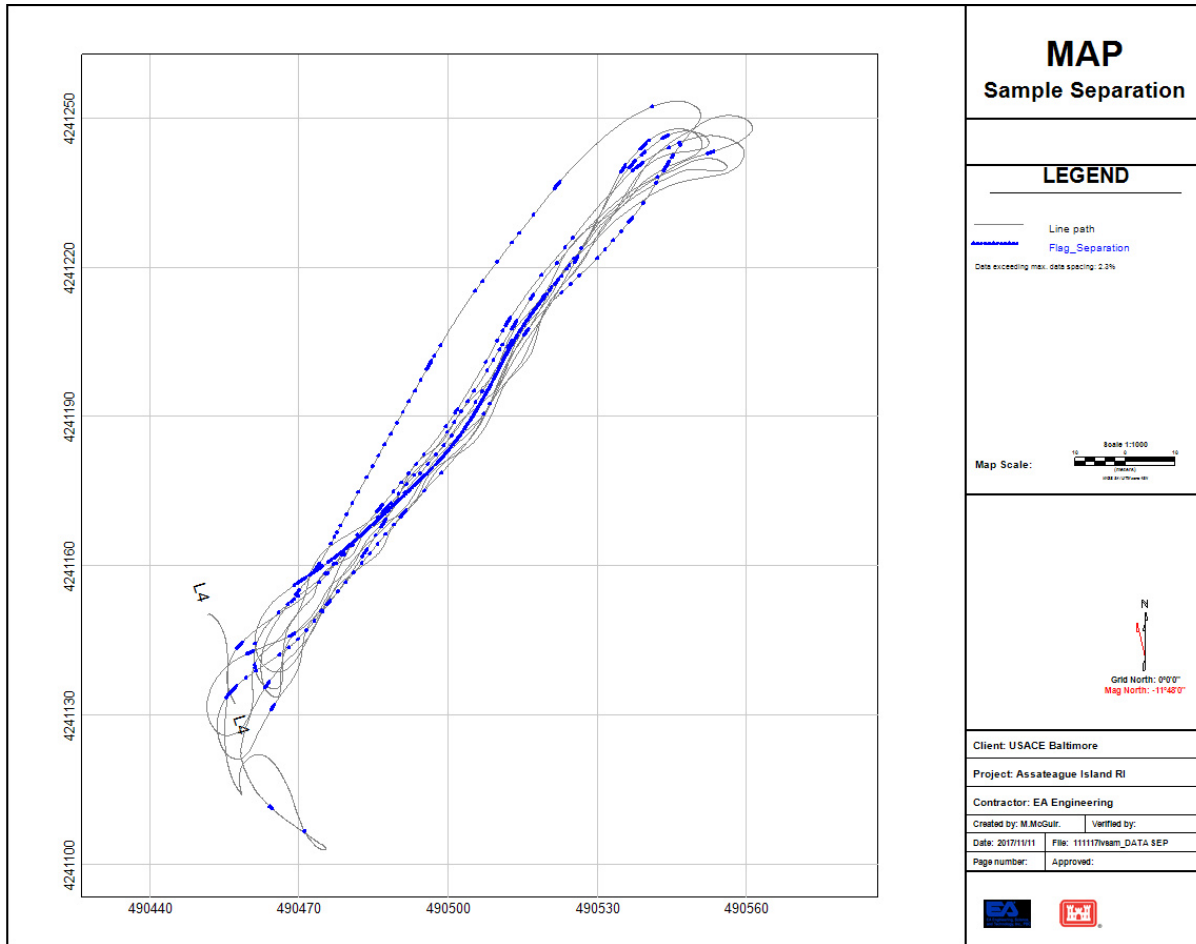
Allowable failure (%): 10%
● Outside range
— Acceptable limits

AM test
Operator: M.McGuire
Date: 11/15/2017



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Line Name: L0 L1 L2

Page: 1



APPENDIX C-2: Terrestrial Instrument Verification Strip Letter Report

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**INSTRUMENT VERIFICATION STRIP REPORT
REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS)
ASSATEAGUE ISLAND FORMERLY USED DEFENSE SITE
WORCESTER COUNTY, MARYLAND**

CONTRACT NUMBER: W912DR-13-D-0018

ZAPATA PROJECT: R20242

Prepared for:

**US Army Corps of Engineers
Baltimore District**

Prepared By:

ZAPATA INCORPORATED
6302 Fairview Rd., Suite 600
Charlotte, NC 28210
(704) 358-8240

March 2018

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Appendix A Photographs

ABBREVIATIONS AND ACRONYMS

AOI	Area of Interest
CD	compact disc
cm	centimeters
DGM	Digital Geophysical Mapping
EM61	EM61-MK2
FUDS	Formerly Used Defense Site
GPS	Global Positioning System
GSV	Geophysical System Verification
ISO	Industry Standard Objects
IVS	Instrument Validation Strip
m	Meter
mV	millivolts
NRL	Naval Research Laboratory
QAPP	Quality Assurance Project Plan
QC	Quality Control
RI/FS	Remedial Investigation/Feasibility Study
TOI	Targets of Interest
UTV	Utility Vehicle
UXO	Unexploded Ordnance
UXOQCS	Unexploded Ordnance Quality Control Supervisor
ZAPATA	Zapata Incorporated

1.0 INTRODUCTION

This Instrument Verification report documents the initial phase of the digital geophysical mapping (DGM) investigation conducted by Zapata Incorporated (ZAPATA) for EA Engineering, in support of a Remedial Investigation / Feasibility Study (RI/FS) at the Assateague Island FUDS (W912DR-13-D-0018), Worcester County, Maryland. The equipment under discussion includes:

- 1) A vehicle-towed, single EM61S-MK2 marine coil, measuring 1.0 X 0.5 meters with long axis perpendicular to direction of travel, 45 cm above ground surface (Figure 1-1). Tested in IVS on March 6, 2018.
- 2) A hand-pulled cart equipped with balloon tires and an encased EM61-MK2 coil, measuring 1.0 X 0.5 meters with long axis perpendicular to direction of travel, 41 cm above ground surface (Figure 1-2). Tested in IVS on March 7, 2018.
- 3) A hand pulled cart equipped with balloon tires and a standard EM61-MK2 coil, measuring 1.0 X 0.5 meters with long axis perpendicular to direction of travel, 41 cm above ground surface (Figure 1-3). Tested in IVS on March 8, 2018.
- 4) A hand pulled cart equipped with standard tires and a standard EM61-MK2 coil, measuring 1.0 X 0.5 meters with long axis perpendicular to direction of travel, 43 cm above ground surface (Figure 1-4). Tested in IVS on March 12, 2018.
- 5) A 1.0 X 1.0 meter coil configured in skirt mode, 41 cm above ground surface (Figure 1-5). Tested in IVS on March 13, 2018.

RTK-GPS positioning of all DGM platforms was completed using a Trimble R10 with SPS855 receiver. The GPS antenna for the towed EM61S marine coil was located 16.75 inches (42.5 cm) to the rear of the coil center, as shown in Figure 1-6. For both balloon tire hand-pulled cart configurations, the GPS antenna was located directly over the coil center, as shown in Figures 1-7 and 1-8. For the standard EM61 cart, the GPS antenna position was located 7 cm to the front of coil center (Figure 1-9). For skirt mode EM61, the GPS antenna position was located 34 cm to the rear of coil center (Figure 1-10).

The IVS is a step in the Geophysical System Verification process in which positioning, signal strength and sensor performance are demonstrated in a seeded test area before initiating DGM, and checked daily over the same test area during DGM production to verify consistent equipment functionality. The first phase as described in this report is intended to demonstrate positioning accuracy and appropriate sensor response in comparison to known benchmarks provided by the U.S. Naval Research Laboratory (NRL), and to evaluate the dynamic background noise.

FIGURE 1-1 VEHICLE TOWED 0.5 X1.0 METER EM61S MARINE COIL



FIGURE 1-2 HAND-PULLED CART WITH BALLOON TIRES AND ENCASED EM61Mk2 COIL



FIGURE 1-3 HAND-PULLED CART WITH BALLOON TIRES AND STANDARD EM61 Mk2 COIL



FIGURE 1-4 STANDARD EM61 HAND-PULLED CART



FIGURE 1-5 1x1 METER COIL CONFIGURED IN SKIRT MODE



FIGURE 1-6 GPS ANTENNA POSITION ON TOWED SINGLE MARINE COIL



FIGURE 1-7 GPS ANTENNA POSITION ON HAND-PULLED ENCASED COIL



FIGURE 1-8 GPS ANTENNA POSITION ON HAND-PULLED STANDARD COIL

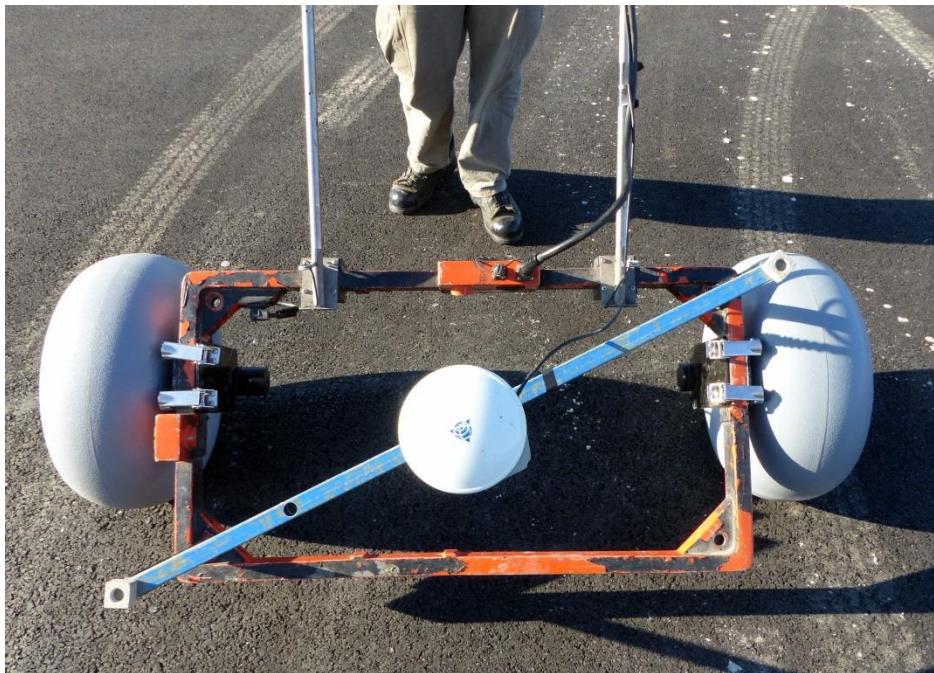


FIGURE 1-9 GPS ANTENNA POSITION ON HAND-PULLED STANDARD COIL AND WHEELS

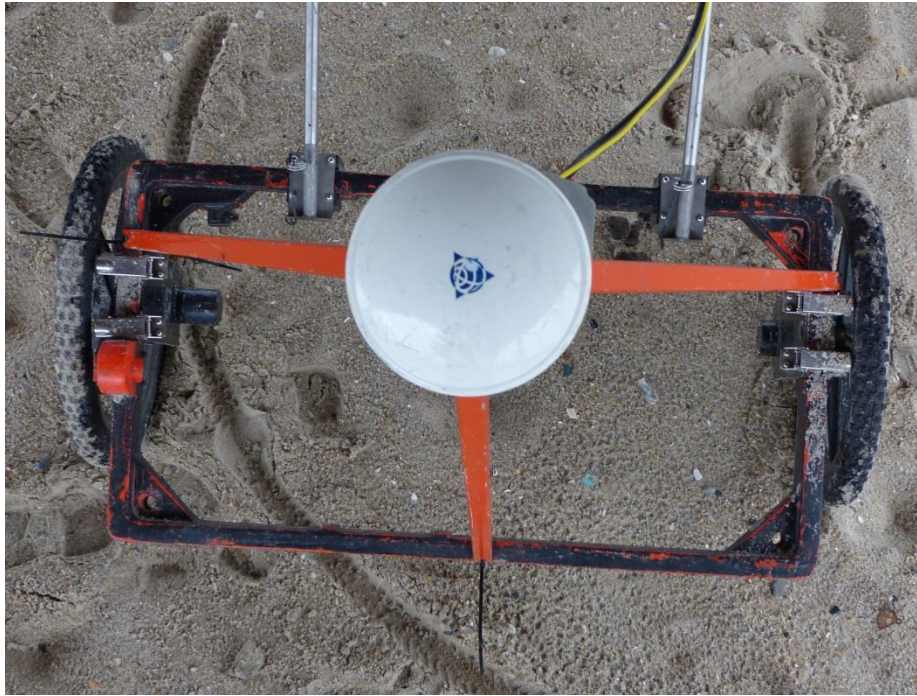


FIGURE 1-10 GPS ANTENNA POSITION ON SKIRT MODE 1 x 1 METER COIL



2.0 IVS LOCATION AND SETUP

On March 6, 2018, Zapata Incorporated (ZAPATA) field geophysicists established the project IVS strip at the location shown on Figure 2-1, in conformance with the IVS specifications outlined in Appendix B2 of the QAPP. The site was chosen to replicate the conditions that are expected to occur in the general survey.

Prior to burying the seed items, the Unexploded Ordnance QC Supervisor (UXOQCS) used handheld metal detectors to confirm that the location was clear of geophysical anomalies. After performing and passing quality control (QC) tests on the towed single coil EM61S that included cable shake tests, personnel metal checks, static background and spike checks, and static position checks, in accordance with the project QAPP, the system was used to conduct a pre-seed background survey within a 3 m by 21 m area identified as a potential IVS location by ZAPATA. The results of the background EM61 survey are shown in Figure 2-2.

Holes were then manually dug at each burial location, the items were placed at appropriate depth and orientation, and then data were collected over the open holes. A total of six seed items were buried, which included small and medium Industry Standard Objects (ISO's), and a single 5/8 inch-11 by 2" bolt, intended to be a surrogate for 20mm projectiles, which are the smallest target of Interest (TOI). The small and medium ISO's are in fact threaded black metal pipe segments, the "small" ISO being 1 inch inside diameter and 4 inches in length, and the "medium" ISO being 2 inch inside diameter and 8 inches in length. Photographs of the actual seed items buried in the IVS are provided in Appendix A. The depth of each item in the IVS was measured to its center of mass using a tape measure and the locations of the items were recorded using a Trimble R10 RTK GPS, which provides maximum accuracy for stationary measurements. The locations, depths and orientations of the items are shown in Table 2-1. An "as-built" map of the IVS is shown as Figure 2-3. All coordinates reported in this document and in the IVS data are listed in NAD 83 UTM Zone 18 N meters.

In conjunction with the IVS strip, a background strip was defined 4 m east of the ISO locations. The purpose of the background strip was to make an estimate of the background dynamic noise response of the EM61 over a quiet area. A map of the background strip as surveyed by the EM61 is shown in Section 4. The background strip was used to estimate the background response for each of the DGM systems.

FIGURE 2-1 INSTRUMENT VERIFICATION STRIP LOCATION



FIGURE 2-2 IVS AREA BACKGROUND SURVEY (PRIOR TO ITEM EMPLACEMENT)

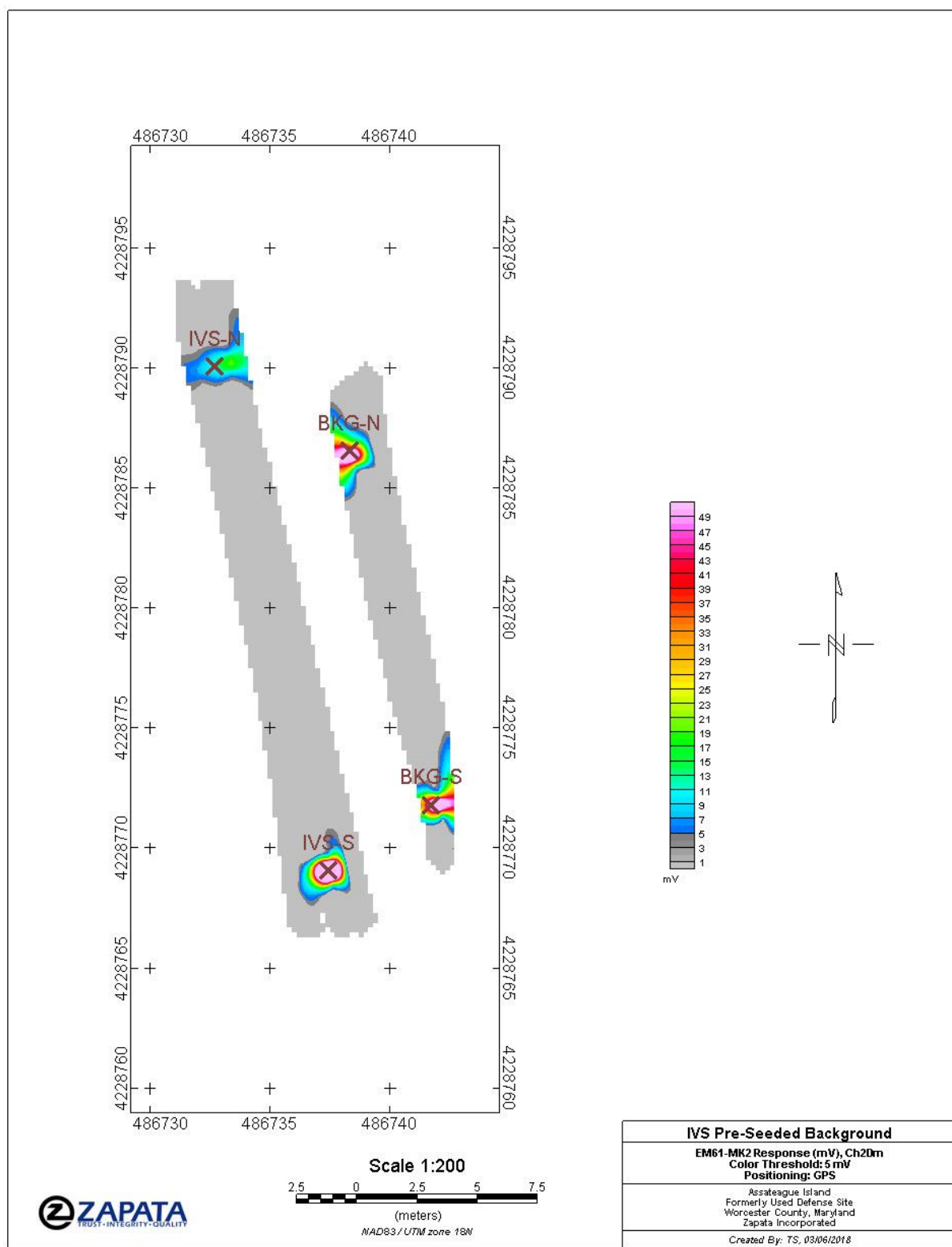


FIGURE 2-3 IVS AS-BUILT LAYOUT

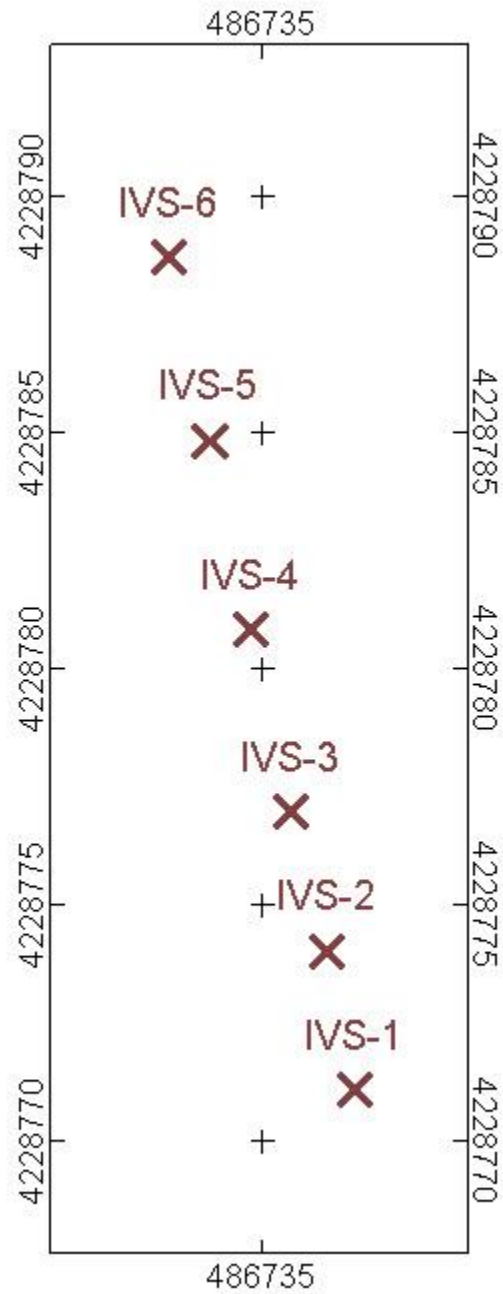


TABLE 2-1 IVS ISO COORDINATES AND ORIENTATIONS

Point ID	Easting¹	Northing¹	Item Depth² (inches)	Item Orientation	Description
IVS-1	486736.98	4228771.09	3.0	Horizontal, Inline	5/8 inch-11 by 2" bolt
IVS-2	486736.38	4228774.04	7.0	Vertical	Small ISO
IVS-3	486735.63	4228776.99	7.0	Horizontal, Crossline	Small ISO
IVS-4	486734.75	4228780.85	6.0	Horizontal, Inline	Medium ISO
IVS-5	486733.89	4228784.85	9.0	Vertical	Medium ISO
IVS-6	486733.04	4228788.72	12.0	Horizontal, Crossline	Medium ISO

Notes:

¹ All coordinates in NAD 83 UTM Zone 18N Meters

² Measured from ground surface to the center of mass of each item.

3.0 IVS SURVEY

Following setup of the IVS, all of the DGM platforms described in Section 1.0 were used to collect data along a single survey line centered over the six buried seeds, and over a neighboring un-seeded background strip.

For all DGM platforms, seven passes were conducted over the IVS and background strips. These results will be used to establish the baseline seed item responses for comparison with the twice-daily IVS tests throughout the project, as well as to aid in the determination of an appropriate picking channel and threshold. All data is provided in a package included with this report.

Results of the noise analysis and the IVS positioning and responses are discussed in Section 4.

4.0 RESULTS

Following acquisition, raw EM61 data collected over the IVS strip and background strip was converted to xyz files and positioned using ZAPATA's MakeXYZ program, which also applies a demedian filter to remove drift and static shift from the raw data. The xyz files were then imported into Geosoft Oasis Montaj where they were converted to UTM Zone 18N, adjusted with a GPS latency, gridded and plotted to produce map views. Targets were selected from the profile data by peak-picking over a threshold of 2 mV on Channel 2. Figures 4-1, 4-2, 4-3, 4-4, and 4-5 show map views of the EM61 survey over the IVS strip.

IVS seed item responses maintained a high degree of consistency across the multiple IVS passes. Table 4-1 displays the average detected amplitudes of the IVS seeds for the three tested systems and comparisons with expected responses. Detected locations of all IVS seeds were within the data quality objective (DQO) of 1 ft or less from their known locations for all tested systems.

Comparison of the responses of the small and medium ISO seeds in their least-favorable orientations (LFO) with expected responses determined by the Naval Research Laboratory (NRL) are shown in Figure 4-6. Responses were broadly in line with expectations.

To determine background levels at the IVS, both a pre-seed background survey of the IVS area and a specific background strip was collected. A map view of the pre-seeded IVS area and the background strip is shown in Figure 2-2.

Statistical analysis of the data collected over the background strip gives an indication of the levels of background noise at the IVS. These results, determined from the leveled (demedian-filtered) data for channel 2, are shown in Table 4-2. While not necessarily representative of background conditions across the entire site, these values serve as a starting point for determining anomaly selection criteria. For example, using the rule of thumb that a picking threshold not be set below approximately three to five times the noise level, a minimum Channel 2 threshold of no less than 2 mV would be indicated.

TABLE 4-1 DETECTION AMPLITUDES OBTAINED ON 7-PASS IVS

Seed Item	Marine Coil / Standard Wheel Ch2 Mean Response (mV)	NRL Pred. Response (mV)	Encased Coil / Balloon Tire Ch2 Mean Response (mV)	Standard Coil / Balloon Tire Ch2 Mean Response (mV)	NRL Pred. Response (mV)	Standard Coil / Standard Wheel Ch2 Mean Response (mV)	NRL Pred. Response (mV)	1x1 m Coil / Skirt Mode Ch2 Mean Response (mV)	NRL Pred. Response (mV)
IVS-1	4.5	N/A	6.0	7.1	N/A	6.4	N/A	4.4	N/A
IVS-2	52.6	59.2	74.9	74.6	82.8	70.6	67.6	48.6	N/A
IVS-3	4.4	5.4	6.4	6.1	7.6	5.9	6.2	2.8	N/A
IVS-4	122.6	N/A	157.3	158.7	N/A	144.1	N/A	96.3	N/A
IVS-5	325.4	245.9	360.4	366.5	318.2	326.7	279.4	258.5	N/A
IVS-6	34.8	28.2	46.6	46.1	36.0	43.1	30.0	34.4	N/A

TABLE 4-2 DYNAMIC BACKGROUND NOISE (STANDARD DEVIATION, mV) AT IVS AREA

	Marine Coil, Standard Wheel	Encased Coil, Balloon Tires	Standard Coil, Balloon Tires	Standard Coil, Standard Wheel	1x1 m Coil, Standard Wheel
Standard Deviation, Ch2	0.43	0.50	0.51	0.23	0.14
Peak to Peak, Ch2	2.05	2.91	2.85	1.86	0.77

FIGURE 4-1 INSTRUMENT VERIFICATION STRIP, TOWED MARINE COIL

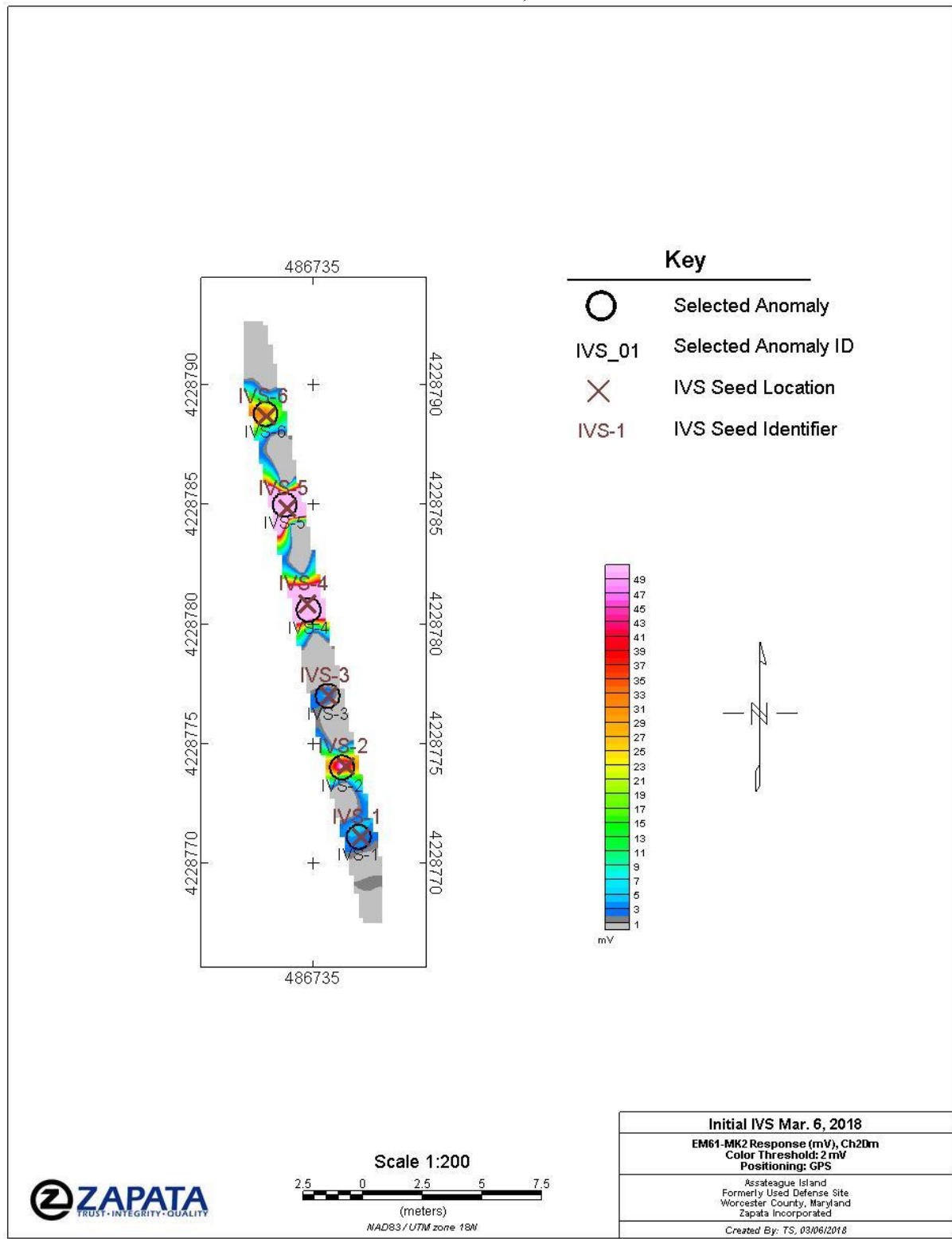


FIGURE 4-2 INSTRUMENT VERIFICATION STRIP, HAND-PULLED CART, ENCASED COIL

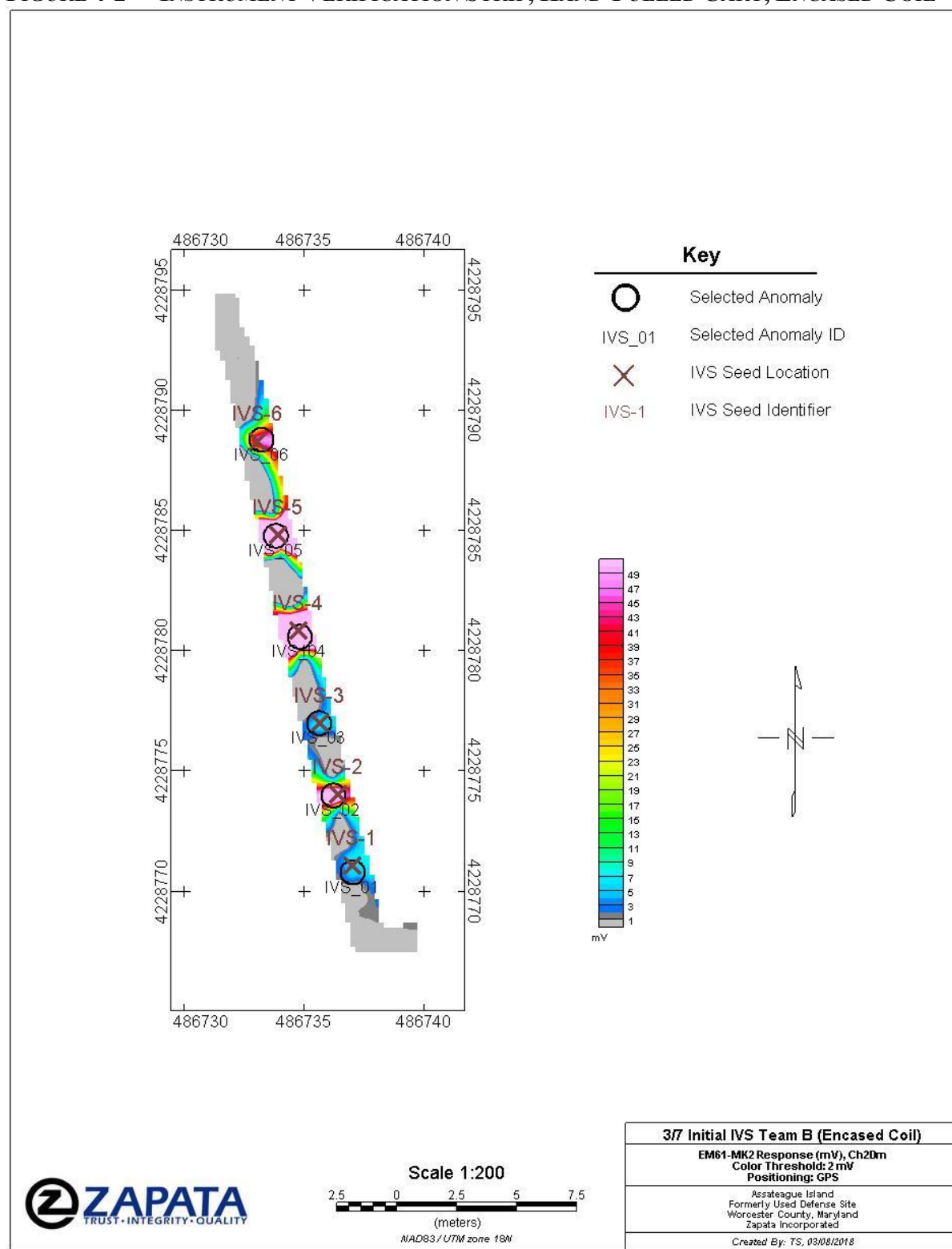


FIGURE 4-3 INSTRUMENT VERIFICATION STRIP, HAND-PULLED CART, STANDARD COIL, BALLOON TIRES

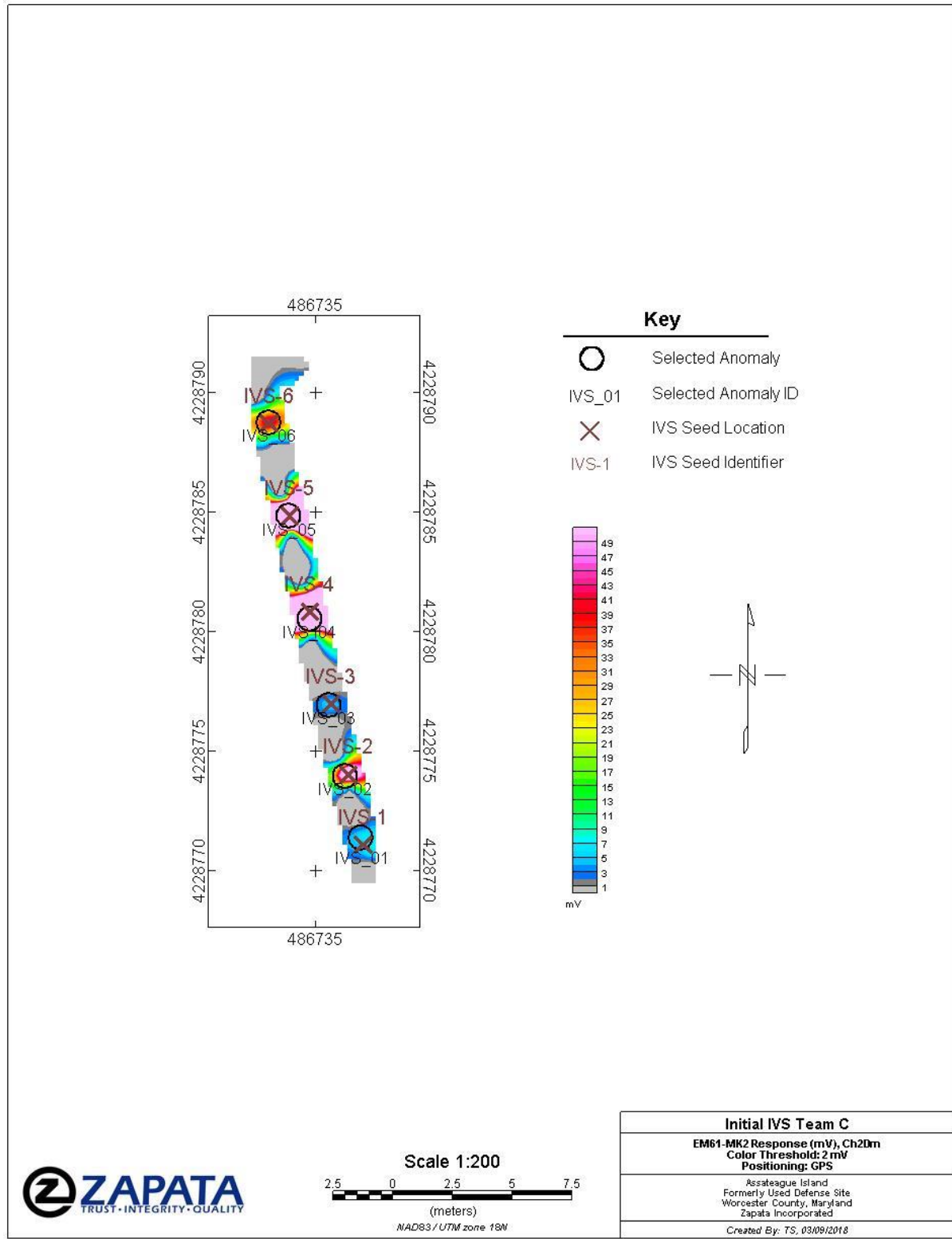


FIGURE 4-4 INSTRUMENT VERIFICATION STRIP, HAND-PULLED CART, STANDARD COIL, STANDARD TIRES

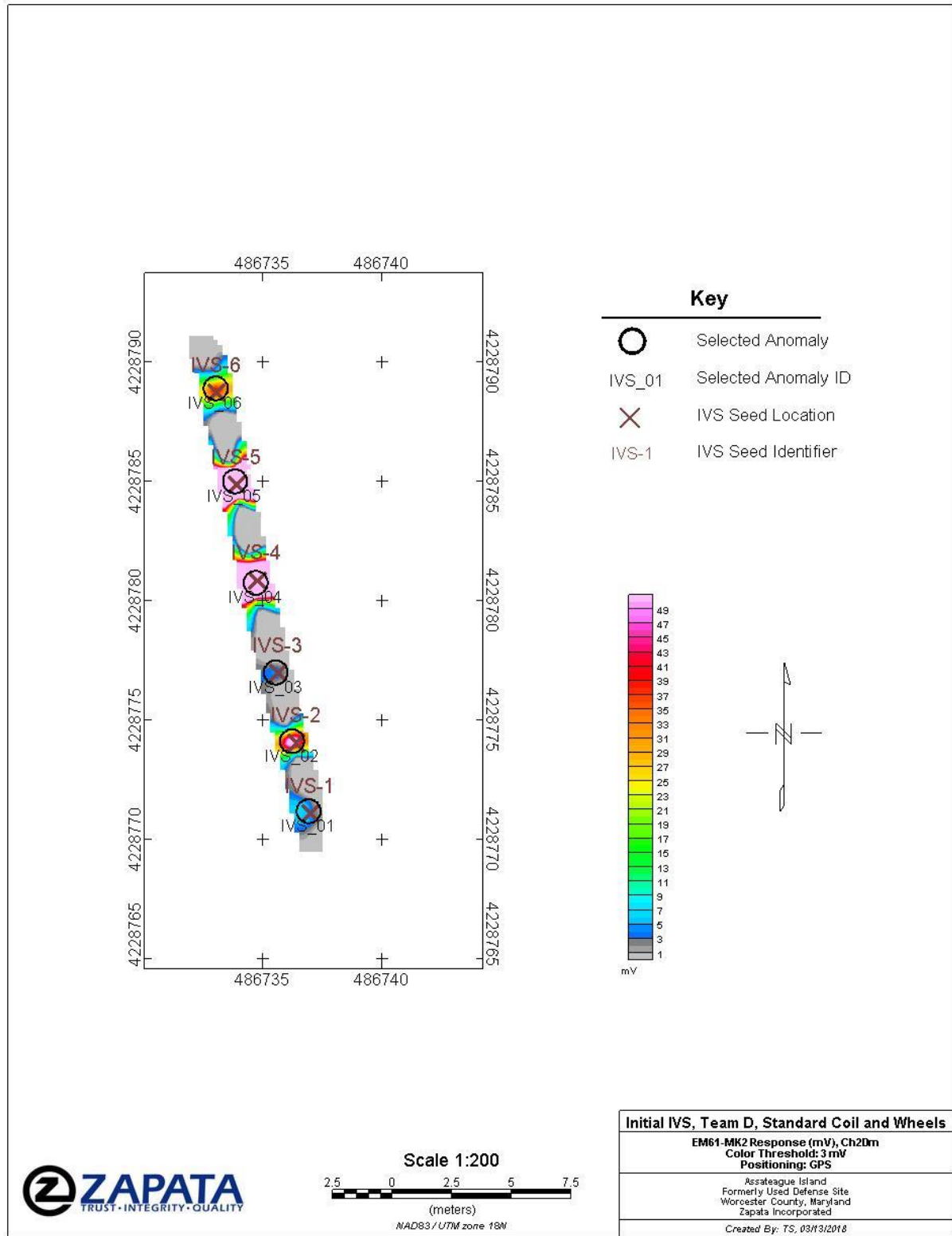


FIGURE 4-5 INSTRUMENT VERIFICATION STRIP, 1x1 m COIL, SKIRT MODE

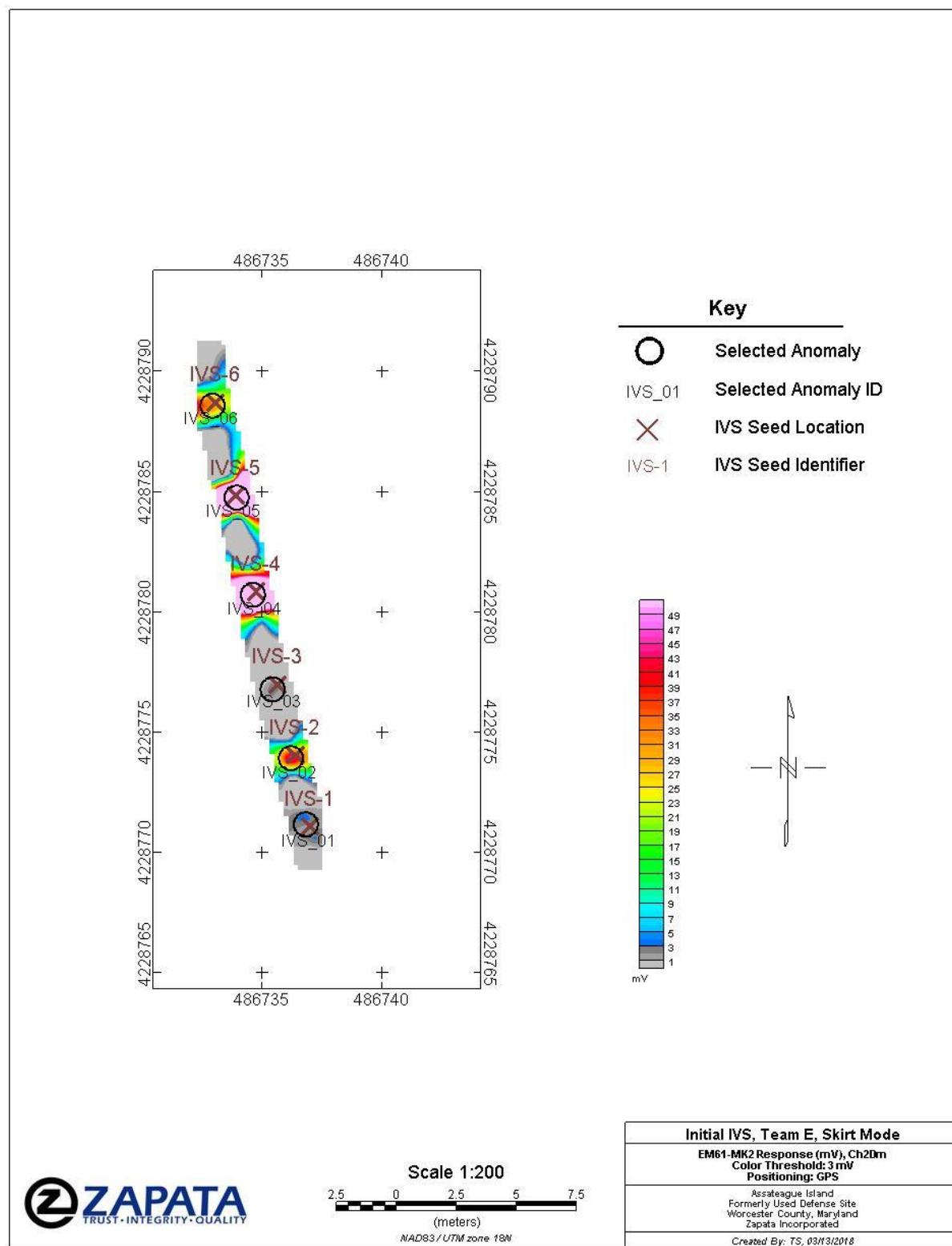
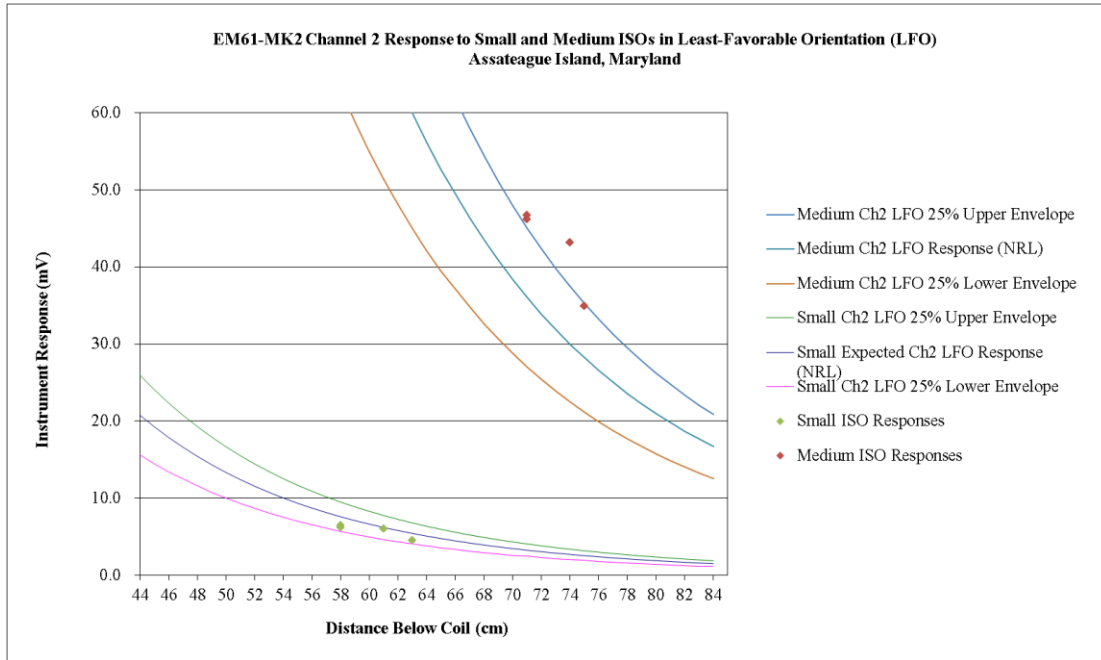


FIGURE 4-6 RESPONSE COMPARISON WITH EXPECTED (NRL) FOR SMALL AND MEDIUM ISOS IN LEAST-FAVORABLE ORIENTATION (LFO)



Based on the IVS test, the background survey results and on an early look at the production data, the following approach is recommended for anomaly selection:

1. A target selection threshold of 3 mV on Channel 2 for all EM61 surveys is initially proposed for anomalies that display decay characteristics consistent with those typically caused by the presence of metallic items; i.e. a stepwise decrease in amplitude across each of the time channels (Channels 1 through 4) is seen in profile and the anomaly shows a parabolic decrease in amplitude to either side of the peak response (Figures 4-7 and 4-8).
2. A target selection threshold of 2 mV is initially proposed for **skirt mode** EM61 surveys for anomalies displaying the decay characteristics described above.
3. Target selection criteria should be re-evaluated and possibly adjusted if background noise in any individual grid or survey area is significantly higher than what is observed in the IVS.

FIGURE 4-7 TIME DECAY CURVES FOR IVS SEEDS (mV vs. TIME)

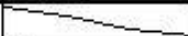
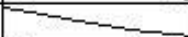
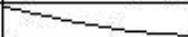
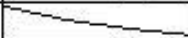

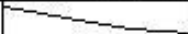
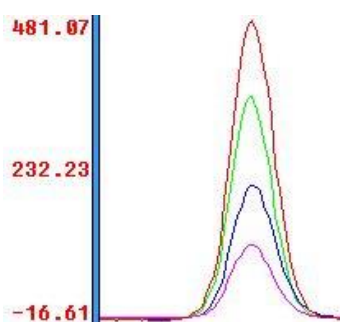
Target_ID	DecayCurve
AMIU_01	
AMIU_02	
AMIU_03	
AMIU_04	
AMIU_05	
AMIU_06	

FIGURE 4-8 DECAY PROFILE, MEDIUM ISO, VERTICAL (CH1-CH4 mV vs. DISTANCE)



5.0 QUALITY CONTROL

QC tests were performed as specified in Appendix B2 of the QAPP. No discrepancies were noted in terms of instrument functionality and all test results were within tolerances stated in the plan. Survey data also met all minimum QC requirements. All QC test data as well as an Access table showing test results and measured survey metrics are provided on the data package included with this report.

Principal QC tests and DQOs required by the QAPP or standard procedure are shown in Table 5-1. An example of a cable shake test is provided in Figure 5-1, and an example of a static/standard test is shown in Figure 5-2.

TABLE 5-1 PRINCIPAL QC TESTS AND DQOs

Test	Acceptance Criteria
Positioning Repeatability	±2 in (control point)
Personnel and Vibration Tests (Cable Shake)	Data profile does not exhibit significant data spikes (above background), disregarding ambient noise
Static Background Test & Static Spike	±10% of standard item response on Channel 2 after background correction
IVS Response and Positioning	Amplitudes ≥ 75% and position offset ≤ 1 ft
Blind Seed Response and Positioning	Amplitudes ≥ 75% of expected and position offset ≤ 3.28 ft (transects) or 2.25 ft (grids)
Transect coverage	VSP Post-Survey Probability of Target Traversal >90%
Grid coverage	>90 percent crossline spacing ≤ 2.5 ft, >95% ≤ 3.3 ft
In-line data spacing	90% of data points separated by ≤ 6 in

FIGURE 5-1 **EXAMPLE OF CABLE SHAKE TEST**

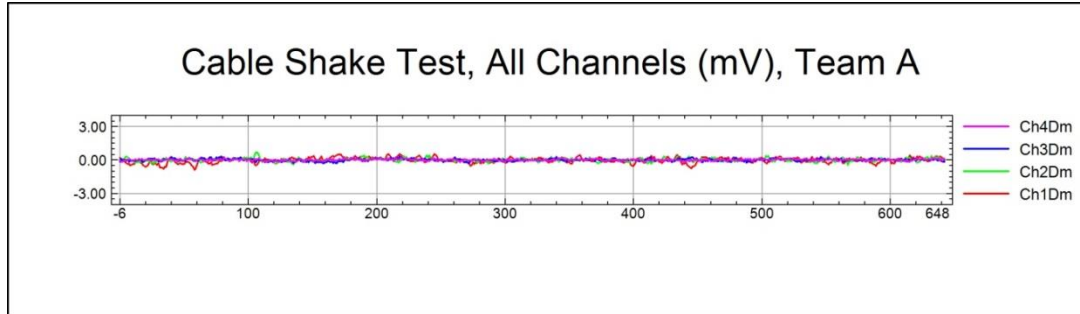


FIGURE 5-2 **EXAMPLE OF STATIC/STANDARD TEST**

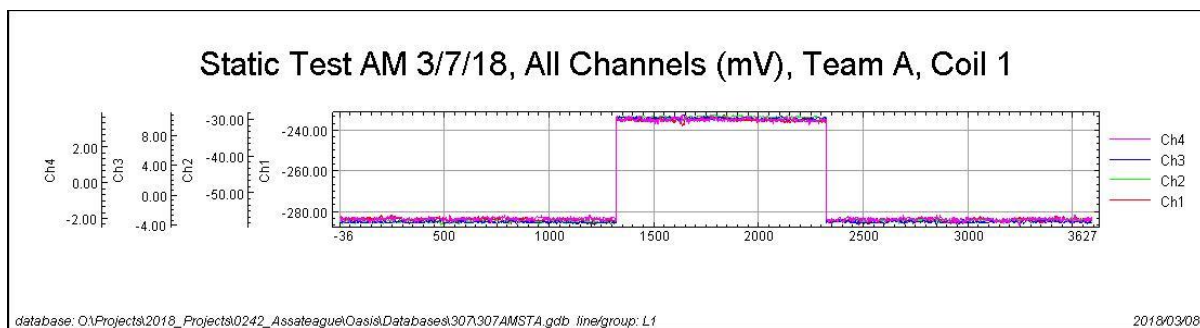
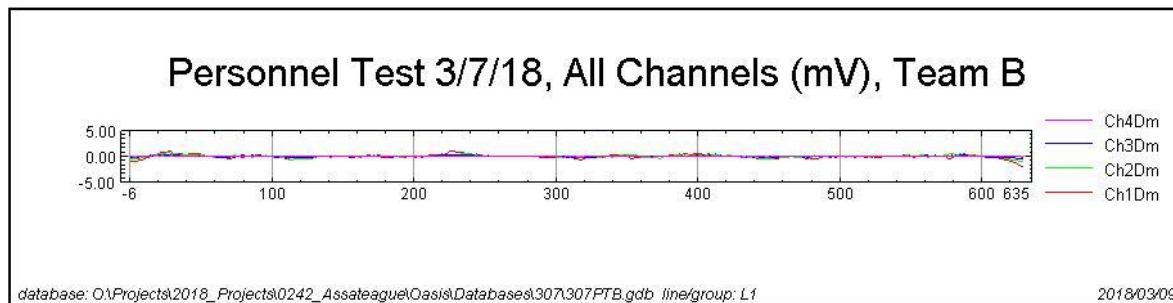


FIGURE 5-3 **EXAMPLE OF PERSONNEL TEST**



6.0 CONCLUSIONS

ZAPATA set up and performed an IVS survey over a 3 m by 21 m grid containing buried seed items using hand-pulled and vehicle-towed EM61S-MK2 and EM61-MK2 systems prior to conducting DGM surveys at the Assateague Island FUDS (W912DR-13-D-0018), Worcester County, Maryland. The systems were verified as being within industry standards and met the QC standards described in the QAPP.

As shown in Tables 4-1 and 4-2 and Figures 4-1, 4-2, and 4-3, positioning of the buried items was found to be within specified limits, while as shown in Figure 4-4 the instrument response was within or above the expected range for small and medium ISOs in the least-favorable orientation.

Based on the results of this IVS, a threshold of 3 mV on Channel 2 for anomaly selection criteria is recommended for all towed and hand-pulled DGM platforms, subject to modification in the event of a changing background noise environment. For skirt mode DGM, a threshold of 2 mV is recommended. If geologic influence or fluctuations in ambient background levels become apparent in some areas and makes individual anomaly selection difficult, ZAPATA will discuss with EA and the USACE project geophysicist potential changes to the data evaluation and/or target selection procedures.

APPENDIX A
PHOTOGRAPHS OF SEED ITEMS

IVS-1: 5/8 inch-11 by 2" Bolt, Inline, Depth to center mass 3 inches.



IVS-2: Small ISO, Vertical, Depth to Center Mass 7 inches



IVS-3: Small ISO, Crossline, Depth to Center Mass 7 inches



IVS-4: Medium ISO, Inline, Depth to Center Mass of 6 inches



IVS-5: Medium ISO, Vertical, Depth to Center Mass 9 inches



IVS--6 : Medium ISO, Depth to Center Mass 12 inches



APPENDIX C-3: Preliminary Characterization Memorandum for MRS 01

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Military Munitions Response Program Remedial Investigation
Assateague Island Formerly Used Defense Site
Preliminary Characterization Memorandum– Munitions Response Site (MRS) 01

Overview

The following is a synopsis of the findings from the digital geophysical mapping (DGM) along transects that will be used to guide the Concentrated Munitions Use Area and Non-Concentrated Munitions Use Area characterizations to follow. This summary presents the selection process used to identify areas for intrusive investigation and to establish dig lists for the intrusive portion of the Remedial Investigation (RI).

DGM Data Collection and Coverage

Figure 1 shows MRS 01 and includes an aerial view of the MRS, the MRS sub-areas (i.e., marsh, campground, West Island, Beach, Surf Zone), the land-based DGM transect locations, the land-based DGM anomaly locations that met the selection criteria presented in the Instrument Verification Strip (IVS) Report, a color-shaded contour map of the DGM anomaly density, the results from the water-based DGM and intrusive investigation performed last fall, the previously identified target area from the SI.

DGM data were collected in accordance with the UFP-QAPP Work Plan and met all Measurement Quality Objectives (MQOs) for DGM. The DGM data was positioned using Real-Time Kinematic (RTK) GPS and the positioning accuracy was achieved throughout the site, including, with a few exceptions, within the woods. All blind seeds were accurately detected and met project MQOs.¹

The Data Quality Objectives for data collection quantities shown in Table 17-3 of the UFP-QAPP Work Plan were for the most part met or exceeded, except for the Beach and Shallow Surf transects. There were issues with obtaining transect coverage on the beach due to Park Service restrictions covering vegetation removal in the beach dunes, and in the shallow surf due to extremely rough surf; therefore the amount of DGM in these areas was less than planned. Based on a visual inspection of the actual DGM transects, it is not believed that this impacted the goal of refining the location of the known target area, as the coverage in and around the target area was more than sufficient to accomplish this goal. In addition, it does not appear that any potential disposal areas on the beach were missed as the coverage between the low-tide water edge and the dunes is considered fully covered at the planned transect spacing. However, it does not appear that the area located in the surf

¹ The DGM data includes a GPS quality flag that indicates the accuracy of the DGM positions (i.e., cm accuracy versus submeter accuracy). When DGM anomalies are identified during data interpretation, the GPS quality flag is captured with the other anomaly attributes, which can then be used to ascertain whether the anomaly has a high probability of reacquisition. Anomalies with a GPS quality flag < 2 (i.e., > 1-meter error) generally were removed from the list of anomalies selected for intrusive investigation. As noted in the UFP QAPP, grids were planned if anomalies could not be accurately positioned.

zone identified during the 1998 TCRA (labeled by EA as a suspect disposal area) was identified from the land-based DGM transects, or from the marine based DGM transects. This area likely lies somewhere between the areas covered by these two surveys. As previously stated this area is likely in the surf zone which was not conducive to land or water surveys. It should be noted that DGM coverage in other subareas (i.e., Marsh, Back Bay Campground, and West Island) was higher than planned and the total achieved coverage (20.0 acres) for the land portion of MRS 01 was only slightly less than the planned DGM coverage (20.4 acres).

DGM Analysis

Targets were identified using the automatic profile picker within Geosoft Oasis Montaj with 2 mV on Channel 2 for the selection criteria. Anomalies that were obviously the result of above ground objects, or utilities, or duplicates, were removed from the target list. The DGM track path and target list were incorporated into the Visual Sampling Plan's (VSPs) Geostatistical Mapping of Anomaly Density module and into Geosoft Oasis Montaj direct gridding (anomaly density) module. Based on the VSP analysis (Appendix A), and Oasis Montaj anomaly density calculations, the measured anomaly density was variable across the site. The Oasis Montaj anomaly density color contour map is presented in Figure 1. The VSP anomaly density map is presented in Appendix A. In areas of high public use (i.e., campgrounds, the maintenance yard, boardwalks, concession stand), the anomaly density was over 100 anomalies/acre. In the low public use areas such as the marsh and the West Island wooded area, the anomaly density ranged from 5 anomalies/acre to 30 anomalies/acre. Anomaly density calculations for each of the subareas within MRS 01 are presented in Table 1. It should be noted that the calculations for each subarea do not include the high-density areas (i.e., Target Area and the Beach Campground), which are presented separately.

Intrusive Sampling Recommendations

EA separated a 12.5-acre high-density area shown in Figure 1 which is being identified as CMUA #1. This area had an average anomaly density of 85 anomalies/acre, which corresponds extremely well with the previously known/identified target area in MRS 01. This area will be treated as a CMUA. One acre of intrusive investigation will take place within the area boundary in accordance with the UFP-QAPP Work Plan. Based on the coverage and transect spacing within this CMUA (approximately 15-foot transects throughout) the one-acre of intrusive investigation will occur along the transects. Refer to the list of anomalies identified along the transects in the CMUA.

A second area with a large number of anomalies was identified as "High-Density Area #2". This area is located at the southern portion of the MRS 01 adjacent to the Beach Campground, and this area had an anomaly density of 175 anomalies/acre. It is likely the high number of anomalies within this area are the result of campground activities and that this area is not a CMUA; however, an initial intrusive investigation is recommended to determine the nature of the anomalies. Thirty-five anomalies are currently planned for investigation in the High-Density Area #2 per Table 3. If the anomalies planned for investigation are primarily related to non-munitions material, then no further intrusive investigation will be performed. However, if the anomalies are munitions related, the High-Density Area #2 will be treated as a CMUA and additional intrusive investigations will take place within this area to ensure the CMUA is characterized (e.g., 1 acre of intrusive targets).

The remaining areas are treated as NCMUAs and will be sampled using the VSP design presented in Table 17-3 of the UFP-QAPP and presented below in Table 2. To ensure that a normal distribution of targets are intrusively investigated throughout each subarea, it is recommended that randomly selected anomalies throughout each subarea be investigated rather than investigating all anomalies on randomly selected “transects” within each of the subareas. This will prevent large areas within each subarea going uninvestigated and small areas getting over-investigated. The calculation for the number of anomalies that should be investigated in each subarea is presented in Table 3. The number of anomalies to be investigated is based on taking the ratio of DGM acreage investigated relative to the acreage that VSP determined should be investigated, and multiplying by the total number of anomalies in each subarea.

Initially, intrusive investigations were to be performed on the DGM transects in the Marsh, the Back Bay Campground, the Beach, and the Shallow Surf, and DGM grids were to be utilized for the intrusive investigation of the wooded areas based on the assumption that the tree canopy would prohibit the use of accurate GPS. However, based on the actual results from the DGM transect survey through the woods, GPS accuracy is sufficient for target reacquisition on the wooded transects; therefore, grids will not be required for intrusive investigations in the woods (i.e., anomaly investigations will occur along the transects).

Although the number of DGM anomalies in the Back Bay Campground calculated for intrusive investigation is 106, based on the fact that this area is primarily backfill that occurred after MRS 01 was used as a bombing range, and many of the anomalies are more than likely related to campground related infrastructure and activities, it is proposed that some of these anomalies be redistributed to the nearby West Island area and Beach area where munitions related material is more likely to be found. The number of DGM anomalies recommended for intrusive investigation for each area is presented in Table 3 and the locations are shown in Figure 2. The list of DGM targets recommended for intrusive investigation in each of the areas is presented in Table 4.

It should be noted that during the recent fieldwork a series of nor’easters’ have hit the ocean city and Assateague Island area. The effect on Assateague Island included flooding and high surf events changing the beach elevations and relocating sand. Given the dynamic nature of the beaches, it is assumed that the potential exists that there could be anomalies classified as a series of “no findings”. If the intrusive team encounters a series of “no findings” due to the dynamic nature of the beaches, the field teams will have the list of remaining targets available and they may add additional targets to replace targets that may have been washed away or buried beyond detection depth in areas of interest.

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TABLES

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Table 1 Anomaly Density Calculations for MRS 01

Munitions Use	Area	DGM Miles Collected	DGM Acres Collected	Total # Targets on Transects	Average Anomaly Density
NCMUA	Marsh	6.49	2.58	13.00	5.04
NCMUA/CMUA	Back Bay Campground	3.57	1.42	160.00	112.73
NCMUA/CMUA	West Island	4.66	1.85	88.00	47.50
NCMUA/CMUA	Beach	15.52	6.17	203.00	32.90
NCMUA/CMUA	Shallow Surf	6.27	2.49	17.00	6.82
CMUA 1	Target Area	6.09	2.42	208.00	85.91
High Density Area 2	Beach Campground	7.60	3.02	532.00	176.07
Total		50.20	19.96	1221.00	61.18

Table 2 MEC Investigation Design Summary on Land at MRS 01 with DGM Results

Munitions Use	Area	Acreage (Acres)	Transect Spacing (feet)	DGM Mode ^(a)	DGM Linear miles / percent coverage / DGM acres	Intrusive Approach	Intrusive Method ^(b)	Intrusive Acreage ^(c)	DGM Miles Collected	DGM Acres Collected
NCMUA	Marsh	128	Variable (395)	Person portable	2.6 / 0.8% / 1	100% of transect anomalies	Transects	1.34	6.5	2.6
NCMUA/CMUA	Back Bay Campground	90	Variable (395)	Person portable	2.0 / 0.9% / 0.8	VSP-NCMUA	Transects	0.94	3.6	1.4
NCMUA/CMUA	West Island	57	150	Person portable	3.5 / 2.2% / 1.4	VSP-NCMUA	Transects	0.59	5.2	2.1
NCMUA/CMUA	Beach	56	15	Person portable	32 / 22% / 12.8	VSP-NCMUA	Transects	0.58	28.7	11.4
NCMUA/CMUA	Shallow Surf ^(d)	20	15	Person-Portable / Boat	11 / 22% / 4.4	VSP-NCMUA	Transects	0.21	6.3	2.5
	Total	351			51.1 / 3% / 20.4			3.7	50.2	20.0

Notes:

(a) Investigation footprint for Person portable = 3.3 feet, Boat = 6.6 feet

(b) Intrusive investigations will be performed on transects in back bay, ocean, marsh, beach, and shallow surf. Intrusive investigations will be performed on transects in wooded areas where GPS quality is good, otherwise they will be performed in grids.

(c) Intrusive acreages are based on VSP estimate for NCMUAs using 95% confidence and 0.5 MEC/acre. Back bay and Island for one NCMUA (undershoots and misses north and south), and Ocean for the second NCMUA (overshoots). This represents a conservative approach, as an argument for only one NCMUA for each MRS could be made (e.g., total of 12 acres intrusive for NCMUAs vs 6 acres intrusive). Intrusive acreages listed do not cover CMUAs found within these areas. Assumed two CMUAs per MRS and 1 acre of grids per CMUA, for a total of 2 acres of grids per MRS covering the CMUAs.

CMUA = Concentrated munitions use area.

DGM = Digital geophysical mapping.

MEC = Munitions and explosives of concern.

MRS = Munitions response site.

NCMUA = Non-concentrated munitions use area.

VSP = Visual Sample Plan.

Table 3 MEC Intrusive Design Summary on Land at MRS 01

Munitions Use	Area	Intrusive Approach	Intrusive Method ^(b)	Intrusive Acreage ^(c)	DGM Miles Collected ^(d)	DGM Acres Collected	Ratio of Intrusive Acreage to DGM Acreage	Total # Targets on Transects	# of Targets to Dig based on Intrusive/DGM Ratio	Intrusive Acreage	# of Targets Recommended
NCMUA	Marsh	100% of transect anomalies	Transects	1.34	6.49	2.58	0.52	13	13	2.6	13
NCMUA/CMUA	Back Bay Campground	VSP-NCMUA	Transects	0.94	3.57	1.42	0.66	160	106	0.6	73
NCMUA/CMUA	West Island	VSP-NCMUA	Transects	0.59	4.66	1.85	0.32	88	28	1.0	46
NCMUA/CMUA	Beach	VSP-NCMUA	Transects	0.58	15.52	6.17	0.09	141	13	2.1	47
NCMUA/CMUA	Shallow Surf	VSP-NCMUA	Transects	0.21	6.27	2.49	0.08	17	1	0.1	1
CMUA 1	Target Area	Population Sampling	Transects	1	6.09	2.42	0.41	208	86	1.0	86
High Density Area 2	Beach Campground	VSP-NCMUA	Transects	0.29	7.60	3.02	0.10	594	57	0.2	35
	Total			7	50.20	16.94	0.41	1221	305	7.6	301

Notes:

- (a) Investigation footprint for Person portable = 3.3 feet, Boat = 6.6 feet
- (b) Intrusive investigations will be performed on transects in back bay, ocean, marsh, beach, and shallow surf. Intrusive investigations will be performed on transects in wooded areas where GPS quality is good, otherwise they will be performed in grids.
- (c) Intrusive acreages are based on VSP estimate for NCMUAs using 95% confidence and 0.5 MEC/acre. Back bay and Island for one NCMUA (undershoots and misses north and south), and Ocean for the second NCMUA (overshoots). This represents a conservative approach, as an argument for only one NCMUA for each MRS could be made (e.g., total of 12 acres intrusive for NCMUAs vs 6 acres intrusive). Intrusive acreages listed do not cover CMUAs found within these areas. Assumed two CMUAs per MRS and 1 acre of grids per CMUA, for a total of 2 acres of grids per MRS covering the CMUAs.
- (d) Subarea mileages do not include mileages in CMUA 1 and High Density Area.

CMUA = Concentrated munitions use area.

DGM = Digital geophysical mapping.

MEC = Munitions and explosives of concern.

MRS = Munitions response site.

NCMUA = Non-concentrated munitions use area.

VSP = Visual Sample Plan.

Table 4 List of DGM Targets Recommended for Intrusive Investigation at MRS 01

Target_ID	Easting (m)	Northing (m)	CH1 (mV)	CH2 (mV)	CH3 (mV)	CH4 (mV)	GPS Qual	Area	ID
MRS01_1	486005.69	4228961.07	20.39	14.24	7.56	2.59	4	Marsh	1
MRS01_2	486007.35	4228968.31	4.3	3.19	1.55	0.44	4	Marsh	2
MRS01_3	486725.14	4229566.88	8.42	5.8	2.83	0.85	4	Marsh	3
MRS01_4	486723.22	4229565.54	6.08	4.24	1.98	0.64	4	Marsh	4
MRS01_5	486712.91	4229586.15	5.29	3.6	1.62	0.42	4	Marsh	5
MRS01_6	486728.84	4229573.39	5.86	3.82	1.62	0.42	4	Marsh	6
MRS01_7	485805.72	4229061.78	22.53	13.29	5	0.9	4	Marsh	7
MRS01_8	486444.69	4229089.83	33.58	9.32	0.81	-0.26	4	Marsh	8
MRS01_9	486245.29	4228964.4	150.92	93.04	48.39	21.64	4	Marsh	9
MRS01_10	486056.11	4229427.61	17.08	11.13	7.4	3.5	4	Marsh	10
MRS01_11	486492.29	4229146.47	52.16	34.36	19.5	9.41	4	Marsh	11
MRS01_12	486378.51	4229254.74	73.22	54.06	34.86	20.82	4	Marsh	12
MRS01_13	486495.07	4229152.46	34.1	24.31	14.82	8.34	4	Marsh	13
MRS01_14	486060.29	4228741.19	40.38	30.42	20.15	12.12	4	Backbay CG	14
MRS01_15	486454.81	4228605.83	9.57	7.07	3.98	1.77	5	Backbay CG	15
MRS01_16	485589.01	4228895.73	4.9	3.83	2.24	1.3	4	Backbay CG	16
MRS01_17	485636.04	4229055.42	10.92	8.6	5.13	3.25	4	Backbay CG	17
MRS01_18	485635.95	4229053.22	6.65	4.98	2.6	0.87	4	Backbay CG	18
MRS01_19	485636.11	4229047.23	17.71	13.53	8.39	4.49	4	Backbay CG	19
MRS01_20	485636.88	4229034.89	53.92	39.53	22.55	9.33	4	Backbay CG	20
MRS01_21	485636.68	4229032.53	18.5	13.8	8.53	4.48	4	Backbay CG	21
MRS01_22	485633.4	4229005.62	49.24	37.46	23.21	13.23	5	Backbay CG	22
MRS01_23	485612.04	4228955.18	7.38	5.21	2.31	0.58	4	Backbay CG	23
MRS01_24	485603.18	4228941.27	6.66	4.56	2.46	1.01	4	Backbay CG	24
MRS01_25	485831.36	4228842.84	9.69	7.2	4.18	1.61	4	Backbay CG	25
MRS01_26	485840.7	4228896.6	12.85	3.3	0.29	0	4	Backbay CG	26
MRS01_27	485878.14	4228955.74	34.09	23.73	14.04	7.2	4	Backbay CG	27
MRS01_28	485944.38	4228776.37	26.31	18.77	10.79	4.43	4	Backbay CG	28
MRS01_29	485948.15	4228790.11	11.83	5.54	1.77	0.37	4	Backbay CG	29
MRS01_30	485949.11	4228800.5	43.07	30.88	18.17	7.09	4	Backbay CG	30

Table 4 List of DGM Targets Recommended for Intrusive Investigation at MRS 01

Target_ID	Easting (m)	Northing (m)	CH1 (mV)	CH2 (mV)	CH3 (mV)	CH4 (mV)	GPS Qual	Area	ID
MRS01_31	485948.35	4228803.12	85.08	62.46	38.81	18.55	4	Backbay CG	31
MRS01_32	485960.74	4228861.93	18.15	12.82	6.89	2.37	4	Backbay CG	32
MRS01_33	485962.63	4228866.96	7.7	5.7	3.11	1.34	4	Backbay CG	33
MRS01_34	485963.33	4228869.93	26.15	18.45	10.97	5.78	4	Backbay CG	34
MRS01_35	485982.19	4228894.98	28.38	20.31	11.49	4.01	4	Backbay CG	35
MRS01_36	485982.92	4228896.73	40.09	29.2	15.78	6.23	4	Backbay CG	36
MRS01_37	485999.28	4228933.44	32.18	25.35	17.27	9.19	4	Backbay CG	37
MRS01_38	485998.71	4228934.89	36.45	23.57	10.38	3.12	4	Backbay CG	38
MRS01_39	485998.05	4228936.03	14.67	9.78	5.04	1.78	4	Backbay CG	39
MRS01_40	485997.7	4228944.82	7.86	5.71	2.82	0.96	4	Backbay CG	40
MRS01_41	486083.79	4228808.01	6.84	3.94	1.63	0.44	4	Backbay CG	41
MRS01_42	486083.46	4228806.99	10.41	6.32	2.75	0.96	4	Backbay CG	42
MRS01_43	486059.16	4228777.09	7.43	4.68	1.93	0.45	4	Backbay CG	43
MRS01_44	486056.54	4228774.75	29.54	19.45	10.17	3.94	4	Backbay CG	44
MRS01_45	486220.8	4228878.69	9.54	6.25	3.05	0.91	4	Backbay CG	45
MRS01_46	486222.93	4228824.1	14.29	9.94	5.73	2.44	5	Backbay CG	46
MRS01_47	486222.7	4228822.41	15.82	10.09	4.82	1.37	5	Backbay CG	47
MRS01_48	486283.34	4228685.58	14.57	10.35	5.67	2.37	2	Backbay CG	48
MRS01_49	486310.38	4228775.82	48.05	33.13	18.14	7.31	4	Backbay CG	49
MRS01_50	486325.22	4228790.49	27.28	19.27	10.56	4.08	4	Backbay CG	50
MRS01_51	486372.28	4228642.58	23.68	15.43	7.92	2.82	2	Backbay CG	51
MRS01_52	486384.08	4228729.44	46.19	31.95	17	6.92	5	Backbay CG	52
MRS01_53	486384.12	4228731.07	13.69	9.84	4.73	1.19	4	Backbay CG	53
MRS01_54	486394.05	4228745.29	86.48	64.29	42.1	24.79	4	Backbay CG	54
MRS01_55	486382.32	4228558.58	8.89	3.73	0.94	0.22	4	Backbay CG	55
MRS01_56	486409.96	4228678.45	13.69	10.25	6.6	3.87	4	Backbay CG	56
MRS01_57	486423.86	4228750.7	19.59	15.35	8.7	4.18	4	Backbay CG	57
MRS01_58	486415.76	4228755.9	18.22	12.19	6.17	2.08	4	Backbay CG	58
MRS01_59	486416.36	4228759.57	7.11	4.81	2.37	1.01	4	Backbay CG	59
MRS01_60	486487.7	4228780.54	46.98	35.8	22.2	13.66	5	Backbay CG	60

Table 4 List of DGM Targets Recommended for Intrusive Investigation at MRS 01

Target_ID	Easting (m)	Northing (m)	CH1 (mV)	CH2 (mV)	CH3 (mV)	CH4 (mV)	GPS Qual	Area	ID
MRS01_61	486481	4228753.14	37.11	26.86	18.54	11.29	5	Backbay CG	61
MRS01_62	486477.08	4228744.94	151.62	114.67	76.99	46.91	5	Backbay CG	62
MRS01_63	486474.31	4228743.18	13.53	10.02	5.48	3	5	Backbay CG	63
MRS01_64	486417.26	4228501.21	19.07	3.87	1.12	0.45	5	Backbay CG	64
MRS01_65	486417.83	4228505.43	5.29	3.65	1.86	0.75	4	Backbay CG	65
MRS01_66	486465.59	4228478.16	4.32	3.35	2.31	1.57	4	Backbay CG	66
MRS01_67	486508.89	4228626.57	17.45	12.83	6.86	2.46	4	Backbay CG	67
MRS01_68	486510.6	4228629.38	29.27	22.91	13.43	6.34	4	Backbay CG	68
MRS01_69	486513.12	4228637.04	12.72	9.73	6.44	3.51	4	Backbay CG	69
MRS01_70	486520.66	4228698.4	11.21	4.04	0.67	0.07	4	Backbay CG	70
MRS01_71	486111.44	4228892.96	23.46	18.69	13.8	8.31	4	Backbay CG	71
MRS01_72	486112.99	4228897.14	5.54	4.74	1.71	0.42	4	Backbay CG	72
MRS01_73	486113.66	4228898.88	19.56	14.92	7.71	2.95	4	Backbay CG	73
MRS01_74	485408.16	4228971.31	5	4.14	2.57	1.07	4	Backbay CG	74
MRS01_75	485635.48	4229045.55	39.33	28.7	17.93	8.24	4	Backbay CG	75
MRS01_76	485633.85	4229007.45	5.07	3.69	2.09	1.01	5	Backbay CG	76
MRS01_77	485620.86	4228970.43	79.53	58.84	36.94	21.4	4	Backbay CG	77
MRS01_78	485833.65	4228887.33	14.75	10.71	6.31	3.37	4	Backbay CG	78
MRS01_79	485998.22	4228928.91	109.25	80.23	49.45	29.24	4	Backbay CG	79
MRS01_80	486099.85	4228860.19	34.21	23.13	12.05	4.83	4	Backbay CG	80
MRS01_81	486168.93	4228695.68	14.04	9.01	4.5	1.53	2	Backbay CG	81
MRS01_82	486177.43	4228721.32	50.87	34.7	20.28	10.3	5	Backbay CG	82
MRS01_83	486178.31	4228734.03	79.68	57.95	32.71	14.18	4	Backbay CG	83
MRS01_84	486203.15	4228764.45	22.05	15.65	8.63	3.36	4	Backbay CG	84
MRS01_85	486450.85	4228573.52	117.55	79.11	36.82	12.1	5	Backbay CG	85
MRS01_86	486515.69	4228659.84	423.99	297.33	149.08	48.25	4	Backbay CG	86
MRS01_87	486745.12	4229239.65	598.38	355.13	135.98	20.4	4	West Island	87
MRS01_88	486771.5	4229382.01	7.33	5.6	3.48	1.89	4	West Island	88
MRS01_89	486749.22	4229460.93	38.54	21.23	7.28	1.45	2	West Island	89
MRS01_90	486672.14	4229178.46	6.51	3.67	1.61	0.53	4	West Island	90

Table 4 List of DGM Targets Recommended for Intrusive Investigation at MRS 01

Target_ID	Easting (m)	Northing (m)	CH1 (mV)	CH2 (mV)	CH3 (mV)	CH4 (mV)	GPS Qual	Area	ID
MRS01_91	486676.3	4229401.85	6.55	4.27	2.2	0.57	4	West Island	91
MRS01_92	486699.19	4229474.44	8.5	5.74	2.49	0.64	4	West Island	92
MRS01_93	486855.62	4229238.93	4.29	4.64	3.43	2	4	West Island	93
MRS01_94	486931.72	4229528.82	26.57	12.11	2.72	0.22	4	West Island	94
MRS01_95	486926.7	4229541.57	3.77	3.19	2.11	1.09	4	West Island	95
MRS01_96	486893.47	4229463.63	4.99	3.91	2.82	1.88	4	West Island	96
MRS01_97	486764.05	4229219.23	99.17	72.53	45.81	25.76	4	West Island	97
MRS01_98	486872.34	4229398.67	9.3	5.87	2.72	0.66	4	West Island	98
MRS01_99	486840.35	4229406.87	7.7	5.06	2.42	0.44	4	West Island	99
MRS01_100	486860.24	4229436.59	8.57	6.01	3.08	1.17	4	West Island	100
MRS01_101	486750.13	4229231.1	14.44	7.34	1.51	0.46	4	West Island	101
MRS01_102	486778.04	4229180.1	43.8	31.57	20.14	11.29	4	West Island	102
MRS01_103	486761.24	4229173.69	122	82.54	45.58	20.13	5	West Island	103
MRS01_104	486764.15	4229164.66	4.17	3.16	2.01	1.08	2	West Island	104
MRS01_105	486763.79	4229247.28	391.77	258.3	145.18	74.53	4	West Island	105
MRS01_106	486789.62	4229292.67	12.54	8.58	4.68	2.42	4	West Island	106
MRS01_107	486472.58	4228972.77	16.84	12.97	6.87	1.99	4	West Island	107
MRS01_108	486472.57	4228975.43	10.32	7.61	4.15	1.3	4	West Island	108
MRS01_109	486507.83	4228846.38	11.85	9.69	5.88	3.73	4	West Island	109
MRS01_110	486540.87	4228919.11	22.17	16.21	10.51	5.97	4	West Island	110
MRS01_111	486627.5	4229114.11	47.35	33.93	19.94	8.63	4	West Island	111
MRS01_112	486579.65	4228894.98	8.97	3.72	1.09	0.22	4	West Island	112
MRS01_113	486796.26	4229534.91	11.09	6.16	2.59	0.76	4	West Island	113
MRS01_114	486690.33	4229342.51	67.59	49.31	30.81	16.82	4	West Island	114
MRS01_115	486742.05	4229593.24	18.02	13.62	9.57	6.1	4	West Island	115
MRS01_116	486871.94	4229283.83	82.93	51.84	26.89	11.87	4	West Island	116
MRS01_117	486911.6	4229398.14	380.86	271.4	161.29	75.84	4	West Island	117
MRS01_118	486911.91	4229399.32	96.77	72.04	47.17	28.45	4	West Island	118
MRS01_119	486944.91	4229477.52	30.37	23.11	14.6	7.63	4	West Island	119
MRS01_120	486959.9	4229517.95	23.78	18.5	12.91	8.7	4	West Island	120

Table 4 List of DGM Targets Recommended for Intrusive Investigation at MRS 01

Target_ID	Easting (m)	Northing (m)	CH1 (mV)	CH2 (mV)	CH3 (mV)	CH4 (mV)	GPS Qual	Area	ID
MRS01_121	486880.77	4229387.42	114.78	82.79	53.11	34.23	4	West Island	121
MRS01_122	486610.57	4228621.1	8.88	4.59	1.38	0.3	4	West Island	122
MRS01_123	486614.38	4228617.12	72.56	51.74	33.52	20.18	4	West Island	123
MRS01_124	486545.56	4228496.48	5.46	3.64	1.82	0.73	4	West Island	124
MRS01_125	486543.88	4228491.16	2050.97	1366.93	734.46	335.42	4	West Island	125
MRS01_126	486866.44	4229474.65	37	27.03	15.17	5.79	4	West Island	126
MRS01_127	486558.62	4229153.64	29	11.93	2.69	0.38	4	West Island	127
MRS01_128	486556.77	4229153.61	812.21	408.6	121.27	14.77	4	West Island	128
MRS01_129	486474.12	4228869.77	10.26	7.35	4.07	1.2	2	West Island	129
MRS01_130	486568.2	4228904.8	11.51	8.16	4.52	2.4	4	West Island	130
MRS01_131	486594.42	4228838.87	14.87	3.28	0.23	-0.07	5	West Island	131
MRS01_132	486595.48	4228840.98	4.93	4.34	1.94	1.05	5	West Island	132
MRS01_133	487039.73	4229422.98	43.29	27.04	11.88	3.73	4	Beach	133
MRS01_134	487025.98	4229369.82	248.92	170.06	83.39	31.76	4	Beach	134
MRS01_135	487022.46	4229359.35	8.99	7.39	4.23	2.65	4	Beach	135
MRS01_136	486964.43	4229184.73	140.95	100.51	51.52	18.85	4	Beach	136
MRS01_137	486837.91	4228797.38	28.63	18.91	9.31	3.36	4	Beach	137
MRS01_138	486826.85	4228766.67	31.34	11.01	2.18	0.2	4	Beach	138
MRS01_139	486824.82	4228760.8	7.61	5.53	2.26	1.18	4	Beach	139
MRS01_140	486840.15	4228793.11	15.4	4.97	0.99	0	4	Beach	140
MRS01_141	487020.61	4229318.12	6.63	3.05	0.31	0.1	4	Beach	141
MRS01_142	487036.8	4229365.98	28.81	22.86	13.16	7.42	4	Beach	142
MRS01_143	486980.72	4229262.11	54.73	35.36	16.53	5.55	4	Beach	143
MRS01_144	486960.14	4229200.81	5.45	3.85	2.08	0.5	4	Beach	144
MRS01_145	486853.2	4228917.97	38.37	18.55	4.73	1.08	4	Beach	145
MRS01_146	486995.83	4229338.05	16.75	9.1	2.92	0.4	4	Beach	146
MRS01_147	486997.6	4229358.24	7.43	4.52	1.59	0.38	4	Beach	147
MRS01_148	486868.46	4228860.92	927.04	802.97	537.63	375.04	4	Beach	148
MRS01_149	486759.71	4228729.79	17.1	12.35	6.13	1.56	4	Beach	149
MRS01_150	486779.04	4228841.67	8.25	6.41	3.01	1.03	4	Beach	150

Table 4 List of DGM Targets Recommended for Intrusive Investigation at MRS 01

Target_ID	Easting (m)	Northing (m)	CH1 (mV)	CH2 (mV)	CH3 (mV)	CH4 (mV)	GPS Qual	Area	ID
MRS01_151	486782.51	4228834.96	11.39	7.99	3.93	1.09	4	Beach	151
MRS01_152	486740.89	4228753.94	31.65	18.93	9.12	3.7	4	Beach	152
MRS01_153	486904.95	4229225.88	39.2	26.91	15.75	8.13	4	Beach	153
MRS01_154	486929.5	4229200.79	15.89	10.97	5.61	1.96	4	Beach	154
MRS01_155	486952.65	4228909.66	99.3	66.98	36.14	18.19	4	Beach	155
MRS01_156	486821.4	4228498.1	9.19	7.19	4.18	2.38	4	Beach	156
MRS01_157	487044.58	4229168.79	5.13	4.28	2.22	1.39	4	Beach	157
MRS01_158	486712.06	4228741.9	34.8	25.67	15.97	9.2	4	Beach	158
MRS01_159	486975.29	4229003.64	8.05	5.66	3.4	1.81	4	Beach	159
MRS01_160	487011.19	4229338.99	115.9	78.27	36.38	12.12	4	Beach	160
MRS01_161	487014.25	4229347.34	250.11	191.18	112.18	51.33	4	Beach	161
MRS01_162	487016.44	4229342.35	175.7	113.51	49.37	14.23	4	Beach	162
MRS01_163	486995.41	4229277.99	65.11	50.21	29.45	13.24	4	Beach	163
MRS01_164	486843.77	4228827.27	24.01	17.75	11.13	6.6	4	Beach	164
MRS01_165	486826.62	4228821.33	15.76	11.8	6.59	2.88	4	Beach	165
MRS01_166	486828.95	4228832.23	14.97	13.25	7.91	4.1	4	Beach	166
MRS01_167	487044.26	4229540.3	176.32	127.33	62.02	23.36	4	Beach	167
MRS01_168	487094.8	4229512.88	24.13	13.41	4.4	0.59	4	Beach	168
MRS01_169	487101.19	4229518.45	12.65	7.69	2.63	0.4	4	Beach	169
MRS01_170	486886.99	4228866.4	9.41	6.45	2.28	0.51	4	Beach	170
MRS01_171	487038.08	4229295.48	12.84	8.39	3.15	1.22	4	Beach	171
MRS01_172	486800.22	4228928.19	15.36	10.6	6.14	3.28	4	Beach	172
MRS01_173	486863.82	4229130.88	13.86	9.19	5.08	2.37	4	Beach	173
MRS01_174	486897.01	4229193.27	6.68	4.4	2.61	1.43	4	Beach	174
MRS01_175	487002.71	4229417.05	8.16	5.16	2.11	0.5	4	Beach	175
MRS01_176	487024.61	4229485.6	11.51	7.7	4.06	1.43	4	Beach	176
MRS01_177	487027.07	4229490.07	37.25	25.74	13.12	5.08	4	Beach	177
MRS01_178	487112.74	4229381.81	18.32	12.47	7.28	3.67	4	Beach	178
MRS01_179	486734.41	4228825.53	5.08	3.92	2.64	1.64	4	Beach	179
MRS01_180	486788.21	4228397.55	5.26	4.55	2.8	1.39	4	Beach	180

Table 4 List of DGM Targets Recommended for Intrusive Investigation at MRS 01

Target_ID	Easting (m)	Northing (m)	CH1 (mV)	CH2 (mV)	CH3 (mV)	CH4 (mV)	GPS Qual	Area	ID
MRS01_181	486781.68	4228644.07	22.48	16.33	8.86	3.64	4	HD #2	181
MRS01_182	486795.92	4228687.94	3.76	3.52	0.99	0.09	4	HD #2	182
MRS01_183	486737.65	4228517.5	67.75	45.8	26.36	13.31	4	HD #2	183
MRS01_184	486737.58	4228499.54	8.24	4.82	1.96	0.49	4	HD #2	184
MRS01_185	486735.56	4228492.72	129.41	95.3	52.03	21.76	4	HD #2	185
MRS01_186	486715.64	4228436.29	959.96	684.61	362.31	156.69	4	HD #2	186
MRS01_187	486711.84	4228428.09	7.12	5.14	2.18	0.99	4	HD #2	187
MRS01_188	486750.72	4228530.69	61.84	45.85	25.61	11.46	4	HD #2	188
MRS01_189	486764.52	4228631.68	17.26	7.93	2.36	0.5	4	HD #2	189
MRS01_190	486688.67	4228446.39	12.52	10.08	5.87	2.8	4	HD #2	190
MRS01_191	486655.04	4228360.93	4.41	4.14	2.57	1.74	4	HD #2	191
MRS01_192	486661.49	4228379.33	10.84	7.31	3.93	1.36	4	HD #2	192
MRS01_193	486809.84	4228687.21	10.95	7.55	2.98	0.9	4	HD #2	193
MRS01_194	486819.22	4228702.36	9.69	4.95	0.65	0	4	HD #2	194
MRS01_195	486790.15	4228595.7	21.08	14.8	8.01	3.58	4	HD #2	195
MRS01_196	486828.81	4228683.58	53.58	33.67	13.51	3.49	4	HD #2	196
MRS01_197	486691.4	4228537.54	16.48	12.15	6.88	3.23	4	HD #2	197
MRS01_198	486651.12	4228474.6	26.37	18.52	9.81	3.84	4	HD #2	198
MRS01_199	486734.18	4228562.42	173.75	125.06	67.5	29.55	4	HD #2	199
MRS01_200	486766.1	4228609.61	28.12	21.63	12.33	5.22	4	HD #2	200
MRS01_201	486760.66	4228560.48	20.58	15.76	8.99	3.96	4	HD #2	201
MRS01_202	486681.66	4228393.33	17.78	14.13	8.19	3.59	4	HD #2	202
MRS01_203	486725.65	4228535.16	160.95	113	65.67	33.44	4	HD #2	203
MRS01_204	486729.52	4228554.51	25.6	17.35	10.34	7.07	4	HD #2	204
MRS01_205	486665.18	4228380.45	13.77	10.05	5.3	2.52	4	HD #2	205
MRS01_206	486696.9	4228468.67	28.12	21.01	12.84	6.4	4	HD #2	206
MRS01_207	486703.03	4228486.18	146.47	108.06	67.79	38.28	4	HD #2	207
MRS01_208	486644.33	4228377.37	42.33	31.72	18.39	8.55	4	HD #2	208
MRS01_209	486804.73	4228675.31	282.89	178.52	80.3	23.83	4	HD #2	209
MRS01_210	486800.59	4228663.29	214.23	151.08	79.48	33.25	4	HD #2	210

Table 4 List of DGM Targets Recommended for Intrusive Investigation at MRS 01

Target_ID	Easting (m)	Northing (m)	CH1 (mV)	CH2 (mV)	CH3 (mV)	CH4 (mV)	GPS Qual	Area	ID
MRS01_211	486754.59	4228440.09	26.82	19.65	10.99	4.63	4	HD #2	211
MRS01_212	486665.98	4228504.83	22.55	17.52	10.6	6.41	4	HD #2	212
MRS01_213	486634.77	4228442.34	29.49	19.84	10.77	5.39	4	HD #2	213
MRS01_214	486691.7	4228593.14	12.24	7.92	4.37	2.15	4	HD #2	214
MRS01_215	486652.55	4228342.53	58.12	12.23	0.72	0.1	4	HD #2	215
MRS01_216	486910.45	4229039.75	268.76	191.74	97.91	39.05	4	CMUA #1	216
MRS01_217	486956.6	4229175.23	36.77	27.85	15.64	6.58	4	CMUA #1	217
MRS01_218	486945.77	4229073.09	24.16	17.75	10.99	6.93	4	CMUA #1	218
MRS01_219	486876.18	4228937.84	61.56	41.43	20.04	7.95	4	CMUA #1	219
MRS01_220	486919.79	4229063.31	13.45	5.86	1.35	0.29	4	CMUA #1	220
MRS01_221	486879.38	4228935.29	456	327.62	181.14	80.23	4	CMUA #1	221
MRS01_222	486954.59	4229132.11	241.77	165.83	93.34	43.07	4	CMUA #1	222
MRS01_223	486930.9	4229063.05	109.32	74.65	38.31	15.94	4	CMUA #1	223
MRS01_224	486896.34	4228950.92	88.49	71.78	47.26	27.94	4	CMUA #1	224
MRS01_225	486956.21	4229124.92	58.92	40.75	20.36	8.71	4	CMUA #1	225
MRS01_226	486966.98	4229156.92	11.38	8.3	4.54	1.88	4	CMUA #1	226
MRS01_227	486949.1	4229167.07	436.63	258.14	103.98	25.72	4	CMUA #1	227
MRS01_228	486901.98	4229030.32	39.21	26.26	12.92	4.66	4	CMUA #1	228
MRS01_229	486879.69	4228965.89	13.44	7.68	2.51	0.4	4	CMUA #1	229
MRS01_230	486915.26	4229072.16	70.29	40.54	15.15	4.02	4	CMUA #1	230
MRS01_231	486881.43	4229025.52	30.23	21.08	11.34	5.28	4	CMUA #1	231
MRS01_232	486918.68	4229083.66	78.29	42.71	14.37	2.68	4	CMUA #1	232
MRS01_233	486955.19	4229110.13	306.37	230.38	136.35	79.17	4	CMUA #1	233
MRS01_234	486949.82	4229094.89	4.12	4.24	1.98	1.19	4	CMUA #1	234
MRS01_235	486925.79	4229014.25	13.48	9.96	5.28	2.29	4	CMUA #1	235
MRS01_236	486934.92	4229040.41	178.12	129.92	75.7	45.96	4	CMUA #1	236
MRS01_237	486952.56	4229093.04	86.71	58.29	31.75	14.34	4	CMUA #1	237
MRS01_238	486961.23	4229117.55	4.06	3.55	2.12	1.19	4	CMUA #1	238
MRS01_239	486899.85	4228928.01	4.95	3.68	2.02	1.18	4	CMUA #1	239
MRS01_240	486976.75	4229138.87	83.34	62.16	37.54	22.2	4	CMUA #1	240

Table 4 List of DGM Targets Recommended for Intrusive Investigation at MRS 01

Target_ID	Easting (m)	Northing (m)	CH1 (mV)	CH2 (mV)	CH3 (mV)	CH4 (mV)	GPS Qual	Area	ID
MRS01_241	486968.74	4229101.92	72.5	47.93	25.55	11.74	4	CMUA #1	241
MRS01_242	486990.4	4229103.87	9.29	7.18	3.91	1.83	4	CMUA #1	242
MRS01_243	486978.81	4229058.08	6.06	3.97	2.2	0.81	4	CMUA #1	243
MRS01_244	486850.51	4228968.99	16.55	10.67	5.35	1.82	4	CMUA #1	244
MRS01_245	486905.57	4229101.21	9.28	6.19	3.33	1.34	4	CMUA #1	245
MRS01_246	486882.26	4229046.05	4.18	3.03	1.41	0.51	4	CMUA #1	246
MRS01_247	486872.21	4229028.88	14.54	10.67	5.76	2.59	4	CMUA #1	247
MRS01_248	486863.42	4229012.21	73.46	44.68	21.9	9.44	4	CMUA #1	248
MRS01_249	486872.57	4229037.18	16.64	9.11	3.09	0.66	4	CMUA #1	249
MRS01_250	486871.03	4229040.66	42.38	30.87	19.19	11.77	4	CMUA #1	250
MRS01_251	486865.68	4229045.57	8.59	6.68	4.53	2.68	4	CMUA #1	251
MRS01_252	486877.37	4229070.2	13.41	9.81	5.86	3.11	4	CMUA #1	252
MRS01_253	486898.35	4229123.5	48.74	36.42	26.18	19.13	4	CMUA #1	253
MRS01_254	486840.39	4229037.75	24.4	17.16	10.1	5.21	4	CMUA #1	254
MRS01_255	486839.84	4229029.78	7.6	5.65	3.38	1.69	4	CMUA #1	255
MRS01_256	486807.42	4229041.55	55.3	40.6	24.8	13.63	4	CMUA #1	256
MRS01_257	486886.76	4229117.69	6.72	4.84	2.63	1.1	4	CMUA #1	257
MRS01_258	486834.47	4229059.23	19.57	11.69	5.45	1.88	4	CMUA #1	258
MRS01_259	486826.61	4228979.62	6.08	4.43	2.82	2.04	4	CMUA #1	259
MRS01_260	487015.62	4229095.02	10.38	7.25	4.13	2	4	CMUA #1	260
MRS01_261	486659.44	4229091.21	94.48	59.63	30.79	13.69	4	CMUA #1	261
MRS01_262	486663.08	4229105.93	20.59	15.37	9.49	5.65	4	CMUA #1	262
MRS01_263	486672.53	4229156.84	9.2	4.45	1.38	0.08	4	CMUA #1	263
MRS01_264	486775.94	4229039.32	220	149.94	85.43	38.36	4	CMUA #1	264
MRS01_265	486781.33	4229049.64	225.08	164.02	103.76	55.34	4	CMUA #1	265
MRS01_266	486788.81	4229070.93	27.67	18.38	10.3	5.22	4	CMUA #1	266
MRS01_267	486797.9	4229098.67	4209.4	3127.24	2052.39	1226.38	4	CMUA #1	267
MRS01_268	486804.15	4229115.52	10.52	7.88	5.16	2.93	4	CMUA #1	268
MRS01_269	486806.23	4229121.52	57.77	44.54	29.81	17.45	4	CMUA #1	269
MRS01_270	486758.01	4229123.17	188.71	140.75	95.08	56.02	5	CMUA #1	270

Table 4 List of DGM Targets Recommended for Intrusive Investigation at MRS 01

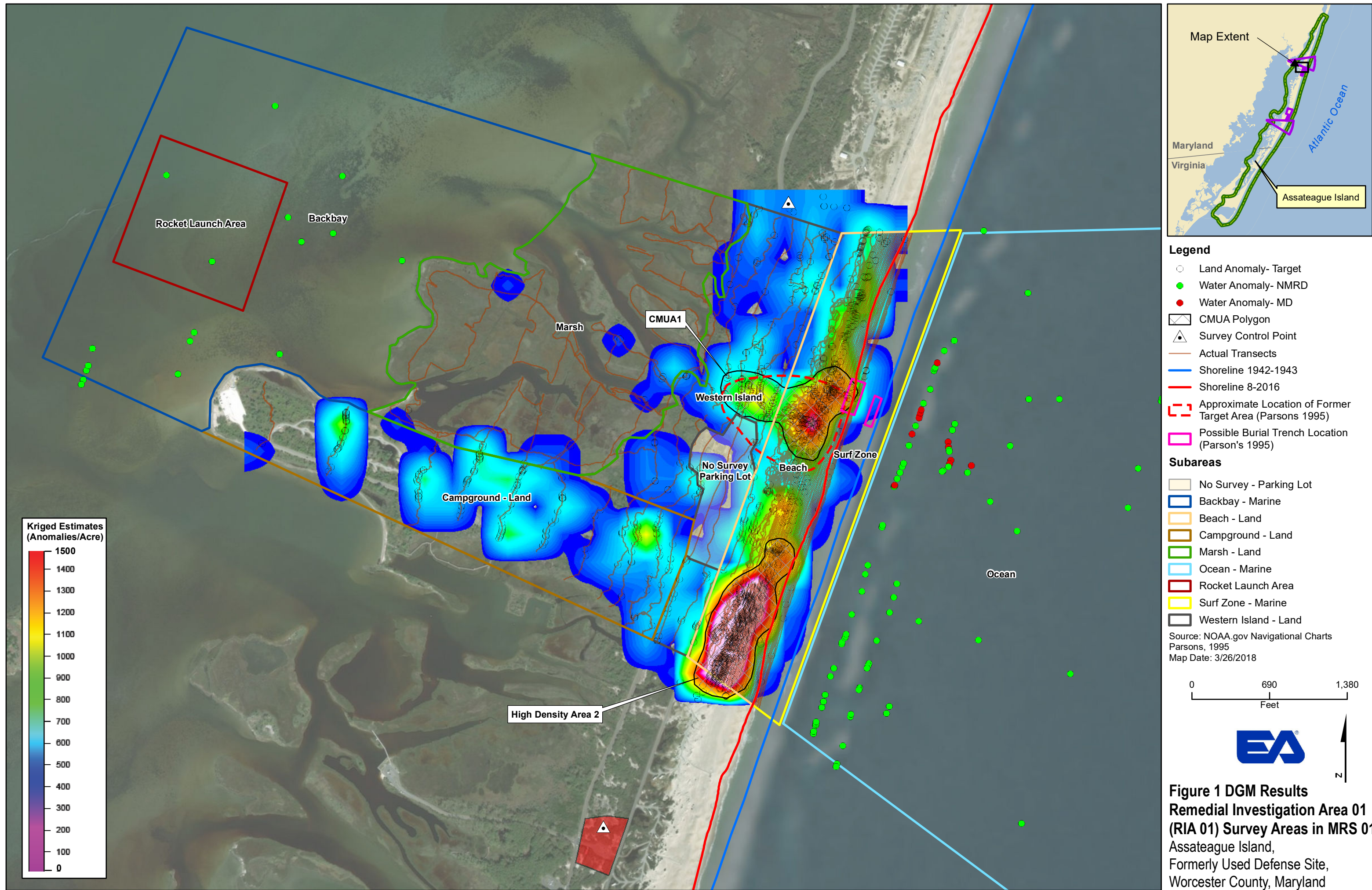
Target_ID	Easting (m)	Northing (m)	CH1 (mV)	CH2 (mV)	CH3 (mV)	CH4 (mV)	GPS Qual	Area	ID
MRS01_271	486757.34	4229113.48	42.54	27.09	14.87	8.19	4	CMUA #1	271
MRS01_272	486757.38	4229108.51	257.74	182.67	111.86	61.32	4	CMUA #1	272
MRS01_273	486759.69	4229089.44	30.65	24.6	17.92	11.08	4	CMUA #1	273
MRS01_274	486763.81	4229075.86	27.98	20.12	12.99	7.57	4	CMUA #1	274
MRS01_275	486725.44	4229092.18	5.26	3.36	1.53	0.44	4	CMUA #1	275
MRS01_276	486736.92	4229101.71	207.15	150.28	89.27	40.55	4	CMUA #1	276
MRS01_277	486737.17	4229106.76	259.13	162.51	83.36	33.08	4	CMUA #1	277
MRS01_278	486739.4	4229111.93	39.17	29.81	20.31	12.13	2	CMUA #1	278
MRS01_279	486726.31	4229125.1	6.07	4.24	2.56	1.54	5	CMUA #1	279
MRS01_280	486726.55	4229130.73	27.54	21.09	12.82	6.81	4	CMUA #1	280
MRS01_281	486729.13	4229135.05	240.52	155.4	81.23	36.39	4	CMUA #1	281
MRS01_282	486937.16	4229117.21	17.95	12.52	6.46	2.64	4	CMUA #1	282
MRS01_283	486947.36	4229147.83	116.54	80.04	40.04	14.63	4	CMUA #1	283
MRS01_284	486870.99	4228991.94	9.5	6	2.9	1.26	4	CMUA #1	284
MRS01_285	486926.36	4228992.11	9.24	5.79	2.46	0.6	4	CMUA #1	285
MRS01_286	486853.29	4229053.59	18.11	11.52	5.29	1.96	4	CMUA #1	286
MRS01_287	486702.28	4229080.84	32.32	24.01	15.41	8.01	4	CMUA #1	287
MRS01_288	486668.73	4229148.01	5.76	3.53	1.46	0.38	4	CMUA #1	288
MRS01_289	486765.67	4229148.03	24.34	18.17	11.09	4.25	4	CMUA #1	289
MRS01_290	486761.75	4229041.95	42.56	26.74	13.16	5.32	4	CMUA #1	290
MRS01_291	486709.38	4229049.57	8.06	4.76	2.12	0.59	4	CMUA #1	291
MRS01_292	486892.71	4228986.47	47.83	34.13	18.61	6.76	4	CMUA #1	292
MRS01_293	486897.06	4228999.52	38.7	25.45	10.29	2.54	4	CMUA #1	293
MRS01_294	486910.89	4229016.47	356.33	243.99	118.78	50.27	4	CMUA #1	294
MRS01_295	487004.41	4229123.99	5.06	3.79	1.79	1	4	CMUA #1	295
MRS01_296	486821.7	4229054.5	10.18	7.1	3.75	1.75	4	CMUA #1	296
MRS01_297	486859.53	4228989.91	5.47	4.34	2.58	1.59	4	CMUA #1	297
MRS01_298	487020.48	4229108.71	6.44	4.61	2.71	1.48	4	CMUA #1	298
MRS01_299	486937.21	4229093.4	41.49	35.39	26.57	18.18	4	CMUA #1	299
MRS01_300	486890.91	4229034.72	9.52	7.08	4.12	1.77	4	CMUA #1	300

Table 4 List of DGM Targets Recommended for Intrusive Investigation at MRS 01

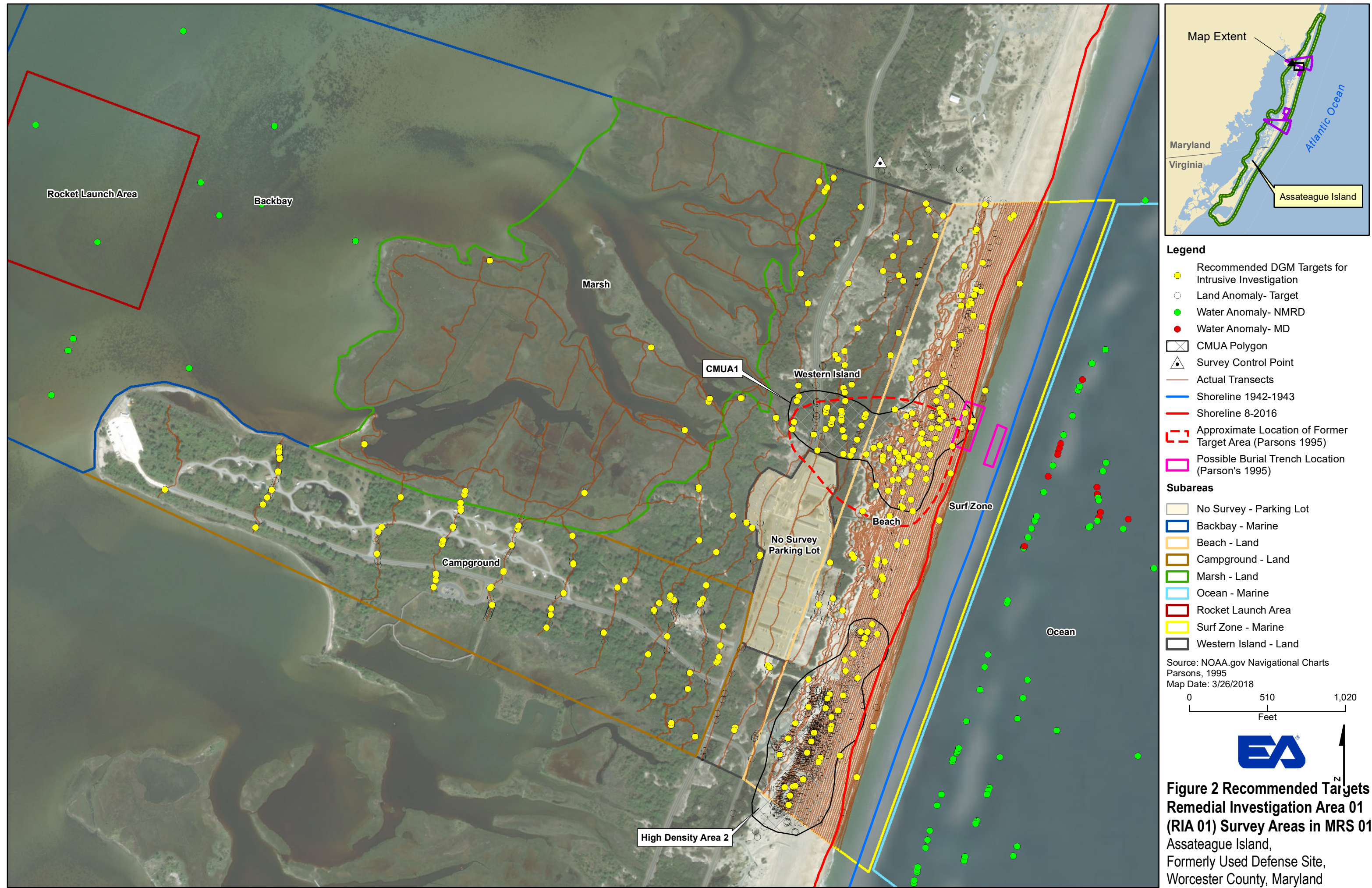
Target_ID	Easting (m)	Northing (m)	CH1 (mV)	CH2 (mV)	CH3 (mV)	CH4 (mV)	GPS Qual	Area	ID
MRS01_301	486757.65	4229128.52	138.78	92.77	52.85	25.46	2	CMUA #1	301

FIGURES

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APPENDIX C-4: Preliminary Characterization Memorandum for MRS 03

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Military Munitions Response Program Remedial Investigation
Assateague Island Formerly Used Defense Site
Preliminary Characterization Memorandum– Munitions Response Site (MRS) 03

Overview

The following is a synopsis of the findings from the digital geophysical mapping (DGM) along transects that will be used to guide the Concentrated Munitions Use Area and Non-Concentrated Munitions Use Area characterizations to follow. This summary presents the selection process used to identify areas for intrusive investigation and to establish dig lists for the intrusive portion of the Remedial Investigation (RI).

DGM Data Collection and Coverage

Figure 1 shows MRS 03 and includes an aerial view of the MRS, the MRS sub-areas (i.e., marsh, West Island, Beach, Surf Zone), the land-based DGM transect locations, the land-based DGM anomaly locations that met the selection criteria presented in the Instrument Verification Strip (IVS) Report, a color-shaded contour map of the DGM anomaly density, and the results from the water-based DGM and intrusive investigation performed last fall.

DGM data were collected in accordance with the UFP-QAPP Work Plan and met all Measurement Quality Objectives (MQOs) for DGM. The DGM data was positioned using Real-Time Kinematic (RTK) GPS and the positioning accuracy was achieved throughout the site, including, with a few exceptions, within the woods. All blind seeds were accurately detected and met project MQOs.¹

The Data Quality Objectives for data collection quantities shown in Table 17-3 of the UFP-QAPP Work Plan were for the most part met or exceeded, except for the Beach and Shallow Surf transects. There were issues with obtaining transect coverage on the strip of beach that extends north of the main portion of the MRS due to Park Service restrictions covering vegetation removal in the beach dunes, and in the shallow surf due to extremely rough surf; therefore, the amount of DGM in these areas was less than planned. It does not appear that any potential disposal areas on the beach were missed as the coverage between the low-tide water edge and the dunes is considered fully covered at the planned transect spacing. It should be noted that DGM coverage in other subareas (i.e. Marsh, and West Island) was higher than planned and the total achieved DGM coverage for MRS 03 was only slightly less than the planned DGM coverage within the main portion of the MRS.

¹ The DGM data includes a GPS quality flag that indicates the accuracy of the DGM positions (i.e., cm accuracy versus submeter accuracy). When DGM anomalies are identified during data interpretation, the GPS quality flag is captured with the other anomaly attributes, which can then be used to ascertain whether the anomaly has a high probability of reacquisition. As noted in the UFP QAPP, grids were planned if anomalies could not be accurately positioned.

DGM Analysis

Targets were identified using the automatic profile picker within Geosoft Oasis Montaj with 3 mV on Channel 2 for the selection criteria. Anomalies that were obviously the result of noise, above ground objects, utilities, or duplicates, were removed from the target list. The DGM track path and target list were incorporated into the Visual Sampling Plan's (VSPs) Geostatistical Mapping of Anomaly Density module and into Geosoft Oasis Montaj direct gridding (anomaly density) module. Based on the VSP analysis and Oasis Montaj anomaly density calculations, the measured anomaly density was variable but generally low across the site. The average anomaly density for the land portion of MRS 03 was less than 7 anomalies/acre. The Oasis Montaj anomaly density color contour map is presented in Figure 1. There are three locations with above background anomaly density. One is located on the beach and is directly attributed to the Green Run Life Saving Station debris, visible on the ground surface. Another area is located in the northwest part of the MRS, north of the Back Bay, and is attributed to the boardwalk at that location. The third location is south of the fish camp near the fenced area. Anomaly density calculations for each of the subareas within MRS 03 are presented in Table 1.

Intrusive Sampling Recommendations

No high anomaly density areas that might indicate a target area or disposal trench were identified on the DGM transects, therefore, the entire MRS 03 is considered a NCMUA and will be sampled using the VSP design presented in Table 17-3 of the UFP-QAPP and presented below in Table 2. The VSP based calculation for the number of anomalies that should be investigated in each subarea is presented in Table-3. The number of anomalies to be investigated is based on taking the ratio of DGM acreage investigated relative to the acreage that VSP determined should be investigated, and multiplying by the total number of anomalies in each subarea. However, because no obvious CMUA/disposal area/target area was identified from the transect data, it is recommended that 100% of the DGM anomalies meeting selection criteria be intrusively investigated to ensure the area is fully characterized. If any of the anomalies identified along the strip of beach that extends north of the main portion of the MRS result in munitions related material, it is further recommended that additional geophysical and intrusive data (mag&dig) take place surrounding that location to determine if the munition item is related to a target area.

Initially, intrusive investigations were to be performed on the DGM transects in the Marsh, the Beach, and the Shallow Surf, and DGM grids were to be utilized for the intrusive investigation of the wooded areas based on the assumption that the tree canopy would prohibit the use of accurate GPS. However, based on the actual results from the DGM transect survey through the woods, GPS accuracy is sufficient for target reacquisition on the wooded transects; therefore; grids will not be required for intrusive investigations in the woods (i.e. anomaly investigations will occur along the transects).

The number of DGM anomalies recommended for intrusive investigation for each area is presented in Table 3 and the locations are shown in Figure 2. The list of DGM targets recommended for intrusive investigation in each of the areas is presented in Table 4.

It should be noted that during the recent field work a series of nor'easters'' have hit the ocean city and Assateague Island area. The effect on Assateague Island included flooding and high surf events changing the beach elevations and relocating sand. Given the dynamic nature of the beaches, it is assumed that the potential exists that there could be anomalies classified as a series of "no findings".

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TABLES

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Table 1 Anomaly Density Calculations for MRS 03

Munitions Use	Area	DGM Miles Collected ⁽¹⁾	DGM Acres Collected	Total # Targets on Transects	Average Anomaly Density
NCMUA	West Island	7.83	3.11	96	30.84
NCMUA/ CMUA	West Island	3.64	1.45	37	25.57
NCMUA/ CMUA	Beach	65.00	25.84	85	3.29
NCMUA/ CMUA	Shallow Surf ⁵	6.89	2.74	1	0.37
Total		83.36	33.14	219	6.61

Table 2 MEC Investigation Design Summary on Land at MRS 03 with DGM Results

Munitions Use	Area	Acreage (Acres)	Transect Spacing (ft)	DGM Mode ¹	DGM Linear miles/percent coverage/DGM acres	Intrusive Approach	Intrusive Method ²	Intrusive Acreage ³	DGM Miles Collected ⁽¹⁾	DGM Acres Collected
NCMUA	West Island	140	Variable (440)	Person portable	1.25/0.65%/0.5	100% of transect anomalies	Transects	0.93	7.83	3.11
NCMUA/ CMUA	West Island	84	150	Person portable	4.625/2.2%/1.85	Population Sampling on follow on DGM grids in CMUA, VSP- NCMUA	Grids	0.56	3.64	1.45
NCMUA/ CMUA	Beach	263	15	Person portable	146/22% /59	Population Sampling on transect anomalies- CMUA, VSP- NCMUA. Also includes DGM grids.	Transects	1.74	65.00	25.84
NCMUA/ CMUA	Shallow Surf ⁵	20	15	Person portable/ Boat	11/22%/4.4	Population Sampling on transect anomalies- CMUA, VSP- NCMUA	Transects	0.08	6.89	2.74
	Total	507			163/13%/66.15			3.31	83.36	33.14

Notes:

- (a) Investigation footprint for Person portable = 3.3 feet, Boat = 6.6 feet
(b) Intrusive investigations will be performed on transects in back bay, ocean, marsh, beach, and shallow surf. Intrusive investigations will be performed on transects in wooded areas where GPS
(c) Intrusive acreages are based on VSP estimate for NCMUAs using 95% confidence and 0.5 MEC/acre. Back bay and Island for one NCMUA (undershoots and misses north and south), and

CMUA = Concentrated munitions use area.
DGM = Digital geophysical mapping.
MEC = Munitions and explosives of concern.
MRS = Munitions response site.
NCMUA = Non-concentrated munitions use area.
VSP = Visual Sample Plan.

Table 3 MEC Intrusive Design Summary on Land at MRS 03

Munitions Use	Area	Intrusive Approach	Intrusive Method ²	Intrusive Acreage ³	DGM Miles Collected ⁽¹⁾	DGM Acres Collected	Ratio of Intrusive Acreage to DGM Acreage	Total # Targets on Transects	# of Targets to Dig based on Intrusive/DGM Ratio	Intrusive Acreage	# of Targets Recommended
NCMUA	West Island	100% of transect anomalies	Transects	0.93	7.83	3.11	0.30	96	29	3.1	96
NCMUA/CMUA	West Island	Population Sampling on follow on DGM grids in CMUA, VSP-NCMUA	Grids	0.56	3.64	1.45	0.39	37	14	1.4	37
NCMUA/CMUA	Beach	Population Sampling on transect anomalies-CMUA, VSP-NCMUA. Also includes DGM grids.	Transects	1.74	65.00	25.84	0.07	85	6	25.8	85
NCMUA/CMUA	Shallow Surf ⁵	Population Sampling on transect anomalies-CMUA, VSP-NCMUA	Transects	0.08	6.89	2.74	0.03	1	1	2.7	1
	Total			3.31	83.36	33.14	0.10	219	21	33.1	219

Notes:

- (a) Investigation footprint for Person portable = 3.3 feet, Boat = 6.6 feet
- (b) Intrusive investigations will be performed on transects in back bay, ocean, marsh, beach, and shallow surf. Intrusive investigations will be performed on transects in wooded areas where GPS
- (c) Intrusive acreages are based on VSP estimate for NCMUAs using 95% confidence and 0.5 MEC/acre. Back bay and Island for one NCMUA (undershoots and misses north and south), and
- (d) Subarea mileages do not include mileages in CMUA 1 and High Density Area.

CMUA = Concentrated munitions use area.
DGM = Digital geophysical mapping.
MEC = Munitions and explosives of concern.
MRS = Munitions response site.
NCMUA = Non-concentrated munitions use area.
VSP = Visual Sample Plan.

Table 4 List of DGM Targets Recommended for Intrusive Investigation

Target_id	Easting (m)	Northing (m)	Ch1 (mV)	Ch2 (mV)	Ch3 (mV)	Ch4 (mV)	GPS Qual	ID
MRS03_1	481861.53	4214361.26	22.98	15.94	9.86	4.87	4	1
MRS03_2	482179.15	4214950.3	67.94	43.46	22.13	10.48	4	2
MRS03_3	482361.81	4215301.08	14.44	9.63	5.61	2.2	4	3
MRS03_4	483443.81	4217649.2	24.25	17.7	11.3	6.98	4	4
MRS03_5	483459.35	4217694.07	24.66	15.38	6.52	2.2	4	5
MRS03_6	481424.71	4215157.67	6.78	3.64	2.49	1.36	4	6
MRS03_7	481421.79	4215154.41	9.13	5.21	3.35	1.43	4	7
MRS03_8	481404.18	4215052.54	10.24	5.74	3.59	1.57	4	8
MRS03_9	481335.16	4214965.7	24.14	16.18	10.2	5.17	4	9
MRS03_10	481259.87	4215012.75	66.69	45.52	28.14	14.29	4	10
MRS03_11	481256.29	4215013.57	7.76	4.52	3.23	1.8	4	11
MRS03_12	481250.68	4215015.15	16.46	7.56	2.73	0.57	4	12
MRS03_13	481242.29	4215022.74	36.32	24.47	14.85	7.61	4	13
MRS03_14	481239.91	4215025.3	16	9.34	5.02	2.37	4	14
MRS03_15	481231.37	4215029.33	7.26	4.59	3.88	2.37	4	15
MRS03_16	481225.93	4215059.69	10.51	5.26	2.95	0.86	4	16
MRS03_17	481236	4215071.23	8.69	5.54	4.39	2.51	4	17
MRS03_18	481239.35	4215076.6	86	40.49	11.01	0.21	2	18
MRS03_19	481237.78	4215079.57	6.04	4.11	3.52	2.52	4	19
MRS03_20	481237.56	4215080.84	47.83	34.53	23.17	13.23	4	20
MRS03_21	481232.59	4215090.35	69.95	21.14	6.33	2.73	4	21
MRS03_22	481233.62	4215096.68	9.49	4.98	2.52	0.5	4	22
MRS03_23	481236.48	4215102.28	7.04	4.32	3.23	1.94	4	23
MRS03_24	481241.48	4215105.32	55.42	37.53	23.65	13.01	4	24
MRS03_25	481244.68	4215111.26	6.89	4.1	2.94	1.44	4	25
MRS03_26	481246.72	4215113.68	7.46	4.6	3.52	2.09	4	26
MRS03_27	481250.97	4215116.99	15.09	9.92	6.61	3.52	4	27
MRS03_28	481294.27	4215133.81	7.24	3.63	2.1	0.73	2	28
MRS03_29	481292.71	4215130.71	8.1	4.29	2.09	0.51	4	29
MRS03_30	481270.77	4215122.97	22.65	14.76	8.82	4.42	4	30
MRS03_31	481254.81	4215117.9	27.07	18.45	11.82	6.6	4	31
MRS03_32	481250.94	4215117.02	12.68	8	5.3	2.9	4	32
MRS03_33	481235.52	4215098.16	7.6	4.66	3.48	1.96	4	33
MRS03_34	481238.5	4215078.35	29.62	19.37	11.62	6.31	2	34
MRS03_35	481238.89	4215077.71	66.21	31.87	9	0.22	5	35
MRS03_36	481239.59	4215074.55	26.18	18.95	13.27	8.19	4	36
MRS03_37	481224.4	4215034.08	26.12	15.48	8.7	3.92	4	37
MRS03_38	481442.7	4214991.53	12.13	6.97	3.87	1.17	4	38
MRS03_39	481558.26	4215072.18	10.96	3.38	-0.94	*	4	39
MRS03_40	481762.52	4214527.56	20.86	4.22	0.37	-0.01	4	40
MRS03_41	481755.73	4214507.33	82.1	58.52	31.97	11.37	4	41
MRS03_42	481688.23	4214414.17	192.95	140.81	92.15	52.9	4	42
MRS03_43	481630.8	4214299.37	399.59	289.14	187.53	111.36	4	43
MRS03_44	481519.02	4214090.86	11.69	7.09	4.56	2.21	4	44
MRS03_45	481409.78	4213888.22	9.64	5.04	3.17	1.47	4	45

Table 4 List of DGM Targets Recommended for Intrusive Investigation

Target_id	Easting (m)	Northing (m)	Ch1 (mV)	Ch2 (mV)	Ch3 (mV)	Ch4 (mV)	GPS Qual	ID
MRS03_46	481266.61	4214260.65	20.82	14.38	9.55	5.53	2	46
MRS03_47	481195.2	4214101.21	7.38	4.29	3.06	1.42	1	47
MRS03_48	481162.53	4214062.98	19.99	9.53	3.51	0.89	2	48
MRS03_49	481106.83	4213929.49	21.41	12.28	6.5	2.62	2	49
MRS03_50	481110.87	4213936.86	17.75	10.41	5.96	2.76	5	50
MRS03_51	481116.28	4214023.44	25.01	15.74	8.74	4.25	2	51
MRS03_52	481115.69	4214024.38	33.82	23.88	14.72	8.21	2	52
MRS03_53	481115.44	4214024.96	69.22	48.96	31.22	17.25	2	53
MRS03_54	481115.47	4214025.45	106.84	77.4	45.99	25.17	2	54
MRS03_55	481115.68	4214026.4	29.47	21.83	14.25	8.81	2	55
MRS03_56	481115.93	4214033.38	89.92	58.54	31.26	13.73	2	56
MRS03_57	481117.91	4214040.91	661.97	390.86	174.28	58.86	2	57
MRS03_58	481236.36	4214221.9	6.2	3.33	2.47	1.65	2	58
MRS03_59	481267.97	4214259.33	16.14	10.96	7.62	4.64	2	59
MRS03_60	481273.4	4214285.05	294.08	186.44	87.97	25.44	5	60
MRS03_61	481286.11	4214303.24	23.97	13.73	6.06	1.26	5	61
MRS03_62	481289.39	4214309.94	13.69	7.35	3.95	1.34	5	62
MRS03_63	481302.74	4214346.32	39.32	14.23	3.21	0.44	2	63
MRS03_64	481378.15	4214488.83	339.47	249.5	158.23	92.18	2	64
MRS03_65	481378.36	4214489.61	325.59	236.63	156.75	89.54	5	65
MRS03_66	481378.69	4214490.75	66.51	47.89	32.32	18.88	5	66
MRS03_67	481427.34	4214555.56	231.67	153.14	80.66	41.04	4	67
MRS03_68	481466.99	4214642.86	19.8	9.09	3.96	1.34	5	68
MRS03_69	481570.28	4214745.57	7.4	3.57	2.1	0.52	4	69
MRS03_70	481558.82	4214771.54	19.58	10.1	4.49	1.05	4	70
MRS03_71	481559.27	4214771.54	21.45	10.62	4.42	1.12	4	71
MRS03_72	481559.15	4214771.84	26.48	13.55	5.69	1.42	4	72
MRS03_73	481803.43	4214247.5	68.13	42.99	23	11.29	4	73
MRS03_74	481863.84	4214353.93	100.72	76.02	47.21	27.88	4	74
MRS03_75	481865.3	4214356.68	162.32	112.17	66.29	34.94	4	75
MRS03_76	481867.67	4214360.94	49.33	35.48	22.87	12.18	4	76
MRS03_77	481871.95	4214368.98	31.58	15.11	4.53	0.87	4	77
MRS03_78	481869.8	4214359.69	158.05	115.57	72.46	38.89	4	78
MRS03_79	481868.77	4214357.39	280.78	202.33	124.56	62.73	4	79
MRS03_80	481867.6	4214354.78	101	77.89	53.44	33.09	4	80
MRS03_81	481866.6	4214352.1	575.14	404.27	237	126.22	4	81
MRS03_82	481868.86	4214350.83	342.69	265.48	170.87	104.58	4	82
MRS03_83	481869.84	4214353.63	125.59	101.15	68.52	43.49	4	83
MRS03_84	481870.23	4214354.72	76.5	61.65	40.98	25.64	4	84
MRS03_85	481870.7	4214356.1	355.9	246.93	141.28	65.1	4	85
MRS03_86	481871.55	4214358.3	134.6	93.56	57.95	28.77	4	86
MRS03_87	481873.8	4214362.15	59.12	45.96	30.91	19.1	4	87
MRS03_88	481873.94	4214349.32	22.96	18.08	12.17	6.74	4	88
MRS03_89	481875.09	4214345.46	11.7	6.74	4.64	2.66	4	89
MRS03_90	481876.08	4214340.5	21.15	14.03	8.13	4.52	4	90

Table 4 List of DGM Targets Recommended for Intrusive Investigation

Target_id	Easting (m)	Northing (m)	Ch1 (mV)	Ch2 (mV)	Ch3 (mV)	Ch4 (mV)	GPS Qual	ID
MRS03_91	481735.85	4214074.7	593.57	432.47	259.13	144.86	4	91
MRS03_92	481843.91	4214363.99	6.49	4.85	4	2.27	4	92
MRS03_93	482141.87	4215016.56	68.56	42.35	22.62	10.17	4	93
MRS03_94	481661.35	4214069.15	6.23	3.24	1.8	0.33	4	94
MRS03_95	481399.36	4213598.47	76.8	46.92	23.61	10.64	4	95
MRS03_96	481674.11	4214172.59	5.97	3.13	1.94	0.39	4	96
MRS03_97	481982.91	4214692.09	23.19	16.43	10.87	6.72	4	97
MRS03_98	481983.5	4214692.62	34.84	24.72	16.25	9.83	4	98
MRS03_99	482081.6	4214903.96	6.54	3.61	2.65	0.97	4	99
MRS03_100	482071.38	4214874.23	7.82	4.51	2.64	0.74	4	100
MRS03_101	482064.47	4214862.55	6.48	3.5	2.25	0.55	4	101
MRS03_102	481994.84	4214737.68	8.11	5.08	2.97	0.74	4	102
MRS03_103	481947.32	4214658.63	5.81	3.26	2.1	0.72	4	103
MRS03_104	481821.93	4214420.37	13.22	3.3	0.62	0.28	4	104
MRS03_105	481485.94	4213818.04	6.57	3.72	2.01	0.63	4	105
MRS03_106	481392.2	4213669.42	7.94	4.47	2.54	0.66	4	106
MRS03_107	481627.85	4214152.25	5.14	3.07	1.72	0.55	4	107
MRS03_108	481716.96	4214323.9	233.27	103.5	26.6	4.2	4	108
MRS03_109	482366.15	4215302.32	6.83	3.9	2.86	1.18	4	109
MRS03_110	482636.81	4215821.04	6.07	4.87	2	0.49	4	110
MRS03_111	482906.68	4216406.61	7.23	5	3.49	1.29	4	111
MRS03_112	483462.78	4217695.54	14.47	5.13	2.24	0.59	4	112
MRS03_113	483646.55	4218173.17	11.47	10.18	7.41	3.96	4	113
MRS03_114	483070.14	4216754.58	26.25	18.03	10.53	5.15	4	114
MRS03_115	483138.94	4216892.1	15.08	9.45	6.63	3.39	4	115
MRS03_116	483138.79	4216892.21	13.03	9.42	5.84	3.29	4	116
MRS03_117	483252.23	4217138.52	15.14	8.02	4.75	1.11	4	117
MRS03_118	483022.5	4216628.17	18.48	10.02	2.29	0.21	4	118
MRS03_119	482264.23	4215084.75	72.01	51.29	28.05	15.42	4	119
MRS03_120	483328.33	4217322.27	182.07	78.37	14.45	0.88	4	120
MRS03_121	483444.39	4217607.21	63.38	44.67	26.57	13.92	4	121
MRS03_122	483445.82	4217601.04	70.79	49.3	28.83	15.19	4	122
MRS03_123	483148.76	4216851.86	92.71	61.68	35.51	17.54	4	123
MRS03_124	481493.58	4213852.57	9.19	5.82	3.98	2.17	4	124
MRS03_125	481564.4	4214023.89	6.16	3.04	0.93	0.28	4	125
MRS03_126	481713.7	4214231.31	72.01	31.96	7.69	0.73	4	126
MRS03_127	481794.53	4214368.01	7.23	3.55	1.97	0.61	4	127
MRS03_128	481844.77	4214362.75	38.38	27.78	18.59	11	4	128
MRS03_129	481857.89	4214368.13	7.12	3.08	1.58	0.37	4	129
MRS03_130	481763.58	4214479.46	6.72	3.57	2.25	0.88	4	130
MRS03_131	481823.58	4214474.39	5.38	3.1	2.51	1.24	4	131
MRS03_132	481897.96	4214440.6	7.72	4.45	3.24	1.73	4	132
MRS03_133	481891.13	4214558.19	8.9	4.41	3.21	2.01	4	133
MRS03_134	481869.1	4214562.03	8.1	3.53	1.69	0.3	4	134
MRS03_135	481827.41	4214604.14	69.26	49.38	31.42	18.36	4	135

Table 4 List of DGM Targets Recommended for Intrusive Investigation

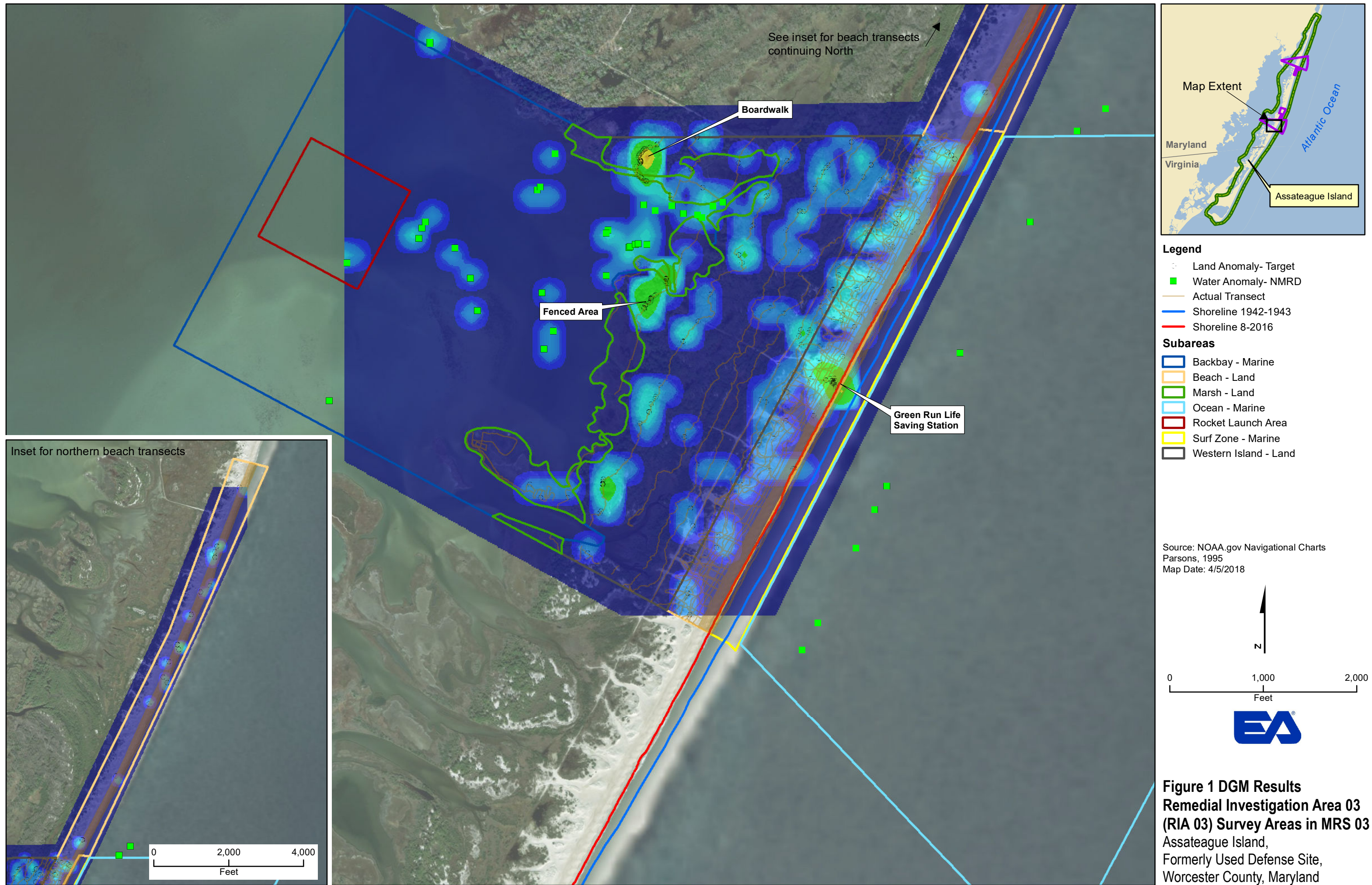
Target_id	Easting (m)	Northing (m)	Ch1 (mV)	Ch2 (mV)	Ch3 (mV)	Ch4 (mV)	GPS Qual	ID
MRS03_136	481897.42	4214575.77	31.78	21.92	14.55	8.83	4	136
MRS03_137	481951.35	4214578.41	16.12	4.33	0.86	0.09	4	137
MRS03_138	481884.76	4214706.89	5.78	3.61	1.78	0.84	4	138
MRS03_139	481992.09	4214849.1	9.75	4.37	2.12	0.69	4	139
MRS03_140	481971.29	4214842.4	18.64	4.88	1.02	0.18	4	140
MRS03_141	482124.33	4215046.01	19.73	6.99	1.84	0.37	4	141
MRS03_142	482144.11	4215124.57	7.08	3	1.54	0.17	4	142
MRS03_143	482193.23	4215114.98	3.77	3.12	1.35	0.69	4	143
MRS03_144	482252.72	4215097.62	196.28	84.6	22.16	3.04	4	144
MRS03_145	482240.28	4215107.18	13.88	9.51	6.54	3.97	4	145
MRS03_146	482007.74	4214845.58	8.02	3.41	1.78	0.41	4	146
MRS03_147	482050.45	4214814.31	28.93	9.74	2.3	0.33	4	147
MRS03_148	482060.62	4214797.92	7.87	3.59	1.66	0.63	4	148
MRS03_149	481935.99	4214537.05	6.76	3.05	1.45	0.26	4	149
MRS03_150	482143.9	4214879.98	90.59	15.06	0.47	-0.1	4	150
MRS03_151	482126.02	4214846	141.72	66.51	16.12	2.07	4	151
MRS03_152	482006.07	4214620.03	115.91	65.84	21.24	2.95	4	152
MRS03_153	481863.29	4214361.04	8.95	5.87	4.07	2.07	4	153
MRS03_154	481986.41	4214957.37	1538.86	1137.2	755.65	481.74	4	154
MRS03_155	482021	4215016.98	73.9	47.25	26.91	12.79	4	155
MRS03_156	481883.11	4214735.1	539.24	157.55	18.36	0.5	4	156
MRS03_157	481866.53	4214659.18	22.93	15.23	9.31	4.9	4	157
MRS03_158	481866	4214658.62	18.24	11.17	6.86	3.5	4	158
MRS03_159	481792.19	4214526.7	15.61	6	2.87	1.33	4	159
MRS03_160	481788.34	4214518.36	5.7	3.19	2.66	1.68	4	160
MRS03_161	481649.3	4214291.66	6.6	3.7	2.73	1.47	4	161
MRS03_162	481402.25	4213945.76	17.37	3.52	0.35	0.07	4	162
MRS03_163	481707.66	4214580.57	50.46	33.91	20.8	11.01	4	163
MRS03_164	481910.78	4214979.03	6.51	3.72	2.93	1.65	4	164
MRS03_165	481966.2	4215025.85	307.11	220.07	135.6	74.38	4	165
MRS03_166	481990.72	4215065.2	1204.53	820.56	411.21	129.09	4	166
MRS03_167	481991.68	4215065.36	14.86	9.86	6.07	1.79	4	167
MRS03_168	481927.82	4215140.38	41.44	29.12	19.89	11.95	4	168
MRS03_169	481851.6	4215064.27	15.33	9.53	5.81	2.79	4	169
MRS03_170	481844.31	4215057.1	6.8	3.31	2.08	1	4	170
MRS03_171	481834.38	4215041.51	21.12	14	8.83	4.66	4	171
MRS03_172	481807.34	4214988.88	78.55	54.86	33.75	17.09	4	172
MRS03_173	481770.67	4214913.76	26.52	18.32	12.14	6.89	4	173
MRS03_174	481757.86	4214916.14	15.5	8.84	4.96	1.86	5	174
MRS03_175	481713.47	4214853.09	11.91	7.83	5.39	3.16	4	175
MRS03_176	481691.24	4214751.37	7.4	3.03	1.58	0.36	4	176
MRS03_177	481382	4214178.56	26.12	16.9	10.82	5.56	5	177
MRS03_178	481422.5	4214089.23	21.7	3.71	0.36	0.15	4	178
MRS03_179	481662.51	4214599.39	20.42	13.01	7.96	3.98	4	179
MRS03_180	481754.62	4214785.12	11.38	7.35	5.4	3.03	4	180

Table 4 List of DGM Targets Recommended for Intrusive Investigation

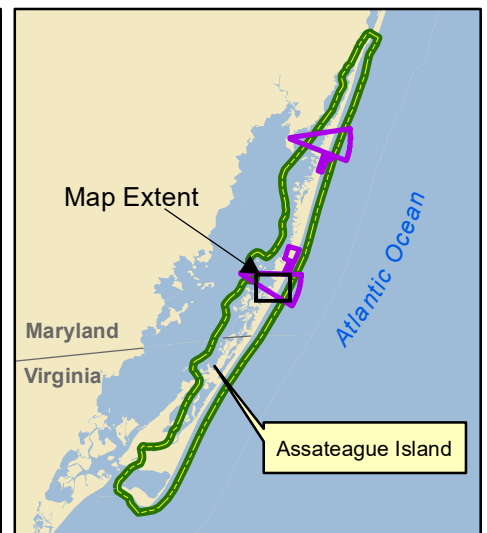
Target_id	Easting (m)	Northing (m)	Ch1 (mV)	Ch2 (mV)	Ch3 (mV)	Ch4 (mV)	GPS Qual	ID
MRS03_181	482103.59	4214728.35	79.46	52.74	30.74	15.4	4	181
MRS03_182	483404.02	4217371.36	8.15	3.13	0.73	0.2	4	182
MRS03_183	483055.77	4216584.1	10.11	3.82	1.03	0.19	4	183
MRS03_184	481740.56	4214075.02	393.85	279.1	153.98	79.42	4	184
MRS03_185	481717.1	4215079.43	18.7	12.84	8.49	4.59	4	185
MRS03_186	481653.29	4214964.86	61.44	39.88	23.26	11.49	4	186
MRS03_187	481647.2	4214961.19	8.56	3.94	1.74	0.35	4	187
MRS03_188	481608.69	4214869.22	6.83	3.82	2.73	1.46	5	188
MRS03_189	481603.16	4214864.29	35.11	23.84	15.28	8.51	5	189
MRS03_190	481231.64	4214741.36	32.51	22.25	13.45	7.33	4	190
MRS03_191	481322.43	4214694.75	97.47	66.76	40.78	20.92	4	191
MRS03_192	481322.56	4214694.83	94.29	64.43	39.58	20.29	4	192
MRS03_193	481322.47	4214694.4	222.38	155.53	94.36	50.27	4	193
MRS03_194	481322.03	4214693.4	58.59	43.99	29.93	16.55	4	194
MRS03_195	481320.02	4214686.72	33.35	25.09	16.46	9.07	4	195
MRS03_196	481320	4214686.27	97.22	68	41.43	20.19	4	196
MRS03_197	481321.07	4214684.08	14.71	9.27	5.85	2.53	4	197
MRS03_198	481321.67	4214679.05	11.91	6.54	3.88	1.63	4	198
MRS03_199	481328.17	4214664.32	27.56	17.46	9.65	3.67	4	199
MRS03_200	481288.8	4214641.71	53.69	35.6	19.64	8.93	2	200
MRS03_201	481285.33	4214638.22	11.96	7.37	4.78	2.25	5	201
MRS03_202	481274.49	4214633.03	38.21	25.82	15.06	7.11	2	202
MRS03_203	481272.83	4214630.32	1069.92	720.86	408.15	194.6	2	203
MRS03_204	481272.46	4214629.27	562.91	377.64	217.67	103.41	2	204
MRS03_205	481272.35	4214628.74	619.71	424.01	249.94	121.66	5	205
MRS03_206	481272.26	4214628.33	636.18	436.79	261.31	126.46	5	206
MRS03_207	481271.78	4214624.13	870.63	482.44	204.8	61.36	4	207
MRS03_208	481271.2	4214618.11	8.01	5.4	4.01	1.9	4	208
MRS03_209	481268.57	4214615.89	7.55	3.99	2.18	0.71	2	209
MRS03_210	481255.12	4214608.34	158.61	111.12	69.03	38.52	5	210
MRS03_211	481253.06	4214607.04	142.56	100.5	60.08	31.76	2	211
MRS03_212	481250.1	4214600.41	12.48	5.21	1.83	0.22	2	212
MRS03_213	481250.32	4214598.45	8.34	4.42	2.54	1.05	2	213
MRS03_214	481251.45	4214596.29	9.33	5.48	3.74	1.91	2	214
MRS03_215	481001.9	4213979.84	6.8	3.72	2.8	1.43	4	215
MRS03_216	481372.23	4214767.9	10.75	5.63	3.03	1.15	4	216
MRS03_217	481066.31	4213799.53	7.76	3.42	1.74	0.58	4	217
MRS03_218	480912.99	4213980.36	7.92	3.01	1.14	0.15	4	218
MRS03_219	480877.91	4214023.74	18.99	3.16	0.15	0	4	219

FIGURES

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\\lovetong\gis\data\StateandLocal\Northeast\Maryland\Assateague\MXD\FieldFigures\Land_Phase\MRS 03 Field Data Recommended Targets.mxd



Legend

- Recommended DGM Targets for Intrusive Investigation
- Water Anomaly- NMRD
- Actual Transect
- Shoreline 1942-1943
- Shoreline 8-2016

Subareas

- Backbay - Marine
- Beach - Land
- Marsh - Land
- Ocean - Marine
- Rocket Launch Area
- Surf Zone - Marine
- Western Island - Land

Source: NOAA.gov Navigational Charts
Parsons, 1995
Map Date: 4/5/2018

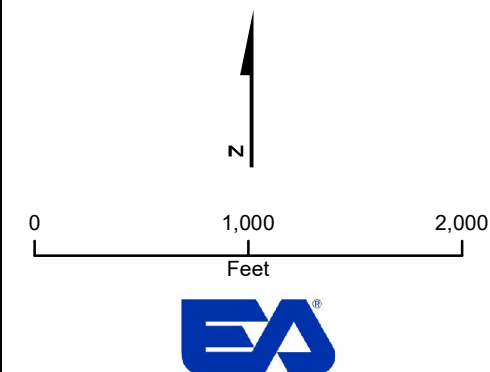


Figure 2 Recommended Targets Remedial Investigation Area 03 (RIA 03) Survey Areas in MRS 03
Assateague Island,
Formerly Used Defense Site,
Worcester County, Maryland

Appendix D - Digital Geophysical Mapping Database

(Provided to the USACE on CD only)

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Appendix E - MDAS Disposal Documentation

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CLEAR

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

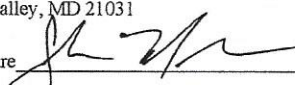
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QUANTITY														SUPPLEMENTARY ADDRESS																UNIT PRICE										DOLLARS		CTS		1. TOTAL PRICE		2. SHIP FROM		3. SHIP TO	
6 of 6 Serial Numbers														Assateague Island Formerly Used Defense Site Warchester County, MD EA Engineering, Science, and Technology, Inc., PBC Project Number: W912DR-13-D-0018 Task Order No. 0006 Ocean City, Maryland 21842																5. DOC DATE		6. NMFC		7. FRT RATE		8. TYPE CARGO		9. PS											
Drum #1 - TBS 102095, Drum #2 - TBS 102092, Drum #3 - TBS 102091, Drum #4 - TBS 102093, Drum #5 - TBS 102096 and Drum #6 - TBS 102097																														10. QTY. REC'D		11. UP		12. UNIT WEIGHT		13. UNIT CUBE		14. UFC		15. SL									
																														16. FREIGHT CLASSIFICATION NOMENCLATURE																			
																														17. ITEM NOMENCLATURE										55 gal. drums of MDAS									
																														18. TY CONT		19. NO CONT		20. TOTAL WEIGHT		21. TOTAL CUBE													
																														22. RECEIVED BY				23. DATE RECEIVED															
																														DEMIC METALS, INC		P.O. BOX 128		GLENCOE, IL 60022		5/7/18													

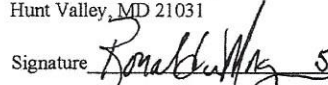
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25. NATIONAL STOCK NO. & ADD (8-22)

26. RIC (4-6)
UI (23-24)
QTY (25-29)
CON CODE (71)
DIST (55-56)
UP (74-80)

27. ADDITIONAL DATA

Inspected by: John Monk
SUXOS
EA Engineering, Science, and Technology, Inc., PBC
Hunt Valley, MD 21031
Signature 

Inspected by: Ron Morgan
UXOQCS/UXOSO
EA Engineering, Science, and Technology, Inc., PBC
Hunt Valley, MD 21031
Signature  5/2/18

"This certifies and verifies that the material listed has been 100 percent properly inspected and to the best of our knowledge and belief are inert and/or free of explosives related material."

PREVIOUS EDITION MAY BE USED

FormFlow (DLA)

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

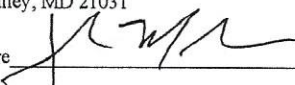
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QUANTITY														SUPPLEMENTARY ADDRESS																UNIT PRICE										DOLLARS		CTS		1. TOTAL PRICE		2. SHIP FROM		3. SHIP TO	
6 of 6 Serial Numbers														Assateague Island Formerly Used Defense Site Warchester County, MD EA Engineering, Science, and Technology, Inc., PBC Project Number: W912DR-13-D-0018 Task Order No. 0006 Ocean City, Maryland 21842																5. DOC DATE		6. NMFC		7. FRT RATE		8. TYPE CARGO		9. PS											
Drum #1 - TBS 102095, Drum #2 - TBS 102092, Drum #3 - TBS 102091, Drum #4 - TBS 102093, Drum #5 - TBS 102096 and Drum #6 - TBS 102097																														10. QTY. REC'D		11. UP		12. UNIT WEIGHT		13. UNIT CUBE		14. UFC		15. SL									
																														16. FREIGHT CLASSIFICATION NOMENCLATURE																			
																														17. ITEM NOMENCLATURE										55 gal. drums of MDAS									
																														18. TY CONT		19. NO CONT		20. TOTAL WEIGHT		21. TOTAL CUBE													
																														22. RECEIVED BY				23. DATE RECEIVED															
																														DEMIC METALS, INC		P.O. BOX 128		GLENCOE, IL 60022		5/7/18													

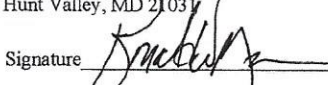
24. DOCUMENT NUMBER & SUFFIX (30-44)

25. NATIONAL STOCK NO. & ADD (8-22)

26. RIC (4-6)
UI (23-24)
QTY (25-29)
CON CODE (71)
DIST (55-56)
UP (74-80)

27. ADDITIONAL DATA

Inspected by: John Monk
SUXOS
EA Engineering, Science, and Technology, Inc., PBC
Hunt Valley, MD 21031
Signature 

Inspected by: Ron Morgan
UXOQCS/UXOSO
EA Engineering, Science, and Technology, Inc., PBC
Hunt Valley, MD 21031
Signature  5/2/18

"This certifies and verifies that the material listed has been 100 percent properly inspected and to the best of our knowledge and belief are inert and/or free of explosives related material."

PREVIOUS EDITION MAY BE USED

FormFlow (DLA)



DEMIL METALS, INC.

601 N. Skokie Blvd
Northbrook, IL 60062

Date: 06/07/18

From: Mike Schaffer
Demil Metals, Inc.
601 N Skokie Blvd. #207
Northbrook, IL. 60062

To: EA Engineering, Science, and Technology, Inc., PBC
ATTN: Ivy Harvey
225 Schilling Circle, Suite #200
Hunt Valley, MD 21031

SUBJECT: Certification of Destruction

I certify that the contents of sealed container/s listed below received on 05/07/18 from EA Engineering, Science, and Technology, Inc., PBC from Assateague Island MMRP Project ite, EAEST Service Order 17733, USACE-Baltimore District-W912DR-13-D-0018 were demilitarized in accordance with guidelines in DoD 4160.21-IVI-1 and have been smelted and are only identifiable by their basic content.

Drum # 1- TBS 102095
Drum # 2- TBS 102092
Drum # 3- TBS 102091
Drum # 4 - TBS 102093
Drum # 5 - TBS 102096
Drum # 6- TBS 102097

DEMIL METALS, INC
P.O. BOX 128
NORBROOK, IL 60062

Signed:

Name: Michael Schaffer

Point of Contact Information: mike@demilmetals.com 847-929-9650

Appendix F - Dig Sheets

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APPENDIX F-1: Marine Dig Sheets

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Geophysical Dig Sheet and Target History

Project Name: Assateague Island RI
Geophysical Contractor: EA Engineering, Science and Technology, Inc. PBC
Project Geophysicist: Michael McGuire (initials MM)
Intrusive Contractor: EOTI

Field Team: EA Engineering
Survey Area ID: MRS 1
Sector: Back Bay (BB) and Ocean (O)
Grid: N/A

Design Center POC: Julie Klaiser/David King USACE Baltimore
Site Geophysicist: John Morris
Date: Geophysics - November 2017; Intrusive - December 2017/January 2018
Coordinate System: UTM 18N WGS Meters



Original Survey								Dig Results									Post-Dig Geophysical QC		
Unique Target ID	Easting Coord. (ft/m)	Northing Coord. (ft/m)	Channel ID (ie- C1C4, top sensor, gradient, etc)	Maximum Amplitude (mV/ nT)	Water Depth (ft)	Side Scan Notes	Date	Anomaly type *	# of contacts	Approx. weight (lbs- oz / kg-g)	Offset Distance	Offset Direction (N, NE, etc.)	Depth (in/cm) Top of Item	Date	Team Leader Initials	COMMENTS	Agreement between Dig Results & Geophysical Data? (G=good, P=poor, U=unacceptable)	Geophysicist QC Initials	Date
BB01	484919.3	4229131.1	AS	8.3	3.4	None	11/12/17	O	1					12/1/17	JLM	Contact deeper than 2 feet, hole filed in faster than diver could remove (diver had contact)	G	MM	12/21/18
BB02	484924.4	4229144.4	AS	11.8	3.4	None	11/12/17	O	1					12/1/17	JLM	Contact deeper than 2 feet, hole filed in faster than diver could remove (diver had contact)	G	MM	12/21/18
BB03	484932.8	4229169.8	AS	14.2	3.1	None	11/12/17	O	1					12/1/17	JLM	Contact deeper than 2 feet, hole filed in faster than diver could remove (diver had contact)	G	MM	12/21/18
BB04	484938.4	4229182.6	AS	17.6	3.4	None	11/12/17	O	1					12/6/17	JLM	Contact deeper than 2 feet, hole filed in faster than diver could remove (diver had contact)	G	MM	12/21/18
BB05	484949.6	4229228.8	AS	9.5	3.9	Small surface object 0.7 m south	11/12/17	NC						12/1/17	JLM	Circle search extended to 20ft	small	MM	12/21/18
BB06	485150.3	4229698.4	AS	5.9	5.1	Larger (0.6 m X 0.6 m), rectangular surface object 4.1 m SE, Smaller linear object 3.5 m NE	11/12/17	NC						12/1/17	JLM	Circle search extended to 20ft	small	MM	12/21/18
BB07	485181.6	4229159.8	AS	17.7	1.0	None	11/12/17	NMRD	1	0.2oz	2ft	N	6"	11/30/17	JLM	Skoyal (tobacco)can, mark reverified	G	MM	12/21/18
BB08	485214.4	4229248.6	AS	11.9	1.5	None	11/12/17	O	1					11/30/17	JLM	Contact deeper than 2 feet,hole filled in faster than diver could remove (diver had contact)	G	MM	12/21/18
BB09	485224.8	4229272.2	AS	37	1.6	None	11/12/17	O	1					11/30/17	JLM	Item broke apart during investigation, no MD	small	MM	12/21/18
BB10	485273.4	4229464.6	AS	56.8	2.2	None	11/12/17	NMRD	1	20lbs	4ft	E	12"	11/30/17	JLM	Broken up crabpot	G	MM	12/21/18
BB11	485444.4	4229885.8	AS	39.7	3.4	None	11/12/17	NMRD	2	5lbs			6"	12/6/17	JLM	Crab pot pieces	G	MM	12/21/18
BB12	485456.2	4229213.4	AS	26.1	1.1	None	11/12/17	NC						12/5/17	JLM	Team conducted 10ft plus circle search on RTK location.	small	MM	12/21/18
BB13	485479	4229583.8	AS	11	2.0	None	11/12/17	NMRD	1	4lb	5ft	W	6"	12/1/17	JLM	crabpot end 24"x24" x3/8" square metal	G	MM	12/21/18
BB14	485516.2	4229518	AS	235.2	1.8	No coverage	11/12/17	NMRD	1	2lb	5ft	N	6"	12/1/17	JLM	24in braided cable	G	MM	12/21/18

Geophysical Dig Sheet and Target History

Project Name: Assateague Island RI
Geophysical Contractor: EA Engineering, Science and Technology, Inc. PBC
Project Geophysicist: Michael McGuire (initials MM)
Intrusive Contractor: EOTI

Field Team: EA Engineering
Survey Area ID: MRS 1
Sector: Back Bay (BB) and Ocean (O)
Grid: N/A

Design Center POC: Julie Klaiser/David King USACE Baltimore
Site Geophysicist: John Morris
Date: Geophysics - November 2017; Intrusive - December 2017/January 2018
Coordinate System: UTM 18N WGS Meters



Original Survey								Dig Results									Post-Dig Geophysical QC		
Unique Target ID	Easting Coord. (ft/m)	Northing Coord. (ft/m)	Channel ID (ie-C1C4, top sensor, gradient, etc)	Maximum Amplitude (mV/ nT)	Water Depth (ft)	Side Scan Notes	Date	Anomaly type *	# of contacts	Approx. weight (lbs-oz / kg-g)	Offset Distance	Offset Direction (N, NE, etc.)	Depth (in/cm) Top of Item	Date	Team Leader Initials	COMMENTS	Agreement between Dig Results & Geophysical Data? (G=good, P=poor, U=unacceptable)	Geophysicist QC Initials	Date
BB15	485601.4	4229540.4	AS	7.9	1.7	None	11/12/17	NMRD	1	1 oz	2ft	N	0"	12/5/17	JLM	2" x 3" wire mesh, see picture	G	MM	12/21/18
BB16	485626.2	4229696	AS	654.7	1.4	None	11/12/17	NMRD	1	5lbs	2ft	W	6"	12/5/17	JLM	Crabpot end 24"x24" x3/8" square metal	G	MM	12/21/18
BB17	485787.8	4229466.6	AS	46.2	1.4	None	11/12/17	NMRD	1	5lbs	3ft	N	12"	12/5/17	JLM	Scrap metal	G	MM	12/21/18
O-01	486901.8	4228185.8	AS	102.3	11.4	None	11/17/17	NMRD	3		3ft	W	6"	12/15/17	JLM	Rust pockets x 3, no MD or MEC	G	MM	12/21/18
O-02	486903	4228191.8	AS	50.5	11.7	None	11/17/17	NMRD	1	5lbs	3ft	N	18"	12/15/17	JLM	Chain 12" long	G	MM	12/21/18
O-03	486908.4	4228208	AS	23	12.2	None	11/17/17	NMRD	1	7lbs				12/15/17	JLM	Cable 1/4" x 22" long	G	MM	12/21/18
O-04	486908.7	4228211.7	AS	16.3	11.7	None	11/17/17	O	1					12/15/17	JLM	Contact deeper than 2 feet, hole filed in faster than diver could remove (diver had contact)	G	MM	12/21/18
O-05	486909.6	4228217.8	AS	21.8	12.1	None	11/17/17	NC						12/15/17	JLM	Circle search extended to 20ft	small	MM	12/21/18
O-06	486963.6	4228096.4	AS	158.4	19.0	None	11/17/17	NC						12/11/17	JLM	Circle search extended to 20ft	P	MM	12/21/18
O-07	486966.2	4228103.8	AS	15.6	19.2	None	11/17/17	O	1		7ft	W		12/11/17	JLM	Contact deeper than 2 feet, hole filed in faster than diver could remove (diver had contact)	G	MM	12/21/18
O-08	486982.2	4228152.8	AS	26.9	19.1	None	11/17/17	NMRD	1	5	10ft	S	6"	12/11/17	JLM	36" x 3/4 in cable. Diver retrieved the contact and when handed to the tender it broke apart and it fell to the bottom, diver went back down to retrieve it, but it was lost. No MD or MEC	G	MM	12/21/18
O-09	487002.3	4228231.1	AS	10.8	18.8	None	11/17/17	NC						12/11/17	JLM	Circle search extended to 20ft	small	MM	12/21/18
O-10	487004	4228238.6	AS	24.3	18.7	None	11/17/17	NC						12/11/17	JLM	Circle search extended to 20ft	small	MM	12/21/18
O-11	486925.2	4228256.4	AS	23.1	12.0	None	11/17/17	O	1		10ft	W		1/25/18	JLM	Contact deeper than 2 feet, hole filled in faster than the diver could remove (diver had contact)	G	MM	1/26/18

Geophysical Dig Sheet and Target History

Project Name: Assateague Island RI
Geophysical Contractor: EA Engineering, Science and Technology, Inc. PBC
Project Geophysicist: Michael McGuire (initials MM)
Intrusive Contractor: EOTI

Field Team: EA Engineering
Survey Area ID: MRS 1
Sector: Back Bay (BB) and Ocean (O)
Grid: N/A

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O-12	486929.2	4228272.5	AS	12.4	12.3	None	11/17/17	O	1		6ft	S		1/25/18	JLM	Contact deeper than 2 feet, hole filled in faster than the diver could remove (diver had contact)	G	MM	1/26/18
O-13	486933.8	4228291	AS	266.2	12.6	None	11/17/17	NMRD	1		3ft	S	18"	1/25/18	JLM	Rust pocket, broke apart during investigation	G	MM	1/26/18
O-14	486948.6	4228341	AS	46.3	13.2	None	11/17/17	O	1		8ft	N		1/25/18	JLM	Contact deeper than 2 feet, hole filled in faster than the diver could remove (diver had contact)	G	MM	1/26/18
O-15	486957.3	4228363.1	AS	8.9	13.2	None	11/17/17	NC						1/25/18	JLM	20ft circle search	small	MM	1/26/18
O-16	486978.8	4228429.1	AS	12.1	12.2	None	11/17/17	O	1		10ft	N		1/25/18	JLM	Contact deeper than 2 feet, hole filled in faster than the diver could remove (diver had contact)	G	MM	1/26/18
O-17	486980	4228433.2	AS	26.8	12.4	None	11/17/17	NMRD	1	1lbs	6ft	S	6"	12/20/17	JLM	Scrap metal, 9in braided cable	G	MM	12/21/18
O-18	486987.2	4228445.6	AS	106.1	12.9	Small scale debris on surface 1.1 m S	11/17/17	O	1					12/20/17	JLM	Contact deeper than 2 feet, hole filled in faster than the diver could remove (diver had contact)	G	MM	12/21/18
O-19	486989.4	4228449	AS	43.8	12.9	Small scale debris on surface 0.7 m N	11/17/17	NMRD	1	5lbs	12ft	W	14"	12/20/17	JLM	Scrap metal, metal rod 14" x 2"	G	MM	12/21/18
O-20	486991.4	4228455.4	AS	191.7	12.2	None	11/17/17	NMRD	1	25+	6ft	E	18"	12/20/17	JLM	Sheet of metal, concreted into the bottom, not retrieved by diver with handtools.	G	MM	12/21/18
O-21	487006.4	4228508.8	AS	288.8	12.1	None	11/17/17	O	1					12/20/17	JLM	Contact deeper than 2 feet, hole filled in faster than the diver could remove (diver had contact)	G	MM	12/21/18
O-22	487073.4	4228437.6	AS	20.2	20.0	None	11/17/17	O	1					1/26/18	JLM	Contact deeper than 2 feet, hole filled in faster than the diver could remove (diver had contact)	G	MM	1/26/18
O-23	487052.8	4228376.2	AS	30.7	21.0	None	11/17/17	NC						1/24/18	JLM	20ft circle search	small	MM	1/26/18
O-24	487050.6	4228370.8	AS	11	20.4	None	11/17/17	NC						1/24/18	JLM	20ft circle search	small	MM	1/26/18
O-25	487047.8	4228363.2	AS	32.9	20.1	None	11/17/17	NC						1/26/18	JLM	20ft circle search	small	MM	1/26/18

Geophysical Dig Sheet and Target History

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Project Geophysicist: Michael McGuire (initials MM)
Intrusive Contractor: EOTI

Field Team: EA Engineering
Survey Area ID: MRS 1
Sector: Back Bay (BB) and Ocean (O)
Grid: N/A

Design Center POC: Julie Klaiser/David King USACE Baltimore
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O-26	487027.8	4228310.6	AS	102.8	18.8	None	11/17/17	NC						12/11/17	JLM	Circle search extended to 20ft	Might be same as #27	MM	12/21/18
O-27	487026.8	4228308.2	AS	21.4	18.8	None	11/17/17	O	1		3ft	S		12/11/17	JLM	Contact deeper than 2 feet, hole filed in faster than diver could remove (diver had contact)	G	MM	12/21/18
O-28	487025.2	4228304.8	AS	45.3	18.8	None	11/17/17	NC						12/11/17	JLM	Circle search extended to 20ft	small-Might be same as #27	MM	12/21/18
O-29	487108	4228259.6	AS	36.3	24.7	None	11/17/17	NMRD	1		6ft	S	12in	12/11/17	JLM	Item broke apart during investigation, no MD	G	MM	12/21/18
O-30	487100	4228240.6	AS	35.2	24.8	Linear object approx 11 m long, 6m to the NE	11/17/17	O	1		5ft	S		12/11/17	JLM	Contact deeper than 2 feet, hole filed in faster than diver could remove (diver had contact)	G	MM	12/21/18
O-31	487466.2	4227942.2	AS	25.2	35.5	None	11/17/17	NC						12/15/17	JLM	Circle search extended to 20ft	small	MM	12/21/18
O-32	487885	4228123.6	AS	59.7	37.7	None	11/17/17	NC						1/24/18	JLM	Circle search extended to 20ft	small	MM	1/26/18
O-33	487892.2	4228148	AS	35.7	37.4	None	11/17/17	NC						1/24/18	JLM	Circle search extended to 20ft	small	MM	1/26/18
O-34	487598.4	4228348	AS	12.3	34.6	Small debris object 3 m WSW	11/17/17	NC						1/24/18	JLM	Circle search extended to 20ft	small	MM	1/26/18
O-35	487349	4228439.4	AS	193.8	30.0	Larger surface object 10m NW	11/17/17	NC						12/11/17	JLM	Circle search extended to 20ft	P	MM	12/21/18
O-36	487187.5	4228490.4	AS	12.7	24.6	None	11/17/17	NC						1/24/18	JLM	Circle search extended to 20ft	small	MM	1/26/18
O-37	487108.2	4228514	AS	100.4	20.4	None	11/17/17	NMRD	1	.5lbs	4ft	W	6"	1/24/18	JLM	Sand dune fence wire 12 inches long. See picture.	G	MM	1/26/18
O-38	487119.7	4228555.5	AS	13.1	20.1	None	11/17/17	NC						1/24/18	JLM	Circle search extended to 20ft	small	MM	1/26/18
O-39	487128.5	4228591.9	AS	17.1	20.0	Small-scale surface debris 3.2 m west	11/17/17	NC						1/24/18	JLM	Circle search extended to 20ft	small	MM	1/26/18

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Unique Target ID	Easting Coord. (ft/m)	Northing Coord. (ft/m)	Channel ID (ie- C1C4, top sensor, gradient, etc)	Maximum Amplitude (mV/ nT)	Water Depth (ft)	Side Scan Notes	Date	Anomaly type *	# of contacts	Approx. weight (lbs- oz / kg-g)	Offset Distance	Offset Direction (N, NE, etc.)	Depth (in/cm) Top of Item	Date	Team Leader Initials	COMMENTS	Agreement between Dig Results & Geophysical Data? (G=good, P=poor, U=unacceptable)	Geophysicist QC Initials	Date	
O-40	487033.9	4228571.4		7.8	13.3	Small object (0.4 m)on surface 0.5 m SE	11/17/17	NMRD	1	5lbs	20ft	W		12/20/17	JLM	Scrap metal	G	MM	12/21/18	
O-41	487043.3	4228617.6		13.9	13.4	None	11/17/17	NMRD	1	1lb	4ft	N		12/20/17	JLM	Small piece of wire came to the surface, more was still buried in hard packed bottom.	G	MM	12/21/18	
O-42	487049.6	4228642.4		267.5	13.3	None	11/17/17	O	1					12/20/17	JLM	Contact deeper than 2 feet, hole filled in faster than the diver could remove (diver had contact)	G	MM	12/21/18	
O-43	487087.6	4228745		388.1	13.9	None	11/17/17	O	1					12/20/17	JLM	Contact deeper than 2 feet, hole filled in faster than the diver could remove (diver had contact)	G	MM	12/21/18	
O-44	487089.4	4228750		778.7	13.7	None	11/17/17	O	1					12/20/17	JLM	Contact deeper than 2 feet, hole filled in faster than the diver could remove (diver had contact)	G	MM	12/21/18	
O-45	487120.8	4228854.6	AS	31.2	13.8	None	11/17/17	O	1					12/19/17	JLM	Contact deeper than 2 feet, hole filled in faster than the diver could remove (diver had contact)	G	MM	12/21/18	
O-46	487122	4228856.8	AS	22.2	13.6	None	11/17/17	NMRD	1	5lbs	15ft	W	6"	12/19/17	JLM	Scrap metal (chain links)	G	MM	12/21/18	
O-47	487122.6	4228858.6	AS	52.3	13.6	None	11/17/17	MD	1	10lbs	6ft	S	18"	12/19/17	JLM	2.25in Sub Caliber Aircraft Rocket (SCAR) (EXPENDED/FIRED) (MDAS)	G	MM	12/21/18	
O-48	487129.4	4228876.1	AS	13.5	13.6	None	11/17/17	NMRD	3	0.5	3ft	W	6"	12/19/17	JLM	Scrap metal 3"x1"	G	MM	12/21/18	
O-49	487136.4	4228893.2	AS	194.2	14.3	None	11/17/17	NMRD	1	6lbs	3ft	N	6"	12/19/17	JLM	Scrap metal (rod) 14"x1"	G	MM	12/21/18	
O-50	487143	4228908.8	AS	432.4	13.9	None	11/17/17	O	1					12/19/17	JLM	Contact deeper than 2 feet, hole filed in fastert than diver could remove (diver had contact)	G	MM	12/21/18	
O-51	487146.8	4228918	AS	28.3	13.9	None	11/17/17	NMRD	1	5	3ft	W	18"	12/19/17	JLM	Rust pocket, no MD or MEC	G	MM	12/21/18	
O-52	487161	4228966.3	AS	9.3	13.4	None	11/17/17	O	1					12/18/17	JLM	Contact deeper than 2 feet, hole filed in faster than diver could remove (diver had contact)	G	MM	12/21/18	
O-53	487169.9	4228997.2	AS	203	13.9	None	11/17/17	MD	1	10lbs	5ft	S	12"	12/18/17	JLM	2.25in Sub Caliber Aircraft Rocket (SCAR)(MDAS)	G	MM	12/21/18	

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O-54	487179.6	4229019	AS	262.2	13.7	None	11/17/17	O	1					12/18/17	JLM	Contact deeper than 2 feet, hole filed in faster than diver could remove (diver had contact)	G	MM	12/21/18
O-55	487190.2	4229046.8	AS	61.8	14.2	None	11/17/17	MD	1	10lbs	5ft	N	12"	12/18/17	JLM	2.25in Sub Caliber Aircraft Rocket (SCAR) (EXPENDED/FIRED) (MDAS)	G	MM	12/21/18
O-56	487188.8	4229040.8	AS	347.7	14.3	None	11/17/17	MD	1	10lbs	2ft	N	6"	12/18/17	JLM	2.25in Sub Caliber Aircraft Rocket (SCAR) (EXPENDED/FIRED) (MDAS)	G	MM	12/21/18
O-57	487192.6	4229054.2	AS	14.6	14.2	None	11/17/17	MD	1	10lbs	3ft	E	6"	12/18/17	JLM	2.25in Sub Caliber Aircraft Rocket (SCAR) (EXPENDED/FIRED) (MDAS)	G	MM	12/21/18
O-58	487194.8	4229062.6	AS	93.2	14.5	None	11/17/17	MD	1	10lbs	5ft	W	6"	12/18/17	JLM	2.25in Sub Caliber Aircraft Rocket (SCAR) (EXPENDED/FIRED) (MDAS)	G	MM	12/21/18
O-59	487200.4	4229080.4	AS	14.2	14.5	None	11/17/17	NMRD	5	.5lbs	3ft	N	18"	12/18/17	JLM	Scrap metal	G	MM	12/21/18
O-60	487218.8	4229118.5	AS	12.9	14.9	Small object 1 m SE	11/17/17	O	1					12/18/17	JLM	Contact deeper than 2 feet, hole filled in faster than the diver could remove (diver had contact)	G	MM	12/21/18
O-61	487229	4229169	AS	24.2	13.8	None	11/17/17	NC						12/18/17	JLM	Circle search extended to 20ft	G	MM	12/21/18
O-62	487230.8	4229174.1	AS	16.3	14.0	None	11/17/17	NMRD	1	3lb	3ft	N	12"	12/18/17	JLM	Scrap metal (cable)	G	MM	12/21/18
O-63	487232.4	4229176.8	AS	21.8	14.4	None	11/17/17	NMRD	20	.1lb	2ft	N	12"	12/18/17	JLM	Scrap metal	G	MM	12/21/18
O-64	487238	4229190.2	AS	8.1	14.8	None	11/17/17	MD	1	10lbs	6ft	N	6"	12/18/17	JLM	2.25in Sub Caliber Aircraft Rocket (SCAR)(MDAS)	G	MM	12/21/18
O-65	487251.6	4229216.5	AS	129.6	15.3	Larger object (0.8 m X 0.5 m) 5 m to SE	11/17/17	NC						12/8/17	JLM	Circle search extended to 20ft	P	MM	12/21/18
O-66	487278.2	4229247.8	AS	61.5	17.1	None	11/17/17	O	1					12/8/17	JLM	Contact deeper than 2 feet, hole filed in faster than diver could remove (diver had contact)	G	MM	12/21/18
O-67	487364	4229547.8	AS	28.7	15.9	No coverage	11/17/17	NMRD	1		3ft	N	12"	1/26/18	JLM	8 in x 2 in metal bar/cable	G	MM	1/26/18

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O-68	487483.6	4229379.2	AS	319.6	25.3	None	11/17/17	NMRD	1	20lbs	5ft	N	0"	12/8/17	JLM	24 in x1 in diameter metal ring (see pictures)	G	MM	12/21/18
O-69	487569.2	4229091.8	AS	336.6	29.5	None	11/17/17	NC						12/8/17	JLM	Circle search extended to 20ft	P	MM	12/21/18
O-70	487485.6	4229092	AS	18.5	27.5	None	11/17/17	O	1		12ft	W		1/25/18	JLM	Contact deeper than 2 feet, hole filled in faster than the diver could remove (diver had contact)	G	MM	1/26/18
O-71	487435.5	4228965.5	AS	13.7	27.4	None	11/17/17	O	1		8ft	S		1/25/18	JLM	Contact deeper than 2 feet, hole filled in faster than the diver could remove (diver had contact)	G	MM	1/26/18
O-72	487285.2	4229024.8	AS	12.5	21.1	None	11/17/17	MDAS	1		3ft	N	12"	1/26/18	JLM	2.25in Rocket heads (MDAS)	G	MM	1/26/18
O-73	487278.8	4229008.2	AS	44.9	21.3	None	11/17/17	O	1					12/19/17	JLM	Contact deeper than 2 feet, hole filed in faster than diver could remove (diver had contact)	G	MM	12/21/18
O-74	487267.4	4228976	AS	483.4	21.1	None	11/17/17	MD	1	10lbs	5ft	W	12"	12/19/17	JLM	2.25in Sub Caliber Aircraft Rocket (SCAR)(MDAS)	G	MM	12/21/18
O-75	487267.8	4228962.2	AS	20.8	22.5	None	11/17/17	MD	1	5lbs	8ft	E	6"	12/19/17	JLM	2.25in Sub Caliber Aircraft Rocket (SCAR) (Tail section 9" long) (EXPENDED/FIRED) (MDAS)	G	MM	12/21/18
O-76	487269.2	4228954.6	AS	201.1	22.6	None	11/17/17	NC						12/8/17	JLM	Circle search extended to 20ft	Might be same as #77	MM	12/21/18
O-77	487270.4	4228950	AS	822.4	22.6	None	11/17/17	O	1					12/8/17	JLM	Contact deeper than 2 feet, hole filed in faster than diver could remove (diver had contact)	G	MM	12/21/18
O-78	487274.4	4228926.1	AS	18	23.1	Multiple small scale items on surface within a 5 m	11/17/17	MD	1	3lbs	6ft	S	14"	12/19/17	JLM	2.25in Sub Caliber Aircraft Rocket (SCAR) (Rocket head) (EXPENDED/FIRED) (MDAS)	G	MM	12/21/18
O-79	487271.1	4228916.1	AS	16.7	23.3	None	11/17/17	MD	1	3lbs	18"	S	12"	12/19/17	JLM	2.25in Sub Caliber Aircraft Rocket (SCAR) (Rocket head) (EXPENDED/FIRED) (MDAS)	G	MM	12/21/18
O-80	487267.6	4228909.2	AS	560.5	23.0	None	11/17/17	O	1					12/8/17	JLM	Item was encased in rock and shell, diver was not able to safely excavate with hand tools, item was deeper than 24 in	G	MM	12/21/18
O-81	487254	4228898	AS	722.2	22.5	None	11/17/17	NMRD	1	200lbs	4ft	W	0"	12/8/17	JLM	10 foot x 4 in structural I-beam. Diver was not able to remove, picture not taken due to zero in-water visibility	G	MM	12/21/18

Geophysical Dig Sheet and Target History

Project Name: Assateague Island RI
Geophysical Contractor: EA Engineering, Science and Technology, Inc. PBC
Project Geophysicist: Michael McGuire (initials MM)
Intrusive Contractor: EOTI

Field Team: EA Engineering
Survey Area ID: MRS 1
Sector: Back Bay (BB) and Ocean (O)
Grid: N/A

Design Center POC: Julie Klaiser/David King USACE Baltimore
Site Geophysicist: John Morris
Date: Geophysics - November 2017; Intrusive - December 2017/January 2018
Coordinate System: UTM 18N WGS Meters



Original Survey								Dig Results									Post-Dig Geophysical QC		
Unique Target ID	Easting Coord. (ft/m)	Northing Coord. (ft/m)	Channel ID (ie- C1C4, top sensor, gradient, etc)	Maximum Amplitude (mV/ nT)	Water Depth (ft)	Side Scan Notes	Date	Anomaly type *	# of contacts	Approx. weight (lbs- oz / kg-g)	Offset Distance	Offset Direction (N, NE, etc.)	Depth (in/cm) Top of Item	Date	Team Leader Initials	COMMENTS	Agreement between Dig Results & Geophysical Data? (G=good, P=poor, U=unacceptable)	Geophysicist QC Initials	Date
O-82	487251.2	4228896	AS	759.4	22.5	None	11/17/17	NC						12/19/17	JLM	20ft circle search	Might be same as #81	MM	12/21/18
O-83	487320	4228892.8	AS	36.4	24.9	None	11/17/17	NMRD	1	20lbs	8ft		8"	12/15/17	JLM	Chain clump see picture	G	MM	12/21/18
O-84	487330	4228912.1	AS	12.1	25.2	None	11/17/17	MD	2	4lbs	0		6"	12/15/17	JLM	2.25in Rocket heads (MDAS)	G	MM	12/21/18
O-85	487381	4228814.6	AS	74.2	27.6	None	11/17/17	NMRD	1	20lbs+	5ft		8"	12/15/17	JLM	Angle iron, more than 20lbs, not recovered	G	MM	12/21/18
O-86	487454	4228734.2	AS	49.5	30.1	None	11/17/17	NMRD	1	10lbs	9ft		15"	12/15/17	JLM	Steel belted tire	G	MM	12/21/18
O-87	487754.5	4228797.3	AS	18.6	33.8	None	11/17/17	O	1		6ft	E		1/25/18	JLM	Contact deeper than 2 feet, hole filled in faster than the diver could remove (diver had contact)	G	MM	1/26/18
O-88	487782.5	4228904.2	AS	9.8	33.8	1.8 m long linear object 6 m to NW	11/17/17	NC						1/26/18	JLM	Circle search extended to 20ft	small	MM	1/26/18
O-89	487845	4229086.1	AS	12.8	33.5	None	11/17/17	NC						1/26/18	JLM	Circle search extended to 20ft	small	MM	1/26/18
O-90	487846.8	4229094	AS	74.6	32.9	cal item on seafloor (1.5 m X 0.5 m) 15	11/17/17	NC						1/26/18	JLM	Circle search extended to 20ft	small-medium	MM	1/26/18
O-91	487866.3	4229156.7	AS	14.4	33.0	None	11/17/17	O	1		6ft	S		1/26/18	JLM	Contact deeper than 2 feet, hole filled in faster than the diver could remove (diver had contact)	G	MM	1/26/18
O-92	488375.5	4229579.3	AS	15.6	37.2	Small round object 4 m ESE	11/17/17	NMRD	1		3FT	N	12"	1/26/18	JLM	Rust pocket, item broke apart during investigation	G	MM	1/26/18

Note: * For **Anomaly type**, use U for UXO, F for frag, OS for ordnance related scrap, S for scrap, A for small arms ammunition, NC for no contact, O for other.
** Optional Fields - refer to SOW for applicability to Specific Project

Geophysical Dig Sheet and Target History

Project Name: Assateague Island RI
Geophysical Contractor: EA Engineering, Science and Technology, Inc. PBC
Project Geophysicist: Michael McGuire (initials MM)
Intrusive Contractor: EOTI

Field Team: EA Engineering
Survey Area ID: MRS 3
Sector: Back Bay (BB) and Ocean (O)
Grid: N/A

Design Center POC: Julie Klaiser/David King USACE Baltimore
Site Geophysicist: John Morris
Date: Geophysics - November 2017; Intrusive - December 2017
Coordinate System: UTM 18N WGS Meters



Original Survey								Dig Results										Post-Dig Geophysical QC		
Unique Target ID	Easting Coord. (ft/m)	Northing Coord. (ft/m)	Channel ID (ie- C1C4, top sensor, gradient, etc)	Maximum Amplitude (mV/ nT)	Water Depth (ft)	Side Scan Notes	Date	Anomaly type *	# of contacts	Approx. weight (lbs-oz / kg-g)	Offset Distance	Offset Direction (N, NE, etc.)	Depth (in/cm) Top of Item	Date	Team Leader Initials	COMMENTS	Agreement between Dig Results & Geophysical Data? (G=good, P=poor, U=unacceptable)	Geophysicist QC Initials	Date	
BB01	480552.9	4215465.6	AS	77.1	1.8	None	13-Nov	NMRD	1	1lbs	0		12"	10-Dec	JLM	crab trap piece	G	MM	12/20/2018	
BB02	480552.6	4215461.5	AS	12	2.2	None	13-Nov	NC						10-Dec	JLM	Circle search extended to 20 ft	small	MM	12/20/2018	
BB03	480282.7	4214746.1	AS	23.5	2.6	None	13-Nov	O	1					16-Dec	JL M	Contact deeper than 24 inches,hole filled in faster than could be removed. Diver had a contact	G	MM	12/20/2018	
BB04	480516.1	4214825.7	AS	69.7	4.5	None	13-Nov	O	1					16-Dec	JLM	Contact deeper than 24 inches,hole filled in faster than could be removed. Diver had a contact	G	MM	12/20/2018	
BB05	480526.2	4214859.4	AS	89.4	4.5	None	13-Nov	NMRD	1	5lbs	3ft	W	12"	16-Dec	JLM	Crap trap pieces (rebar)	G	MM	12/20/2018	
BB06	480537.2	4214879.3	AS	61.5	4.6	None	13-Nov	NMRD	1	5lbs	3ft	W	12"	16-Dec	JLM	Crap trap pieces (rebar)	G	MM	12/20/2018	
BB07	480633.6	4214794.4	AS	34.5	3.7	None	13-Nov	NMRD	1	4lbs	6ft	N	15"	16-Dec	JLM	Scrap metal	G	MM	12/20/2018	
BB08	480684.3	4214695.5	AS	56.5	1.4	None	13-Nov	NMRD		.5lbs	8ft	N	18"	16-Dec	JLM	Tin beer can, see pictures.	G	MM	12/20/2018	
BB09	480706.9	4214589.7	AS	21.5	1.2	No coverage	13-Nov	NC						17-Dec	JLM	Circle search extended to 20 ft	small	MM	12/20/2018	
BB10	480923.9	4214464.6	AS	25.7	3.3	None	13-Nov	NMRD	1	7lb	6ft	N	12"	17-Dec	JLM	Crab trap piece	G	MM	12/20/2018	
BB11	480955	4214523.6	AS	28.6	4.6	Surface debris item 1 m NW	13-Nov	NMRD	1	3lb	3ft	E	12"	17-Dec	JLM	Crab trap piece	G	MM	12/20/2018	
BB12	480917.7	4214648.5	AS	1118.4	3.8	Small debris item 1.2 m NW	13-Nov	NMRD	1	8lb	6ft	N	18"	17-Dec	JLM	34" x 1" galvanized pipe	G	MM	12/20/2018	
BB13	481127.4	4214704.1	AS	32.7	1.9	None	13-Nov	NMRD	1	3lb	2	N	12"	6-Dec	JLM	SM 8' long x2" angle iron	G	MM	12/20/2018	
BB14	481201.5	4214796.4	AS	24.8	1.1	None	13-Nov	NMRD	4	10lbs	0		12"	6-Dec	JLM	Electrical pump and wire	G	MM	12/20/2018	

Geophysical Dig Sheet and Target History

Project Name: Assateague Island RI
Geophysical Contractor: EA Engineering, Science and Technology, Inc. PBC
Project Geophysicist: Michael McGuire (initials MM)
Intrusive Contractor: EOTI

Field Team: EA Engineering
Survey Area ID: MRS 3
Sector: Back Bay (BB) and Ocean (O)
Grid: N/A

Design Center POC: Julie Klaiser/David King USACE Baltimore
Site Geophysicist: John Morris
Date: Geophysics - November 2017; Intrusive - December 2017
Coordinate System: UTM 18N WGS Meters



Original Survey								Dig Results										Post-Dig Geophysical QC		
Unique Target ID	Easting Coord. (ft/m)	Northing Coord. (ft/m)	Channel ID (ie- C1C4, top sensor, gradient, etc)	Maximum Amplitude (mV/ nT)	Water Depth (ft)	Side Scan Notes	Date	Anomaly type *	# of contacts	Approx. weight (lbs- oz / kg-g)	Offset Distance	Offset Direction (N, NE, etc.)	Depth (in/cm) Top of Item	Date	Team Leader Initials	COMMENTS	Agreement between Dig Results & Geophysical Data? (G=good, P=poor, U=unacceptable)	Geophysicist QC Initials	Date	
BB15	481205.4	4214798.7	AS	13.3	0.9	None	13-Nov	NMRD	1	1oz	2	N	6"	6-Dec	JLM	SM broken up upon investigation (No MD/MEC)	G	MM	12/20/2018	
BB16	481222.4	4214806.5	AS	10.8	1.1	None	13-Nov	NMRD	1	2oz	2	E	12"	6-Dec	JLM	Broken up wire, item kept moving during investigation. Shared contact with BB14	G	MM	12/20/2018	
BB17	481231.9	4214808.2	AS	16.3	1.7	None	13-Nov	NMRD	4	1lb	0		6"	6-Dec	JLM	4 pieces of SM (No MD/MEC)	G	MM	12/20/2018	
BB18	481261	4214806.1	AS	34	2.1	None	13-Nov	NMRD	4	1lb	0		6"	6-Dec	JLM	5pieces of SM (No MD/MEC)	G	MM	12/20/2018	
BB19	481440.1	4214893.5	AS	10.6	2.5	None	13-Nov	NMRD	1	0.5lbs	0		0"	10-Dec	JLM	Scrap metal, broke apart during investigation NO MD/MEC	G	MM	12/20/2018	
BB20	481508	4214943.9	AS	15	3.1	None	13-Nov	O						10-Dec	JLM	Contact was deeper than 2 feet and in hard sediment, could not to safely remove with hand tools	G	MM	12/20/2018	
BB21	481476.5	4214931.6	AS	9.4	3.0	Larger scale item 2.9 m to the SSE	13-Nov	NMRD	1	1lbs	0		12"	10-Dec	JLM	Mesh part of a crab trap	G	MM	12/20/2018	
BB22	481424.8	4214902.5	AS	7.2	2.4	Possible debris item 3.1 m NE	13-Nov	NMRD	1	10lbs	6ft	N	0"	10-Dec	JLM	Crab trap	G	MM	12/20/2018	
BB23	481378.4	4214907.7	AS	14.9	2.2	None	13-Nov	NC						16-Dec	JLM	Circle search extended to 20 ft	G	MM	12/20/2018	
BB24	481341.5	4214932.5	AS	84.1	2.4	No coverage	13-Nov	O						10-Dec	JLM	Contact deeper than 24 inches,hole filled in faster than could be removed.	G	MM	12/20/2018	
BB25	481287.4	4214916.6	AS	17.7	2.6	Larger surfical object (0.8 m X 0.8 m) 3.5 m to north	13-Nov	NC						17-Dec	JLM	Circle search extended to 20 ft	small	MM	12/20/2018	
BB26	481249.2	4214936.1	AS	10.2	1.9	None	13-Nov	NMRD	1	30lbs	6ft	S	24"	17-Dec	JLM	Sheet metal,36"x36" to deep to recover.	G	MM	12/20/2018	
BB27	481133.4	4214852.5	AS	23.5	2.5	None	13-Nov	NMRD	1	30lbs	6ft	N	18"	17-Dec	JLM	36"x36" buried sheet metal	G	MM	12/20/2018	

Geophysical Dig Sheet and Target History

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Project Geophysicist: Michael McGuire (initials MM)
Intrusive Contractor: EOTI

Field Team: EA Engineering
Survey Area ID: MRS 3
Sector: Back Bay (BB) and Ocean (O)
Grid: N/A

Design Center POC: Julie Klaiser/David King USACE Baltimore
Site Geophysicist: John Morris
Date: Geophysics - November 2017; Intrusive - December 2017
Coordinate System: UTM 18N WGS Meters



Original Survey								Dig Results										Post-Dig Geophysical QC		
Unique Target ID	Easting Coord. (ft/m)	Northing Coord. (ft/m)	Channel ID (ie- C1C4, top sensor, gradient, etc)	Maximum Amplitude (mV/ nT)	Water Depth (ft)	Side Scan Notes	Date	Anomaly type *	# of contacts	Approx. weight (lbs- oz / kg-g)	Offset Distance	Offset Direction (N, NE, etc.)	Depth (in/cm) Top of Item	Date	Team Leader Initials	COMMENTS	Agreement between Dig Results & Geophysical Data? (G=good, P=poor, U=unacceptable)	Geophysicist QC Initials	Date	
BB28	481127.8	4214842.8	AS	43.6	2.3	None	13-Nov	NMRD	2	5lbs	3ft	N	12"	17-Dec	JLM	Steel marking stakes 12"x2"	G	MM	12/20/2018	
BB29	480902.2	4214983.1	AS	42.4	2.0	None	13-Nov	NMRD	1	4lbs	6ft	W	6"	17-Dec	JLM	crab trap piece	G	MM	12/20/2018	
BB30	480911.8	4214993.5	AS	1650.1	1.9	Larger item on surface at location	13-Nov	NMRD	1	5lbs	2ft	S	0"	17-Dec	JLM	crab trap piece	G	MM	12/20/2018	
BB31	480960.7	4215102.4	AS		13.8	1.5	Small debris item 1.2 m SE	13-Nov	NC						10-Dec	JLM	Circle search extended to 20 ft	small	MM	12/20/2018
BB32	480227.71	4214296.16	AS	13.45	1.0		13-Nov	NC						17-Dec	JLM	Circle search extended to 20 ft	small	MM	12/20/2018	
O-1	481767.2	4213483.2	AS	14.4	19.1	None	20-Nov	O						7-Dec	JLM	Contact was deeper than 2 feet, hole filled in faster than diver could remove sand	G	MM	12/20/2018	
O-2	481817.8	4213572.4	AS	67	20.6	None	20-Nov	O						7-Dec	JLM	Contact was deeper than 2 feet, hole filled in faster than diver could remove sand	G	MM	12/20/2018	
O-3	481941.8	4213815.8	AS	50.9	17.8	3 m long linear object 5.4 m NW	20-Nov	O						7-Dec	JLM	Contact was deeper than 2 feet, hole filled in faster than diver could remove sand	G	MM	12/20/2018	
O-4	482002.6	4213942.4	AS	14.3	17.8	None	20-Nov	NMRD	1	5oz	6ft	W	3"	7-Dec	JLM	Large metal nail approx 6in long	G	MM	12/20/2018	
O-5	482042.2	4214017.4	AS	54	18.1	None	20-Nov	NC						7-Dec	JLM	Contact was deeper than 2 feet, hole filled in faster than diver could remove sand	G	MM	12/20/2018	
O-6	482282	4214452.4	AS	129.2	18.3	Small irregular shaped target on surface 1.25 m W	20-Nov	NMRD	1	4 oz	6ft	N	6"	7-Dec	JLM	14" dual strand lamp cord	G	MM	12/20/2018	
O-7	482509.6	4214878.8	AS	37.2	18.3	None	20-Nov	O						7-Dec	JLM	Contact was deeper than 2 feet, hole filled in faster than diver could remove sand	G	MM	12/20/2018	
O-8	482663.8	4215176.4	AS	130.8	18.1	None	20-Nov	O						7-Dec	JLM	Contact was deeper than 2 feet, hole filled in faster than diver could remove sand	G	MM	12/20/2018	

Geophysical Dig Sheet and Target History

Project Name: Assateague Island RI
Geophysical Contractor: EA Engineering, Science and Technology, Inc. PBC
Project Geophysicist: Michael McGuire (initials MM)
Intrusive Contractor: EOTI

Field Team: EA Engineering
Survey Area ID: MRS 3
Sector: Back Bay (BB) and Ocean (O)
Grid: N/A

Design Center POC: Julie Klaiser/David King USACE Baltimore
Site Geophysicist: John Morris
Date: Geophysics - November 2017; Intrusive - December 2017
Coordinate System: UTM 18N WGS Meters



Original Survey								Dig Results										Post-Dig Geophysical QC		
Unique Target ID	Easting Coord. (ft/m)	Northing Coord. (ft/m)	Channel ID (ie- C1C4, top sensor, gradient, etc)	Maximum Amplitude (mV/ nT)	Water Depth (ft)	Side Scan Notes	Date	Anomaly type *	# of contacts	Approx. weight (lbs- oz / kg-g)	Offset Distance	Offset Direction (N, NE, etc.)	Depth (in/cm) Top of Item	Date	Team Leader Initials	COMMENTS	Agreement between Dig Results & Geophysical Data? (G=good, P=poor, U=unacceptable)	Geophysicist QC Initials	Date	
O9	482755.8	4215250	AS	15.7	18.1	None	20-Nov	NC						8-Dec	JLM	circle search extended out to 20ft	small	MM	12/20/2018	

Note: * For **Anomaly type** , use U for UXO, F for frag, OS for ordnance related scrap, S for scrap, A for small arms ammunition, NC for no contact, O for other.
 ** Optional Fields - refer to SOW for applicability to Specific Project

APPENDIX F-2: Terrestrial Dig Sheets

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Table F.2 Terrestrial Dig Sheets																
GridTransID	MRS	Target_ID	Date_Dig	Anom_Type	Munition Type	AnomDesc	Additional Description	Contacts	AnomLength	Anom Depth	AnomWt	Ch2Resp	Comments	QC_Check	POINT_X	POINT_Y
MRS01-05	MRS01	MRS01-05-25	4/2/2018 18:15	NMRD	<Null>	Wire	braided cable	2	24	5	1	7.2	<Null>	4/4/2018 12:35	485831.2153	4228843.696
MRS01-03	MRS01	MRS01-03-74	4/2/2018 18:30	NMRD	<Null>	Other	Hot rock/asphalt	10	<Null>	5	10	4.14	near roadside	4/4/2018 12:42	485407.7624	4228972.185
MRS01-04	MRS01	MRS01-04-24	4/2/2018 17:45	NMRD	<Null>	Nail	<Null>	1	6	12	0.1	4.56	<Null>	4/4/2018 12:48	485603.0353	4228942.126
MRS01-04	MRS01	MRS01-04-16	4/2/2018 17:00	NMRD	<Null>	Nail	<Null>	1	<Null>	12	0.1	3.83	<Null>	4/4/2018 12:52	485588.8653	4228896.586
MRS01-05	MRS01	MRS01-05-78	4/3/2018 19:24	NMRD	<Null>	<Null>	<Null>	1	6	3	0.5	10.71	Metal spike	4/4/2018 13:48	485833.5053	4228888.186
MRS01-05	MRS01	MRS01-05-26	4/2/2018 16:45	NMRD	<Null>	Other	Hot	15	<Null>	12	<Null>	3.3	<Null>	4/4/2018 13:55	485840.5553	4228897.456
MRS01-05	MRS01	MRS01-05-27	4/2/2018 17:15	NMRD	<Null>	Metal Scrap	Hitch pin	1	4	4	0.5	23.73	<Null>	4/4/2018 13:59	485877.9954	4228956.596
MRS01-04	MRS01	MRS01-04-22	4/2/2018 17:00	NMRD	<Null>	Metal Scrap	tent spike/bottle	3	8	3	0.3	37.46	<Null>	4/4/2018 14:08	485633.2553	4229006.476
MRS01-04	MRS01	MRS01-04-21	4/2/2018 17:15	NMRD	<Null>	Metal Scrap	tent spikes	2	8	2	0.2	13.8	<Null>	4/4/2018 14:13	485636.5353	4229033.386
MRS01-04	MRS01	MRS01-04-19	4/2/2018 18:15	NMRD	<Null>	Metal Scrap	tent spikes	2	8	3	0.1	13.53	<Null>	4/4/2018 14:13	485635.9653	4229048.086
MRS01-04	MRS01	MRS01-04-17	4/2/2018 15:45	NMRD	<Null>	Nail	<Null>	1	6	3	0.1	8.6	<Null>	4/4/2018 14:13	485635.8953	4229056.276
MRS01-04	MRS01	MRS01-04-18	4/2/2018 16:00	NMRD	<Null>	Metal Scrap	tent spike	1	8	2	0.2	4.98	<Null>	4/4/2018 14:14	485635.8053	4229054.076
MRS01-04	MRS01	MRS01-04-20	4/3/2018 12:15	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	39.53	<Null>	4/4/2018 14:15	485636.7354	4229035.746
MRS01-07	MRS01	MRS01-07-41	4/2/2018 17:45	NMRD	<Null>	Metal Scrap	<Null>	1	3	5	0.1	3.94	<Null>	4/4/2018 16:20	486083.6454	4228808.866
MRS01-07	MRS01	MRS01-07-42	4/2/2018 17:15	NMRD	<Null>	Metal Scrap	<Null>	1	3	4	0.1	6.32	<Null>	4/4/2018 16:21	486083.3154	4228807.846
MRS01-08	MRS01	MRS01-08-84	4/2/2018 18:25	NMRD	<Null>	Metal Scrap	<Null>	<Null>	<Null>	<Null>	<Null>	15.65	<Null>	4/4/2018 16:26	486203.0054	4228765.306
MRS01-08	MRS01	MRS01-08-47	4/2/2018 19:30	NMRD	<Null>	Metal Scrap	<Null>	1	2	8	0.1	10.09	<Null>	4/4/2018 16:27	486222.5554	4228823.266
MRS01-B	MRS01	MRS01-B-152	4/3/2018 13:12	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	18.93	Utility line l l p ax verified	4/4/2018 16:37	486740.7456	4228754.796
MRS01-12	MRS01	MRS01-12-90	4/4/2018 16:39	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	3.67	Dug down 30 no contact	4/5/2018 4:00	486671.9955	4229179.316
MRS01-13	MRS01	MRS01-13-86	4/4/2018 13:41	NMRD	<Null>	<Null>	<Null>	4	14	5	1	297.33	Busted up paint can	4/5/2018 18:36	486515.5454	4228660.696
MRS01-13	MRS01	MRS01-13-69	4/4/2018 13:37	NMRD	<Null>	<Null>	<Null>	1	12	2	0.5	9.73	Paint roller	4/5/2018 18:38	486512.9755	4228637.896
MRS01-13	MRS01	MRS01-13-67	4/4/2018 13:34	NMRD	<Null>	<Null>	<Null>	3	14	4	2	12.83	Fencing material	4/5/2018 18:39	486508.7455	4228627.426
MRS01-11	MRS01	MRS01-11-58	4/4/2018 11:55	NMRD	<Null>	<Null>	<Null>	5	4	4	0.2	12.19	Nails	4/5/2018 18:47	486415.6154	4228756.756
MRS01-11	MRS01	MRS01-11-59	4/4/2018 11:58	NMRD	<Null>	<Null>	<Null>	5	20	2	0.2	4.81	Nails and banding material	4/5/2018 18:48	486416.2155	4228760.426
MRS01-10	MRS01	MRS01-10-129	4/4/2018 12:36	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	7.35	Dug down 30 in no contact	4/5/2018 18:53	486473.9755	4228870.626
MRS01-08	MRS01	MRS01-08-9	4/2/2018 17:15	SEED	<Null>	QC Seed	EA004	1	6	6	1	93.04	<Null>	4/5/2018 19:10	486245.1455	4228965.256
MRS01-08	MRS01	MRS01-08-45	4/2/2018 18:45	NMRD	<Null>	Metal Scrap	tent spike	1	6	2	0.1	6.25	<Null>	4/5/2018 19:15	486220.6554	4228879.546
MRS01-09	MRS01	MRS01-09-50	4/3/2018 20:06	NMRD	<Null>	<Null>	<Null>	1	18	5	0.2	19.27	Braided cable	4/5/2018 19:19	486325.0755	4228791.346
MRS01-09	MRS01	MRS01-09-49	4/3/2018 20:04	NMRD	<Null>	<Null>	<Null>	1	12	4	2	33.13	Chain	4/5/2018 19:21	486310.2355	4228776.676
MRS01-B	MRS01	MRS01-B-198	4/4/2018 19:19	NMRD	<Null>	<Null>	<Null>	5	4	5	0.3	18.52	Nails	4/6/2018 14:17	486650.9755	4228475.456
MRS01-B	MRS01	MRS01-B-206	4/5/2018 14:27	NMRD	<Null>	<Null>	<Null>	2	6	12	0.2	21.01	Tent spikes	4/6/2018 14:19	486696.7555	4228469.526
MRS01-B	MRS01	MRS01-B-186	4/5/2018 14:11	NMRD	<Null>	<Null>	<Null>	<Null>	48	2	5	684.61	Fence post	4/6/2018 14:21	486715.4955	4228437.146
MRS01-B	MRS01	MRS01-B-187	4/5/2018 14:13	NMRD	<Null>	<Null>	<Null>	4	1	3	0.2	5.14	Misc scrap metal	4/6/2018 14:26	486711.6956	4228428.946
MRS01-B	MRS01	MRS01-B-202	4/5/2018 18:00	NMRD	<Null>	<Null>	<Null>	3	36	24	0.3	14.13	Barbed wire 3", and 2 tent	4/6/2018 14:28	486681.5156	4228394.186
MRS01-B	MRS01	MRS01-B-192	4/5/2018 17:48	NMRD	<Null>	<Null>	<Null>	1	6	3	0.1	7.31	Tent spike	4/6/2018 14:30	486661.3455	4228380.186
MRS01-B	MRS01	MRS01-B-205	4/5/2018 17:46	NMRD	<Null>	<Null>	<Null>	2	6	4	0.1	10.05	Tent spikes	4/6/2018 14:30	486665.0355	4228381.306
MRS01-B	MRS01	MRS01-B-191	4/5/2018 17:50	NMRD	<Null>	<Null>	<Null>	2	6	4	0.2	4.14	Tent spike and bottle cap	4/6/2018 14:32	486654.8955	4228361.786
MRS01-B	MRS01	MRS01-B-215	4/5/2018 17:56	NMRD	<Null>	<Null>	<Null>	1	5	1	0.1	12.23	Bread tie	4/6/2018 14:33	486652.4055	4228343.386
MRS01-B	MRS01	MRS01-B-208	4/5/2018 17:52	NMRD	<Null>	<Null>	<Null>	1	8	4	0.1	31.72	Tent spike	4/6/2018 14:36	486644.1855	4228378.226
MRS01-B	MRS01	MRS01-B-213	4/4/2018 20:04	NMRD	<Null>	<Null>	<Null>	2	12	24	0.5	19.84	Rebar nail in boardwalk left	4/6/2018 14:38	486634.6255	4228443.196
MRS01-B	MRS01	MRS01-B-212	4/4/2018 19:25	NMRD	<Null>	<Null>	<Null>	1	12	10	0.1	17.52	Nail	4/6/2018 14:43	486665.8355	4228505.686
MRS01-13	MRS01	MRS01-13-88	4/3/2018 13:50	NMRD	<Null>	<Null>	<Null>	1	12	30	1	5.6	Rebar	4/9/2018 13:18	486771.3555	4229382.866
MRS01-15	MRS01	MRS01-15-102	4/6/2018 11:52	MD	Rocket	<Null>	Rocket motor	2	24	24	5	31.57	2.25 rocket motor	4/9/2018 13:23	486777.8955	4229180.956
MRS01-15	MRS01	MRS01-15-103	4/6/2018 11:50	MD	Rocket	<Null>	Rocket motor	1	18	24	4	82.54	2.25 rocket motor	4/9/2018 13:29	486761.0955	4229174.546
MRS01-15	MRS01	MRS01-15-104	4/6/2018 11:57	MD	Rocket	<Null>	Rocket motor	1	24	24	5	3.16	2.25 rocket motor	4/9/2018 13:29	486764.0055	4229165.516
MRS01-15	MRS01	MRS01-15-301	4/6/2018 11:45	MD	Rocket	<Null>	Rocket motor	1	14	24	2	92.77	2.25 rocket motor	4/9/2018 13:38	486757.5055	4229129.376

Table F.2 Terrestrial Dig Sheets																
GridTransID	MRS	Target_ID	Date_Dig	Anom_Type	Munition Type	AnomDesc	Additional Description	Contacts	AnomLength	Anom Depth	AnomWt	Ch2Resp	Comments	QC_Check	POINT_X	POINT_Y
MRS01-15	MRS01	MRS01-15-272	4/6/2018 11:30	MD	Rocket	<Null>	Rocket motor	1	14	12	4	182.67	2.25 rocket motor	4/9/2018 13:41	486757.2356	4229109.366
MRS01-14	MRS01	MRS01-14-281	4/6/2018 11:17	NMRD	<Null>	<Null>	<Null>	1	<Null>	<Null>	<Null>	155.4	Colbert left in place	4/9/2018 13:49	486728.9855	4229135.906
MRS01-14	MRS01	MRS01-14-280	4/6/2018 11:15	NMRD	<Null>	<Null>	<Null>	2	8	2	1	21.09	Wrench,wire, and near	4/9/2018 13:57	486726.4055	4229131.586
MRS01-14	MRS01	MRS01-14-279	4/6/2018 11:13	NMRD	<Null>	<Null>	<Null>	2	2	2	0.1	4.24	Misc scrap metal	4/9/2018 13:59	486726.1656	4229125.956
MRS01-06	MRS01	MRS01-06-79	4/5/2018 12:12	NMRD	<Null>	<Null>	<Null>	2	14	10	2	80.23	Metal spike,bracket	4/10/2018 17:37	485998.0754	4228929.766
MRS01-06	MRS01	MRS01-06-38	4/5/2018 12:20	NMRD	<Null>	<Null>	<Null>	<Null>	6	5	0.5	23.57	Tent spikes, bottle opener,	4/10/2018 17:37	485998.5653	4228935.746
MRS01-06	MRS01	MRS01-06-1	4/2/2018 16:45	NMRD	<Null>	Metal Scrap	tent spike	1	6	6	0.1	14.24	<Null>	4/10/2018 17:38	486005.5454	4228961.926
MRS01-06	MRS01	MRS01-06-40	4/5/2018 12:23	NMRD	<Null>	<Null>	<Null>	1	6	6	0.1	5.71	Tent spike	4/10/2018 17:39	485997.5553	4228945.676
MRS01-06	MRS01	MRS01-06-39	4/5/2018 12:18	NMRD	<Null>	<Null>	<Null>	<Null>	6	3	0.2	9.78	Tent spikes	4/10/2018 17:39	485997.9054	4228936.886
MRS01-06	MRS01	MRS01-06-37	4/5/2018 12:16	NMRD	<Null>	<Null>	<Null>	3	6	5	0.2	25.35	Tent spikes	4/10/2018 17:40	485999.1354	4228934.296
MRS01-06	MRS01	MRS01-06-32	4/2/2018 19:30	NMRD	<Null>	Metal Scrap	tent spike	1	6	6	0.1	12.82	<Null>	4/10/2018 17:46	485960.5954	4228862.786
MRS01-06	MRS01	MRS01-06-33	4/2/2018 18:45	NMRD	<Null>	Metal Scrap	tent spikes	3	6	6	0.3	5.7	<Null>	4/10/2018 17:47	485962.4854	4228867.816
MRS01-06	MRS01	MRS01-06-34	4/2/2018 15:15	NMRD	<Null>	Metal Scrap	tent spike	1	6	6	0.1	18.45	<Null>	4/10/2018 17:48	485963.1853	4228870.786
MRS01-06	MRS01	MRS01-06-36	4/5/2018 12:55	NMRD	<Null>	<Null>	<Null>	3	6	5	0.3	29.2	Tent spikes	4/10/2018 17:49	485982.7753	4228897.586
MRS01-06	MRS01	MRS01-06-35	4/5/2018 12:53	NMRD	<Null>	<Null>	<Null>	3	6	4	0.3	20.31	Tent spikes	4/10/2018 17:49	485982.0454	4228895.836
MRS01-06	MRS01	MRS01-06-29	4/2/2018 18:45	NMRD	<Null>	Metal Scrap	sheet metal	1	<Null>	48	<Null>	5.54	<Null>	4/10/2018 18:15	485948.0053	4228790.966
MRS01-06	MRS01	MRS01-06-28	4/2/2018 18:00	NMRD	<Null>	Wire	braided cable	2	18	6	1	18.77	<Null>	4/10/2018 18:18	485944.2353	4228777.226
MRS01-06	MRS01	MRS01-06-30	4/2/2018 18:45	NMRD	<Null>	Wire	braided cable	1	24	12	2	30.88	<Null>	4/10/2018 18:19	485948.9654	4228801.356
MRS01-06	MRS01	MRS01-06-31	4/2/2018 18:45	NMRD	<Null>	Wire	braided cable	1	24	6	2	62.46	<Null>	4/10/2018 18:20	485948.2053	4228803.976
MRS01-5	MRS01	MRS01-05-1121	4/10/2018 12:58	NMRD	<Null>	<Null>	<Null>	1	4	4	0.2	<Null>	Metal bracket, hot rocks and	4/11/2018 11:50	485829.5453	4228868.776
MRS01-7	MRS01	MRS01-07-1293	4/9/2018 15:34	NMRD	<Null>	<Null>	<Null>	2	6	3	0.3	<Null>	Tent spikes	4/11/2018 12:25	486114.3955	4228902.376
MRS01-15	MRS01	MRS01-15-289	4/11/2018 13:18	No Contact	<Null>	<Null>	<Null>	1	<Null>	38	<Null>	18.17	Unrecoverable and	4/11/2018 13:20	486765.5255	4229148.886
MRS01-07	MRS01	MRS01-07-72	4/9/2018 15:32	NMRD	<Null>	<Null>	<Null>	2	6	3	0.2	4.74	Tent spike	4/11/2018 14:35	486112.8454	4228897.996
MRS01-15	MRS01	MRS01-15-290	4/6/2018 12:14	MD	Rocket	<Null>	Rocket motor	2	24	6	5	26.74	2.25 rocket motor	4/11/2018 15:22	486761.6056	4229042.806
MRS01-6	MRS01	MRS01-06-1128	4/9/2018 15:53	NMRD	<Null>	<Null>	<Null>	2	6	3	0.1	<Null>	Tent spikes	4/11/2018 17:56	485965.3053	4228874.636
MRS01-5	MRS01	MRS01-05-1123	4/10/2018 12:56	NMRD	<Null>	<Null>	<Null>	1	5	5	0.2	<Null>	Wire and hot rocks near	4/11/2018 17:57	485832.3753	4228882.426
MRS01-6	MRS01	MRS01-06-1129	4/9/2018 15:49	NMRD	<Null>	<Null>	<Null>	2	6	3	0.2	<Null>	Nail pin flag	4/11/2018 17:57	485966.9854	4228875.576
MRS01-5	MRS01	MRS01-05-1116	4/10/2018 13:01	NMRD	<Null>	<Null>	<Null>	1	12	20	0.3	<Null>	Braided cable	4/11/2018 18:15	485832.9454	4228821.356
MRS01-07	MRS01	MRS01-07-71	4/9/2018 15:29	NMRD	<Null>	<Null>	<Null>	3	6	3	0.2	18.69	Tent spikes,bolt	4/11/2018 18:36	486111.2953	4228893.816
MRS01-5	MRS01	MRS01-05-1126	4/10/2018 12:54	NMRD	<Null>	<Null>	<Null>	10	<Null>	12	<Null>	<Null>	Hot rocks near roadside	4/11/2018 18:50	485846.5953	4228901.076
MRS01-07	MRS01	MRS01-07-73	4/9/2018 15:33	NMRD	<Null>	<Null>	<Null>	1	6	3	0.1	14.92	Tent spike	4/11/2018 18:54	486113.5154	4228899.736
MRS01-7	MRS01	MRS01-07-1290	4/9/2018 15:36	NMRD	<Null>	<Null>	<Null>	2	6	3	0.2	<Null>	Tent spike	4/11/2018 19:03	486118.4253	4228902.496
MRS01-7	MRS01	MRS01-07-1134	4/9/2018 15:27	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	Under asphalt	4/11/2018 19:07	486103.6953	4228881.986
MRS01-6	MRS01	MRS01-06-1130	4/9/2018 15:51	NMRD	<Null>	<Null>	<Null>	1	6	3	0.1	<Null>	Tent spike	4/11/2018 19:07	485984.4954	4228901.276
MRS01-12	MRS01	MRS01-12-15	4/10/2018 15:37	NMRD	<Null>	<Null>	<Null>	1	4	1	0.1	7.07	Nail	4/11/2018 19:32	486454.6655	4228606.686
MRS01-12	MRS01	MRS01-12-85	4/10/2018 18:38	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	79.11	No contact with both	4/11/2018 19:33	486450.7054	4228574.376
MRS01-11	MRS01	MRS01-11-1169	4/9/2018 15:11	NMRD	<Null>	<Null>	<Null>	2	3	2	0.2	<Null>	Pin flag piece	4/11/2018 19:34	486409.4954	4228650.606
MRS01-11	MRS01	MRS01-11-1168	4/9/2018 15:09	NMRD	<Null>	<Null>	<Null>	1	14	5	0.3	<Null>	Braided cable	4/11/2018 19:34	486408.6154	4228651.866
MRS01-11	MRS01	MRS01-11-55	4/4/2018 14:39	NMRD	<Null>	<Null>	<Null>	1	1	8	0.1	3.73	Misc scrap	4/11/2018 19:35	486382.1755	4228559.436
MRS01-12	MRS01	MRS01-12-65	4/4/2018 13:57	NMRD	<Null>	<Null>	<Null>	1	1	3	0.1	3.65	Shot gun shell primer 16 ga	4/11/2018 19:35	486417.6854	4228506.286
MRS01-12	MRS01	MRS01-12-64	4/4/2018 14:04	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	3.87	Dug to 30 in no contact with	4/11/2018 19:36	486417.1155	4228502.066
MRS01-13	MRS01	MRS01-13-1192	4/9/2018 15:01	NMRD	<Null>	<Null>	<Null>	6	2	6	0.1	<Null>	Misc metal scrap	4/11/2018 19:42	486490.3255	4228589.686
MRS03-B	MRS03	MRS03-B-112	4/17/2018 13:41	NMRD	<Null>	<Null>	<Null>	1	6	5	0.5	6.13	Bolt	4/17/2018 14:34	483462.6351	4217696.393
MRS03-B	MRS03	MRS03-B-5	4/17/2018 13:38	NMRD	<Null>	<Null>	<Null>	1	1	0	0	16.38	Can pull tab.	4/17/2018 14:36	483459.2051	4217694.923
MRS03-B	MRS03	MRS03-B-4	4/17/2018 13:35	NMRD	<Null>	<Null>	<Null>	1	30	14	2	18.7	Metal bar.	4/17/2018 14:38	483443.6651	4217650.053
MRS03-B	MRS03	MRS03-B-121	4/17/2018 13:06	NMRD	<Null>	<Null>	<Null>	1	<Null>	12	<Null>	45.67	Wood with bolts in it. Left in	4/17/2018 14:39	483444.2451	4217608.063

Table F.2 Terrestrial Dig Sheets																
GridTransID	MRS	Target_ID	Date_Dig	Anom_Type	Munition Type	AnomDesc	Additional Description	Contacts	AnomLength	Anom Depth	AnomWt	Ch2Resp	Comments	QC_Check	POINT_X	POINT_Y
MRS03-B	MRS03	MRS03-B-122	4/17/2018 13:12	NMRD	<Null>	<Null>	<Null>	1	<Null>	30	<Null>	50.3	Left in place. Wood with	4/17/2018 14:40	483445.6751	4217601.893
MRS03-B	MRS03	MRS03-B-116	4/17/2018 13:21	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	1	<Null>	10.42	Pliers shared with 115	4/17/2018 14:45	483138.6451	4216893.063
MRS03-B	MRS03	MRS03-B-115	4/17/2018 14:46	NMRD	<Null>	<Null>	<Null>	1	6	5	1	10.45	Pliers	4/17/2018 14:46	483138.7951	4216892.953
MRS01-B	MRS01	MRS01-B-163	4/9/2018 18:18	NMRD	<Null>	<Null>	<Null>	1	48	24	5	50.21	Fence post	4/17/2018 16:03	486995.2656	4229278.846
MRS01-B	MRS01	MRS01-B-162	4/9/2018 18:24	NMRD	<Null>	<Null>	<Null>	1	30	10	3.5	113.51	Fence post	4/17/2018 16:04	487016.2956	4229343.206
MRS01-B	MRS01	MRS01-B-221	4/11/2018 15:18	NMRD	<Null>	<Null>	<Null>	1	30	24	4	327.62	Fence post	4/17/2018 16:05	486879.2356	4228936.146
MRS01-B	MRS01	MRS01-B-232	4/12/2018 14:14	NMRD	<Null>	<Null>	<Null>	1	30	24	3	42.71	Fence post	4/17/2018 16:06	486918.5356	4229084.516
MRS01-B	MRS01	MRS01-B-153	4/13/2018 11:47	MD	Rocket	<Null>	Rocket motor	1	24	24	4	26.91	2.25 rocket motor	4/17/2018 16:07	486904.8056	4229226.736
MRS01-B	MRS01	MRS01-B-133	4/6/2018 15:17	NMRD	<Null>	<Null>	<Null>	1	30	48	3	27.04	Fence post	4/17/2018 16:07	487039.5855	4229423.836
MRS01-B	MRS01	MRS01-B-160	4/9/2018 18:22	NMRD	<Null>	<Null>	<Null>	1	30	10	3.5	78.27	Fence post	4/17/2018 16:08	487011.0456	4229339.846
MRS01-B	MRS01	MRS01-B-230	4/12/2018 14:02	NMRD	<Null>	<Null>	<Null>	1	24	2	2	40.54	Fence post	4/17/2018 16:09	486915.1155	4229073.016
MRS01-B	MRS01	MRS01-B-285	4/12/2018 16:45	NMRD	<Null>	<Null>	<Null>	1	<Null>	48	<Null>	5.79	Fence post left in place	4/17/2018 16:09	486926.2155	4228992.966
MRS01-B	MRS01	MRS01-B-161	4/9/2018 18:26	NMRD	<Null>	<Null>	<Null>	1	48	24	5	191.18	Fence post	4/17/2018 16:11	487014.1056	4229348.196
MRS01-B	MRS01	MRS01-B-220	4/12/2018 14:07	NMRD	<Null>	<Null>	<Null>	3	7	3	1	5.86	Fence post pieces	4/17/2018 16:12	486919.6456	4229064.166
MRS01-B	MRS01	MRS01-B-239	4/11/2018 15:29	NMRD	<Null>	<Null>	<Null>	1	48	60	<Null>	3.68	Fence post at60 in left in	4/17/2018 16:13	486899.7056	4228928.866
MRS01-B	MRS01	MRS01-B-296	4/12/2018 13:22	MD	Rocket	<Null>	Rocket motor	1	24	36	4	7.1	2.25 inch rocket motor	4/17/2018 16:13	486821.5556	4229055.356
MRS01-B	MRS01	MRS01-B-147	4/6/2018 15:14	NMRD	<Null>	<Null>	<Null>	<Null>	30	48	2	4.52	Fence post piece hit remains	4/17/2018 16:14	486997.4555	4229359.096
MRS01-B	MRS01	MRS01-B-219	4/11/2018 15:16	NMRD	<Null>	<Null>	<Null>	1	30	24	3.5	41.43	Fence post	4/17/2018 16:14	486876.0355	4228938.696
MRS01-B	MRS01	MRS01-B-154	4/11/2018 18:13	NMRD	<Null>	<Null>	<Null>	1	<Null>	36	<Null>	10.97	Fence post LIP	4/17/2018 16:17	486929.3555	4229201.646
MRS03-B	MRS03	MRS03-B-181	4/17/2018 18:31	SEED	<Null>	QC Seed	EA016	1	8	20	1	53.74	Q c seed ea016	4/17/2018 18:37	482103.4449	4214729.203
MRS01-B	MRS01	MRS01-B-253	4/18/2018 16:13	RRD	<Null>	<Null>	<Null>	1	<Null>	65	<Null>	36.42	Target debris left in place	4/18/2018 16:14	486898.2056	4229124.356
MRS01-B	MRS01	MRS01-B-245	4/18/2018 14:45	MD	Rocket	<Null>	Rocket motors	14	30	66	56	6.19	14 2.25 rocket motors flag	4/18/2018 16:16	486905.4255	4229102.066
MRS01-B	MRS01	MRS01-B-174	4/18/2018 11:50	MD	Rocket	<Null>	Rocket motor	1	36	60	4	4.4	2.25 rocket motor	4/18/2018 16:17	486896.8655	4229194.126
MRS01-B	MRS01	MRS01-B-257	4/18/2018 17:40	MD	Rocket	<Null>	Rocket motors	1	24	60	8	4.84	2. 2.25 rocket motors	4/18/2018 16:18	486886.6156	4229118.546
MRS01-B	MRS01	MRS01-B-243	4/18/2018 16:17	MD	Rocket	<Null>	Rocket motors	4	30	65	16	3.97	4. 2.25 rocket motors	4/18/2018 16:19	486978.6655	4229058.936
MRS01-B	MRS01	MRS01-B-242	4/18/2018 16:20	MD	Rocket	<Null>	Rocket motors	5	24	66	16	7.18	5 2.25 rocket motors flag	4/18/2018 16:41	486990.2556	4229104.726
MRS01-B	MRS01	MRS01-B-295	4/18/2018 18:01	MD	Rocket	<Null>	Rocket motor	2	24	60	8	3.79	2. 2.25 rocket motors flag	4/18/2018 16:45	487004.2655	4229124.846
MRS01-B	MRS01	MRS01-B-298	4/18/2018 16:28	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.61	Too deep unrecoverable	4/18/2018 16:46	487020.3356	4229109.566
MRS01-B	MRS01	MRS01-B-157	4/18/2018 16:36	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.28	Too deep unrecoverable	4/18/2018 16:47	487044.4355	4229169.646
MRS01-B	MRS01	MRS01-B-260	4/18/2018 16:31	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	7.25	Too deep unrecoverable	4/18/2018 16:47	487015.4756	4229095.876
MRS01-B	MRS01	MRS01-B-159	4/18/2018 16:36	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	5.66	Too deep unrecoverable	4/18/2018 16:49	486975.1456	4229004.496
MRS01-B	MRS01	MRS01-B-155	4/18/2018 16:35	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	66.98	Too deep unrecoverable	4/18/2018 16:49	486952.5055	4228910.516
MRS01-B	MRS01	MRS01-B-178	4/18/2018 16:34	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	12.47	Too deep unrecoverable	4/18/2018 16:50	487112.5956	4229382.666
MRS01-B	MRS01	MRS01-B-180	4/18/2018 16:32	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.55	Too deep unrecoverable	4/18/2018 16:51	486788.0656	4228398.406
MRS01-B	MRS01	MRS01-B-156	4/18/2018 16:33	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	7.19	Too deep unrecoverable	4/19/2018 16:51	486821.2556	4228498.956
MRS03-B	MRS03	MRS03-B-98	4/19/2018	NMRD	Other	Other	Bolt	1	14	6	1	25.72	Bolt	4/20/2018 4:00	481983.3549	4214693.473
MRS03-B	MRS03	MRS03-B-103	4/19/2018	No Contact	<Null>	<Null>	<Null>	0	<Null>	24	<Null>	4.26	No Contact	4/20/2018 4:00	481947.1749	4214659.483
MRS03-B	MRS03	MRS03-B-104	4/19/2018	No Contact	<Null>	<Null>	<Null>	0	<Null>	24	<Null>	4.3	No Contacts	4/20/2018 4:00	481821.7848	4214421.223
MRS03-B	MRS03	MRS03-B-105	4/19/2018	No Contact	<Null>	<Null>	<Null>	0	<Null>	24	<Null>	4.72	No Contact	4/20/2018 4:00	481485.7948	4213818.893
MRS03-B	MRS03	MRS03-B-106	4/19/2018	No Contact	<Null>	<Null>	<Null>	0	<Null>	24	<Null>	5.47	No Contact	4/20/2018 4:00	481392.0548	4213670.273
MRS03-B	MRS03	MRS03-B-124	4/19/2018	NMRD	<Null>	Metal Scrap	Metal in wood	1	<Null>	30	<Null>	6.82	Metal in wood LIP	4/20/2018 4:00	481493.4348	4213853.423
MRS03-B	MRS03	MRS03-B-125	4/19/2018	No Contact	<Null>	<Null>	<Null>	0	<Null>	24	<Null>	4.04	No Contact	4/20/2018 4:00	481564.2548	4214024.743
MRS03-B	MRS03	MRS03-B-127	4/19/2018	No Contact	<Null>	<Null>	<Null>	0	<Null>	24	<Null>	4.55	No Contacts	4/20/2018 4:00	481794.3848	4214368.863
MRS03-B	MRS03	MRS03-B-133	4/19/2018	No Contact	<Null>	<Null>	<Null>	0	<Null>	24	<Null>	5.41	No Contact	4/20/2018 4:00	481890.9849	4214559.043
MRS03-B	MRS03	MRS03-B-149	4/19/2018	No Contact	<Null>	<Null>	<Null>	0	<Null>	24	<Null>	4.05	No Contact	4/20/2018 4:00	481935.8449	4214537.903
MRS03-B	MRS03	MRS03-B-95	4/19/2018	SEED	<Null>	QC Seed	EA012	1	8	12	1	47.92	QC Seed	4/20/2018 4:00	481399.2148	4213599.323

Table F.2 Terrestrial Dig Sheets																
GridTransID	MRS	Target_ID	Date_Dig	Anom_Type	Munition Type	AnomDesc	Additional Description	Contacts	AnomLength	Anom Depth	AnomWt	Ch2Resp	Comments	QC_Check	POINT_X	POINT_Y
MRS03-B	MRS03	MRS03-B-147	4/17/2018 15:49	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	30	<Null>	10.74	Dug to 30 in no contact with	4/20/2018 16:52	482050.3049	4214815.163
MRS03-B	MRS03	MRS03-B-126	4/30/2018 16:01	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	32.96	Dug to 24 inches- no	4/20/2018 16:53	481713.5549	4214232.163
MRS03-B	MRS03	MRS03-B-101	4/17/2018 17:31	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	30	<Null>	4.5	Dug to 30 in no contact with	4/20/2018 16:54	482064.3249	4214863.403
MRS03-B	MRS03	MRS03-B-99	4/17/2018 12:53	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.61	<Null>	4/20/2018 16:55	482081.4549	4214904.813
MRS03-B	MRS03	MRS03-B-100	4/17/2018 17:27	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	30	<Null>	5.51	Dug down 30 in no contact	4/20/2018 16:56	482071.2349	4214875.083
MRS03-06	MRS03	MRS03-06-210	4/20/2018 12:38	NMRD	<Null>	<Null>	<Null>	1	<Null>	36	<Null>	112.12	Utility line at 36 in left in	4/23/2018 16:39	481254.9747	4214609.193
MRS03-06	MRS03	MRS03-06-208	4/20/2018 12:15	NMRD	<Null>	<Null>	<Null>	6	6	4	0.2	6.4	Tent spike and nails	4/23/2018 16:40	481271.0548	4214618.963
MRS03-06	MRS03	MRS03-06-203	4/20/2018 12:05	NMRD	<Null>	<Null>	<Null>	3	12	12	2	721.86	Metal bar and spike and	4/23/2018 16:40	481272.6847	4214631.173
MRS03-06	MRS03	MRS03-06-201	4/20/2018 12:34	NMRD	<Null>	<Null>	<Null>	5	12	6	1	8.37	Metal plate and nails	4/23/2018 16:41	481285.1847	4214639.073
MRS03-06	MRS03	MRS03-06-200	4/20/2018 11:52	NMRD	<Null>	<Null>	<Null>	8	6	1	0.2	36.6	Nails	4/23/2018 16:41	481288.6547	4214642.563
MRS03-06	MRS03	MRS03-06-202	4/20/2018 11:54	NMRD	<Null>	<Null>	<Null>	6	6	6	0.2	26.82	Nails	4/23/2018 16:42	481274.3447	4214633.883
MRS03-04	MRS03	MRS03-04-12	4/23/2018 19:04	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	8.56	No contact. Test hole dug	4/24/2018 16:02	481250.5348	4215016.003
MRS03-07	MRS03	MRS03-07-63	4/23/2018 15:09	NMRD	<Null>	<Null>	<Null>	1	20	4	1	15.23	Barbed wire	4/24/2018 16:03	481302.5947	4214347.173
MRS03-07	MRS03	MRS03-07-67	4/20/2018 16:05	NMRD	<Null>	<Null>	<Null>	1	108	5	5	154.14	Copper pipe with bolts	4/24/2018 16:03	481427.1948	4214556.413
MRS03-07	MRS03	MRS03-07-62	4/23/2018 15:18	NMRD	<Null>	<Null>	<Null>	1	6	2	1	8.35	Rusted pipe	4/24/2018 16:03	481289.2447	4214310.793
MRS03-07	MRS03	MRS03-07-66	4/20/2018 16:09	NMRD	<Null>	<Null>	<Null>	1	<Null>	0	<Null>	48.89	Well head left inplace	4/24/2018 16:15	481378.5447	4214491.603
MRS03-07	MRS03	MRS03-07-61	4/23/2018 15:20	NMRD	<Null>	<Null>	<Null>	1	4	5	<Null>	14.73	Metal flake	4/24/2018 16:15	481285.9648	4214304.093
MRS03-04	MRS03	MRS03-04-37	4/23/2018 19:29	NMRD	<Null>	<Null>	<Null>	3	8	12	2	16.48	8 Steel chunks	4/24/2018 16:16	481224.2547	4215034.933
MRS03-04	MRS03	MRS03-04-10	4/23/2018 19:18	NMRD	<Null>	<Null>	<Null>	2	16	24	30	46.52	2 lg circular steel chain links.	4/24/2018 16:17	481259.7248	4215013.603
MRS03-04	MRS03	MRS03-04-15	4/23/2018 19:26	NMRD	<Null>	<Null>	<Null>	<Null>	12	6	1	5.59	Rebar	4/24/2018 16:21	481231.2248	4215030.183
MRS03-04	MRS03	MRS03-04-14	4/23/2018 19:12	NMRD	<Null>	<Null>	<Null>	5	6	2	1	10.34	5 nails	4/24/2018 16:22	481239.7647	4215026.153
MRS03-04	MRS03	MRS03-04-11	4/23/2018 19:23	NMRD	<Null>	<Null>	<Null>	<Null>	4	0	1	5.52	Wire	4/24/2018 16:24	481256.1447	4215014.423
MRS03-04	MRS03	MRS03-04-13	4/23/2018 19:07	NMRD	<Null>	<Null>	<Null>	3	12	3	2	25.47	Lg nails	4/24/2018 16:25	481242.1447	4215023.593
MRS03-05	MRS03	MRS03-05-9	4/23/2018	NMRD	<Null>	<Null>	<Null>	1	60	0	50	17.18	Decking with exposed nails.	4/24/2018 16:26	481335.0148	4214966.553
MRS03-11	MRS03	MRS03-11-43	4/19/2018	NMRD	<Null>	Other	Fire pit residue	1	<Null>	48	<Null>	290.14	Burn pit LIP	4/25/2018 14:06	481630.6548	4214300.223
MRS03-B	MRS03	MRS03-B-93	4/25/2018 11:18	SEED	<Null>	QC Seed	EA017	<Null>	8	8	2	43.35	Seed EA 017	4/25/2018 14:12	482141.7249	4215017.413
MRS03-11	MRS03	MRS03-11-42	4/19/2018	NMRD	Other	Other	Bolt in wood LIP	1	<Null>	6	<Null>	141.81	Shipwreck wood/bolt LIP	4/25/2018 14:13	481688.0848	4214415.023
MRS03-11	MRS03	MRS03-11-155	4/17/2018 12:38	SEED	<Null>	QC Seed	EA010	1	8	12	1	48.25	QC seed 010	4/25/2018 14:16	482020.8548	4215017.833
MRS03-07	MRS03	MRS03-07-186	4/25/2018 11:34	SEED	<Null>	QC Seed	EA015	<Null>	8	10	2	40.88	Seed EA 015	4/25/2018 14:16	481653.1448	4214965.713
MRS03-08	MRS03	MRS03-08-174	4/25/2018 11:43	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	9.84	No contact. Test hole dug	4/30/2018 17:12	481757.7148	4214916.993
MRS03-07	MRS03	MRS03-07-188	4/25/2018 11:47	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.82	No contact. Test hole dug	4/30/2018 17:16	481608.5448	4214870.073
MRS03-07	MRS03	MRS03-07-187	4/25/2018 11:31	NMRD	<Null>	<Null>	<Null>	<Null>	24	0	30	4.94	Board with nails	4/30/2018 17:18	481647.0548	4214962.043
MRS03-07	MRS03	MRS03-07-189	4/25/2018 11:48	NMRD	<Null>	<Null>	<Null>	<Null>	16	10	2	24.84	Metal bolt	4/30/2018 17:19	481603.0148	4214865.143
MRS03-07	MRS03	MRS03-07-185	4/25/2018 11:27	NMRD	<Null>	<Null>	<Null>	<Null>	10	6	1	13.84	Metal chunk	4/30/2018 17:21	481716.9548	4215080.283
MRS03-08	MRS03	MRS03-08-175	4/26/2018 14:02	NMRD	<Null>	<Null>	<Null>	<Null>	15	24	1	8.83	Rebar	4/30/2018 17:22	481713.47	4214853.09
MRS01-08	MRS01	MRS01-08-46	4/2/2018 15:45	NMRD	<Null>	Metal Scrap	<Null>	1	2	8	0.1	9.94	<Null>	<Null>	486222.7855	4228824.956
MRS01-06	MRS01	MRS01-06-2	4/2/2018 16:30	NMRD	<Null>	Metal Scrap	tent spike	1	6	6	0.1	3.19	<Null>	<Null>	486007.2054	4228969.166
MRS01-07	MRS01	MRS01-07-14	4/2/2018 17:30	NMRD	<Null>	Other	Utility Line	<Null>	<Null>	<Null>	<Null>	30.42	left in place	<Null>	486060.1454	4228742.046
MRS01-07	MRS01	MRS01-07-44	4/2/2018 17:45	NMRD	<Null>	Metal Scrap	rebar	1	12	1	1	19.45	<Null>	<Null>	486056.3954	4228775.606
MRS01-08	MRS01	MRS01-08-83	4/2/2018 18:15	NMRD	<Null>	Wire	braided cable	1	18	6	2	57.95	<Null>	<Null>	486178.1654	4228734.886
MRS01-07	MRS01	MRS01-07-43	4/2/2018 18:45	NMRD	<Null>	Metal Scrap	tent spike	1	6	3	0.1	4.68	<Null>	<Null>	486059.0154	4228777.946
MRS01-08	MRS01	MRS01-08-82	4/2/2018 19:30	SEED	<Null>	QC Seed	EA005	1	6	8	1	34.7	<Null>	<Null>	486177.2854	4228722.176
MRS01-B	MRS01	MRS01-B-158	4/3/2018 13:10	NMRD	<Null>	<Null>	<Null>	1	12	3	1	25.67	Pipe	<Null>	486711.9155	4228742.756
MRS01-B	MRS01	MRS01-B-194	4/3/2018 13:21	NMRD	<Null>	<Null>	<Null>	1	24	3	0.1	4.95	Wire	<Null>	486819.0755	4228703.216
MRS01-B	MRS01	MRS01-B-149	4/3/2018 13:28	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	12.35	Dug to 38 in no contact	<Null>	486759.5655	4228730.646
MRS01-13	MRS01	MRS01-13-87	4/3/2018 13:58	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	355.13	Utilities cable on surface	<Null>	486744.9755	4229240.506

Table F.2 Terrestrial Dig Sheets																
GridTransID	MRS	Target_ID	Date_Dig	Anom_Type	Munition Type	AnomDesc	Additional Description	Contacts	AnomLength	Anom Depth	AnomWt	Ch2Resp	Comments	QC_Check	POINT_X	POINT_Y
MRS01-13	MRS01	MRS01-13-101	4/3/2018 13:59	NMRD	<Null>	<Null>	<Null>	1	<Null>	<Null>	<Null>	7.34	Utilities cable on surface	<Null>	486749.9856	4229231.956
MRS01-14	MRS01	MRS01-14-97	4/3/2018 14:04	MD	Rocket	<Null>	2.25 in rocket	1	24	10	5	72.53	<Null>	<Null>	486763.9055	4229220.086
MRS01-14	MRS01	MRS01-14-105	4/3/2018 14:13	MD	Rocket	<Null>	Misc rocket	8	30	24	15	258.3	Misc rocket motor	<Null>	486763.6455	4229248.136
MRS01-14	MRS01	MRS01-14-106	4/3/2018 14:20	NMRD	<Null>	<Null>	<Null>	2	10	5	1	8.58	Construction debris washer,	<Null>	486789.4755	4229293.526
MRS01-14	MRS01	MRS01-14-98	4/3/2018 14:30	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	5.87	Dug down 24 no contact	<Null>	486872.1955	4229399.526
MRS01-14	MRS01	MRS01-14-99	4/3/2018 14:35	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	5.06	Dug to 30 in no contact with	<Null>	486840.2056	4229407.726
MRS01-14	MRS01	MRS01-14-100	4/3/2018 14:41	NMRD	<Null>	<Null>	<Null>	<Null>	4	3	0.4	6.01	Nails	<Null>	486860.0956	4229437.446
MRS01-15	MRS01	MRS01-15-96	4/3/2018 14:45	NMRD	<Null>	<Null>	<Null>	1	8	2	0.6	3.91	Aluminum pan camping gear	<Null>	486893.3255	4229464.486
MRS01-14	MRS01	MRS01-14-126	4/3/2018 14:51	NMRD	<Null>	<Null>	<Null>	1	14	30	0.5	27.03	Aluminum sheet metal	<Null>	486866.2955	4229475.506
MRS01-15	MRS01	MRS01-15-95	4/3/2018 14:56	NMRD	<Null>	<Null>	<Null>	2	30	14	0.2	3.19	Wire	<Null>	486926.5556	4229542.426
MRS01-15	MRS01	MRS01-15-94	4/3/2018 14:58	NMRD	<Null>	<Null>	<Null>	7	4	24	1	12.11	Construction debris trash pit	<Null>	486931.5755	4229529.676
MRS01-15	MRS01	MRS01-15-120	4/3/2018 15:09	NMRD	<Null>	<Null>	<Null>	1	0	<Null>	<Null>	18.5	Pipe l l p	<Null>	486959.7555	4229518.806
MRS01-15	MRS01	MRS01-15-119	4/3/2018 15:22	NMRD	Flare	Other	Flare Shute wire	1	24	5	0.1	23.11	<Null>	<Null>	486944.7656	4229478.376
MRS01-15	MRS01	MRS01-15-117	4/3/2018 15:35	NMRD	<Null>	<Null>	<Null>	1	0	<Null>	<Null>	271.4	Square metal pipe in	<Null>	486911.4555	4229398.996
MRS01-15	MRS01	MRS01-15-118	4/3/2018 15:39	NMRD	<Null>	<Null>	<Null>	1	64	5	5	72.04	Grounding rod	<Null>	486911.7655	4229400.176
MRS01-15	MRS01	MRS01-15-116	4/3/2018 16:52	SEED	<Null>	QC Seed	EA007	<Null>	<Null>	10	<Null>	51.84	EA seed 07	<Null>	486871.7955	4229284.686
MRS01-B	MRS01	MRS01-B-139	4/3/2018 17:18	NMRD	<Null>	<Null>	<Null>	1	4	2	0.2	5.53	Birds with nails	<Null>	486824.6755	4228761.656
MRS01-B	MRS01	MRS01-B-138	4/3/2018 17:25	NMRD	<Null>	<Null>	<Null>	10	30	2	2	11.01	Fencing barb wire	<Null>	486826.7055	4228767.526
MRS01-B	MRS01	MRS01-B-140	4/3/2018 17:30	NMRD	<Null>	<Null>	<Null>	6	12	2	0.3	4.97	Barbed wire	<Null>	486840.0055	4228793.966
MRS01-B	MRS01	MRS01-B-137	4/3/2018 17:32	NMRD	<Null>	<Null>	<Null>	6	12	6	0.5	18.91	Boards with nails and	<Null>	486838.2286	4228802.276
MRS01-B	MRS01	MRS01-B-165	4/3/2018 17:37	NMRD	<Null>	<Null>	<Null>	1	6	12	0.1	11.8	Tent spike	<Null>	486826.4755	4228822.186
MRS01-B	MRS01	MRS01-B-164	4/3/2018 17:38	NMRD	<Null>	<Null>	<Null>	1	12	5	1	17.75	Long bolt	<Null>	486843.6255	4228828.126
MRS01-B	MRS01	MRS01-B-166	4/3/2018 17:40	NMRD	<Null>	<Null>	<Null>	1	8	10	0.1	13.25	Tent spike	<Null>	486828.8055	4228833.086
MRS01-B	MRS01	MRS01-B-148	4/3/2018 17:43	NMRD	<Null>	<Null>	<Null>	1	8	4	0.1	802.97	Barbed wire	<Null>	486868.3155	4228861.776
MRS01-B	MRS01	MRS01-B-170	4/3/2018 17:47	NMRD	<Null>	<Null>	<Null>	6	4	5	0.1	6.45	Fire pit wood with nails	<Null>	486886.8455	4228867.256
MRS01-B	MRS01	MRS01-B-179	4/3/2018 18:37	NMRD	<Null>	<Null>	<Null>	2	<Null>	<Null>	<Null>	3.92	Hot rocks	<Null>	486734.2655	4228826.386
MRS01-B	MRS01	MRS01-B-145	4/3/2018 18:48	NMRD	<Null>	<Null>	<Null>	1	12	3	1	18.55	Metal bucket	<Null>	486853.0555	4228918.826
MRS01-B	MRS01	MRS01-B-172	4/3/2018 18:54	MD	Rocket	<Null>	2.25 rocket	1	24	30	5	10.6	Rocket motor	<Null>	486800.0755	4228929.046
MRS01-09	MRS01	MRS01-09-48	4/3/2018 19:57	NMRD	<Null>	<Null>	<Null>	3	12	2	0.2	10.35	Barbed wire	<Null>	486283.1666	4228686.289
MRS01-10	MRS01	MRS01-10-51	4/3/2018 20:21	NMRD	<Null>	<Null>	<Null>	1	12	3	0.2	15.43	Braided cable	<Null>	486372.1354	4228643.436
MRS01-11	MRS01	MRS01-11-56	4/3/2018 20:24	NMRD	<Null>	<Null>	<Null>	1	8	3	0.3	10.25	Rebar	<Null>	486409.8155	4228679.306
MRS01-10	MRS01	MRS01-10-52	4/4/2018 11:39	NMRD	<Null>	<Null>	<Null>	1	12	2	0.3	31.95	Braided cable	<Null>	486383.9355	4228730.296
MRS01-10	MRS01	MRS01-10-53	4/4/2018 11:44	NMRD	<Null>	<Null>	<Null>	5	4	3	0.2	9.84	Nails	<Null>	486383.9754	4228731.926
MRS01-10	MRS01	MRS01-10-54	4/4/2018 11:46	NMRD	<Null>	<Null>	<Null>	1	8	0	1	64.29	Telephone pole with large	<Null>	486393.9054	4228746.146
MRS01-11	MRS01	MRS01-11-57	4/4/2018 12:03	NMRD	<Null>	<Null>	<Null>	4	10	3	0.2	15.35	Nails and banding material	<Null>	486423.7155	4228751.556
MRS01-04	MRS01	MRS01-04-23	4/4/2018 12:18	NMRD	<Null>	Other	tent spike/bottle	3	6	3	0.3	5.21	Tent spikes	<Null>	485623.2005	4228967.925
MRS01-11	MRS01	MRS01-11-110	4/4/2018 12:25	NMRD	<Null>	<Null>	<Null>	1	14	4	1	16.21	Metal spike	<Null>	486540.7255	4228919.966
MRS01-11	MRS01	MRS01-11-109	4/4/2018 12:42	NMRD	<Null>	<Null>	<Null>	1	30	5	4	9.69	Pipe	<Null>	486507.6854	4228847.236
MRS01-12	MRS01	MRS01-12-60	4/4/2018 12:46	NMRD	<Null>	<Null>	<Null>	1	10	4	0.3	35.8	Survey nail	<Null>	486487.5555	4228781.396
MRS01-12	MRS01	MRS01-12-61	4/4/2018 12:55	NMRD	<Null>	<Null>	<Null>	5	36	2	5	26.86	Rebar, nails	<Null>	486480.8555	4228753.996
MRS01-13	MRS01	MRS01-13-68	4/4/2018 13:36	NMRD	<Null>	<Null>	<Null>	4	6	4	1	22.91	Fencing material	<Null>	486510.4555	4228630.236
MRS01-13	MRS01	MRS01-13-66	4/4/2018 14:16	NMRD	<Null>	<Null>	<Null>	1	24	20	2	3.35	Metal spike	<Null>	486465.4455	4228479.016
MRS01-12	MRS01	MRS01-12-130	4/4/2018 15:37	NMRD	<Null>	<Null>	<Null>	1	6	4	2	8.16	Trailer hitch	<Null>	486568.0555	4228905.656
MRS01-12	MRS01	MRS01-12-112	4/4/2018 15:45	NMRD	<Null>	<Null>	<Null>	6	6	5	0.1	3.72	Nails and hot rocks	<Null>	486579.5055	4228895.836
MRS01-12	MRS01	MRS01-12-261	4/4/2018 16:04	MD	Rocket	<Null>	2.25 rocket	1	14	24	4	59.63	Rocket motor	<Null>	486659.2955	4229092.066
MRS01-12	MRS01	MRS01-12-262	4/4/2018 16:07	MD	Rocket	<Null>	2.25 rocket	1	24	24	4	15.37	Rocket motor	<Null>	486662.9355	4229106.786

Table F.2 Terrestrial Dig Sheets																
GridTransID	MRS	Target_ID	Date_Dig	Anom_Type	Munition Type	AnomDesc	Additional Description	Contacts	AnomLength	Anom Depth	AnomWt	Ch2Resp	Comments	QC_Check	POINT_X	POINT_Y
MRS01-12	MRS01	MRS01-12-288	4/4/2018 16:20	NMRD	<Null>	<Null>	<Null>	1	1	2	0.1	3.53	Misc scrap metal	<Null>	486668.5855	4229148.866
MRS01-12	MRS01	MRS01-12-263	4/4/2018 16:30	No Contact	<Null>	<Null>	<Null>	0	<Null>	<Null>	<Null>	4.45	Hit dug to 36 continuously	<Null>	486672.3855	4229157.696
MRS01-15	MRS01	MRS01-15-121	4/4/2018 16:45	NMRD	<Null>	<Null>	<Null>	5	6	3	0.2	82.79	Metal spikes, rod	<Null>	486880.6255	4229388.276
MRS01-B	MRS01	MRS01-B-141	4/4/2018 16:45	NMRD	<Null>	<Null>	<Null>	1	78	3	0.3	3.05	Barbed wire	<Null>	487020.4655	4229318.976
MRS01-12	MRS01	MRS01-12-89	4/4/2018 16:55	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	21.23	Utility line moved and left in	<Null>	486749.0755	4229461.786
MRS01-12	MRS01	MRS01-12-113	4/4/2018 17:03	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	6.16	Dug to 30 in no contact with	<Null>	486796.1156	4229535.766
MRS01-12	MRS01	MRS01-12-62	4/4/2018 18:58	NMRD	<Null>	<Null>	<Null>	3	6	2	0.3	114.67	Banding nails and hot rocks	<Null>	486476.9355	4228745.796
MRS01-B	MRS01	MRS01-B-197	4/4/2018 19:31	NMRD	<Null>	<Null>	<Null>	1	6	10	0.1	12.15	Tent spike	<Null>	486691.2555	4228538.396
MRS01-B	MRS01	MRS01-B-204	4/4/2018 19:35	NMRD	<Null>	<Null>	<Null>	1	10	2	0.2	17.35	Tent spike long	<Null>	486729.3755	4228555.366
MRS01-B	MRS01	MRS01-B-199	4/4/2018 19:37	NMRD	<Null>	<Null>	<Null>	2	24	10	4	125.06	Grill grate and hot dog fork	<Null>	486734.0355	4228563.276
MRS01-B	MRS01	MRS01-B-203	4/4/2018 19:52	NMRD	<Null>	<Null>	<Null>	1	<Null>	48	<Null>	113	Buried burn pit drum left in	<Null>	486725.5055	4228536.016
MRS01-12	MRS01	MRS01-12-63	4/5/2018 11:45	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	25	<Null>	10.02	Hot rocks, dug to 25 in	<Null>	486474.1655	4228744.036
MRS01-07	MRS01	MRS01-07-80	4/5/2018 11:59	NMRD	<Null>	<Null>	<Null>	4	6	5	0.5	23.13	Bracket with nails,tent	<Null>	486099.7054	4228861.046
MRS01-04	MRS01	MRS01-04-77	4/5/2018 12:35	NMRD	<Null>	Metal Scrap	<Null>	1	12	5	2	58.84	Metal bar	<Null>	485620.7153	4228971.286
MRS01-B	MRS01	MRS01-B-211	4/5/2018 14:09	NMRD	<Null>	<Null>	<Null>	1	6	6	0.1	19.65	Tent spike	<Null>	486754.4456	4228440.946
MRS01-B	MRS01	MRS01-B-190	4/5/2018 14:16	NMRD	<Null>	<Null>	<Null>	3	6	5	0.2	10.08	Tent spikes	<Null>	486688.5256	4228447.246
MRS01-B	MRS01	MRS01-B-207	4/5/2018 14:30	NMRD	<Null>	<Null>	<Null>	1	6	2	0.1	108.06	Bread tie, hit near fire pit	<Null>	486702.8855	4228487.036
MRS01-B	MRS01	MRS01-B-185	4/5/2018 14:34	NMRD	<Null>	<Null>	<Null>	1	48	24	5	95.3	Fence post	<Null>	486735.4155	4228493.576
MRS01-B	MRS01	MRS01-B-184	4/5/2018 14:41	NMRD	<Null>	<Null>	<Null>	1	12	14	2	4.82	Fence post piece	<Null>	486737.4356	4228500.396
MRS01-B	MRS01	MRS01-B-183	4/5/2018 14:45	SEED	<Null>	QC Seed	EA001	1	8	18	1	45.8	Q.v. seed ea 01	<Null>	486737.5055	4228518.356
MRS01-B	MRS01	MRS01-B-188	4/5/2018 14:57	NMRD	<Null>	<Null>	<Null>	3	36	30	5	45.85	Fence post 3 pieces	<Null>	486750.5755	4228531.546
MRS01-B	MRS01	MRS01-B-201	4/5/2018 15:05	NMRD	<Null>	<Null>	<Null>	1	48	12	5	15.76	Fence post	<Null>	486760.5156	4228561.336
MRS01-B	MRS01	MRS01-B-195	4/5/2018 15:12	NMRD	<Null>	<Null>	<Null>	8	5	12	0.2	14.8	Barbed wire broken in	<Null>	486790.0055	4228596.556
MRS01-04	MRS01	MRS01-04-76	4/5/2018 15:35	NMRD	<Null>	<Null>	<Null>	2	6	3	0.2	3.69	Tent spikes	<Null>	485633.7053	4229008.306
MRS01-04	MRS01	MRS01-04-75	4/5/2018 15:38	NMRD	<Null>	<Null>	<Null>	3	6	3	0.2	28.7	Tent spikes	<Null>	485635.3353	4229046.406
MRS01-B	MRS01	MRS01-B-196	4/5/2018 16:34	NMRD	<Null>	<Null>	<Null>	12	4	4	0.2	33.67	Burnt nails	<Null>	486828.6655	4228684.436
MRS01-B	MRS01	MRS01-B-193	4/5/2018 16:38	NMRD	<Null>	<Null>	<Null>	2	12	6	0.2	7.55	Wire, nail	<Null>	486809.6955	4228688.066
MRS01-B	MRS01	MRS01-B-209	4/5/2018 16:41	NMRD	<Null>	<Null>	<Null>	1	24	8	2	178.52	Fence post	<Null>	486804.5856	4228676.166
MRS01-B	MRS01	MRS01-B-210	4/5/2018 16:45	NMRD	<Null>	<Null>	<Null>	1	40	24	2	151.08	Fence post	<Null>	486800.4456	4228664.146
MRS01-B	MRS01	MRS01-B-189	4/5/2018 16:50	NMRD	<Null>	<Null>	<Null>	1	12	12	1.5	7.93	Fence post piece	<Null>	486764.3756	4228632.536
MRS01-B	MRS01	MRS01-B-214	4/5/2018 17:01	NMRD	<Null>	<Null>	<Null>	1	<Null>	<Null>	<Null>	7.92	Utility line manhole left in	<Null>	486691.5556	4228593.996
MRS01-B	MRS01	MRS01-B-200	4/5/2018 17:05	NMRD	<Null>	<Null>	<Null>	1	6	2	0.2	21.63	Tent spike	<Null>	486765.9555	4228610.466
MRS01-15	MRS01	MRS01-15-123	4/5/2018 17:14	NMRD	<Null>	<Null>	<Null>	1	<Null>	<Null>	<Null>	51.74	Utility line left in place	<Null>	486614.2354	4228617.976
MRS01-15	MRS01	MRS01-15-122	4/5/2018 17:18	NMRD	<Null>	<Null>	<Null>	10	4	12	0.5	4.59	Burnt nails fire pit remnants	<Null>	486610.4255	4228621.956
MRS01-14	MRS01	MRS01-14-291	4/6/2018 11:11	NMRD	<Null>	<Null>	<Null>	10	<Null>	<Null>	<Null>	4.76	Hot rocks on walkpath	<Null>	486709.2355	4229050.426
MRS01-15	MRS01	MRS01-15-273	4/6/2018 11:24	MD	Rocket	<Null>	Rocket motor	1	30	12	5	24.6	2.25 rocket motor	<Null>	486759.5455	4229090.296
MRS01-15	MRS01	MRS01-15-271	4/6/2018 11:34	MD	Rocket	<Null>	Rocket motor	1	28	12	5	27.09	2.25 rocket motor and	<Null>	486757.1955	4229114.336
MRS01-15	MRS01	MRS01-15-270	4/6/2018 11:42	MD	Rocket	<Null>	Rocket motor	1	24	12	3	140.75	2.25 rocket motor	<Null>	486757.8655	4229124.026
MRS01-15	MRS01	MRS01-15-274	4/6/2018 12:22	MD	Rocket	<Null>	Rocket motor	1	24	24	5	20.12	2.25 rocket motor	<Null>	486763.6656	4229076.716
MRS01-08	MRS01	MRS01-08-81	4/6/2018 13:11	NMRD	<Null>	<Null>	<Null>	3	12	5	0.2	9.01	Braided cable	<Null>	486168.7854	4228696.536
MRS01-12	MRS01	MRS01-12-114	4/6/2018 13:49	NMRD	<Null>	<Null>	<Null>	2	12	5	0.3	49.31	Braided cable, nail	<Null>	486690.1856	4229343.366
MRS01-B	MRS01	MRS01-B-171	4/6/2018 14:47	NMRD	<Null>	<Null>	<Null>	1	0	48	<Null>	8.39	Sheet metal scrap at 48 in	<Null>	487037.9356	4229296.336
MRS01-10	MRS01	MRS01-10-107	4/9/2018 12:01	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	12.97	Dug to 30 in no contact with	<Null>	486472.4355	4228973.626
MRS01-10	MRS01	MRS01-10-108	4/9/2018 12:04	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	7.61	Dug to 30 in no contact with	<Null>	486472.4255	4228976.286
MRS01-09	MRS01	MRS01-09-8	4/9/2018 12:11	NMRD	<Null>	<Null>	<Null>	1	6	6	0.1	9.32	Aluminum can	<Null>	486444.5455	4229090.686
MRS01-05	MRS01	MRS01-05-10	4/9/2018 12:34	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	11.13	Wood with metal bolt and	<Null>	486055.9654	4229428.466

Table F.2 Terrestrial Dig Sheets																
GridTransID	MRS	Target_ID	Date_Dig	Anom_Type	Munition Type	AnomDesc	Additional Description	Contacts	AnomLength	Anom Depth	AnomWt	Ch2Resp	Comments	QC_Check	POINT_X	POINT_Y
MRS01-09	MRS01	MRS01-09-13	4/9/2018 13:01	NMRD	<Null>	<Null>	<Null>	<Null>	12	5	2	24.31	Metal bar	<Null>	486494.9254	4229153.316
MRS01-09	MRS01	MRS01-09-11	4/9/2018 13:03	SEED	<Null>	QC Seed	EA006	1	8	12	1	34.36	Q.v. seed ea06	<Null>	486492.1455	4229147.326
MRS01-08	MRS01	MRS01-08-12	4/9/2018 13:15	NMRD	<Null>	<Null>	<Null>	3	36	12	3	54.06	Metal pipe	<Null>	486378.3654	4229255.596
MRS01-10	MRS01	MRS01-10-127	4/9/2018 13:27	NMRD	<Null>	<Null>	<Null>	8	8	12	2	11.93	Misc metal scrap vehicle	<Null>	486558.4755	4229154.496
MRS01-10	MRS01	MRS01-10-128	4/9/2018 13:29	NMRD	<Null>	<Null>	<Null>	1	<Null>	<Null>	<Null>	408.6	Metal scrap sheet metal left	<Null>	486556.6255	4229154.466
MRS01-13	MRS01	MRS01-13-1194	4/9/2018 14:06	NMRD	<Null>	<Null>	<Null>	1	<Null>	<Null>	<Null>	<Null>	Concrete	<Null>	486515.2654	4228658.746
MRS01-12	MRS01	MRS01-12-1188	4/9/2018 14:10	NMRD	<Null>	<Null>	<Null>	6	12	6	0.2	<Null>	Wire nails and hot rocks	<Null>	486483.8555	4228690.566
MRS01-12	MRS01	MRS01-12-1189	4/9/2018 14:19	NMRD	<Null>	<Null>	<Null>	1	24	3	0.2	<Null>	Metal banding	<Null>	486486.2155	4228671.156
MRS01-12	MRS01	MRS01-12-1187	4/9/2018 14:25	NMRD	<Null>	<Null>	<Null>	2	8	4	0.2	<Null>	Banding,washer,asphalt left	<Null>	486477.2054	4228726.866
MRS01-13	MRS01	MRS01-13-70	4/9/2018 14:33	NMRD	<Null>	<Null>	<Null>	<Null>	5	2	0.2	4.04	Staples for grass matting	<Null>	486520.5155	4228699.256
MRS01-13	MRS01	MRS01-13-132	4/9/2018 14:41	NMRD	<Null>	<Null>	<Null>	1	5	4	0.2	4.34	Misc metal scrap	<Null>	486595.3355	4228841.836
MRS01-13	MRS01	MRS01-13-131	4/9/2018 14:44	No Contact	<Null>	<Null>	<Null>	0	0	<Null>	<Null>	3.28	No contact with both	<Null>	486594.2755	4228839.726
MRS01-7	MRS01	MRS01-07-1139	4/9/2018 15:18	NMRD	<Null>	<Null>	<Null>	3	4	2	0.3	<Null>	Bolt,wire	<Null>	486092.8654	4228848.396
MRS01-7	MRS01	MRS01-07-1141	4/9/2018 15:22	NMRD	<Null>	<Null>	<Null>	1	6	5	0.1	<Null>	Tent spike	<Null>	486087.7254	4228839.136
MRS01-7	MRS01	MRS01-07-999	4/9/2018 15:42	NMRD	<Null>	<Null>	<Null>	1	<Null>	<Null>	<Null>	<Null>	Pipe left in place	<Null>	486118.5254	4228918.606
MRS01-B	MRS01	MRS01-B-146	4/9/2018 18:14	NMRD	<Null>	<Null>	<Null>	1	30	36	2	9.1	Fence post	<Null>	486995.6856	4229338.906
MRS01-B	MRS01	MRS01-B-143	4/9/2018 18:19	NMRD	<Null>	<Null>	<Null>	1	48	24	5	35.36	Fence post	<Null>	486980.5756	4229262.966
MRS01-B	MRS01	MRS01-B-135	4/9/2018 18:28	NMRD	<Null>	<Null>	<Null>	1	30	40	3.5	7.39	Fence post	<Null>	487022.3156	4229360.206
MRS01-B	MRS01	MRS01-B-134	4/9/2018 18:29	NMRD	<Null>	<Null>	<Null>	2	14	12	2	170.06	Fence post 2 pieces	<Null>	487025.8356	4229370.676
MRS01-B	MRS01	MRS01-B-142	4/9/2018 18:31	NMRD	<Null>	<Null>	<Null>	1	14	6	2	22.86	Metal spike	<Null>	487036.6556	4229366.836
MRS01-11	MRS01	MRS01-11-115	4/9/2018 19:25	NMRD	<Null>	<Null>	<Null>	1	<Null>	<Null>	<Null>	13.62	Pipe left in place	<Null>	486741.9055	4229594.096
MRS01-13	MRS01	MRS01-13-287	4/10/2018 11:35	NMRD	<Null>	<Null>	<Null>	1	<Null>	40	<Null>	24.01	Utility line running east to	<Null>	486702.1354	4229081.696
MRS01-05	MRS01	MRS01-05-7	4/10/2018 12:13	NMRD	<Null>	<Null>	<Null>	1	4	5	0.1	13.29	Misc aluminum scrap	<Null>	485805.5754	4229062.636
MRS01-4	MRS01	MRS01-04-1105	4/10/2018 12:20	NMRD	<Null>	<Null>	<Null>	4	10	5	0.3	<Null>	Tent spikes	<Null>	485612.7553	4228957.976
MRS01-4	MRS01	MRS01-04-1115	4/10/2018 12:21	NMRD	<Null>	<Null>	<Null>	5	8	5	0.5	<Null>	Tent spikes and nails fire pit	<Null>	485616.3453	4228960.376
MRS01-4	MRS01	MRS01-04-1114	4/10/2018 12:23	NMRD	<Null>	<Null>	<Null>	2	4	4	0.2	<Null>	Large bolt, asphalt under	<Null>	485622.4454	4228975.786
MRS01-4	MRS01	MRS01-04-1109	4/10/2018 12:25	NMRD	<Null>	<Null>	<Null>	2	6	5	0.2	<Null>	Tent spikes	<Null>	485635.4952	4229041.266
MRS01-4	MRS01	MRS01-04-1113	4/10/2018 12:27	NMRD	<Null>	<Null>	<Null>	2	6	5	0.2	<Null>	Tent spikes	<Null>	485636.1453	4229043.706
MRS01-7	MRS01	MRS01-07-1143	4/10/2018 12:34	NMRD	<Null>	<Null>	<Null>	1	24	12	0.5	<Null>	Braided cable	<Null>	486057.6253	4228756.576
MRS01-7	MRS01	MRS01-07-1144	4/10/2018 12:35	NMRD	<Null>	<Null>	<Null>	5	4	3	0.2	<Null>	Nails	<Null>	486059.9054	4228746.966
MRS01-8	MRS01	MRS01-08-1153	4/10/2018 12:40	NMRD	<Null>	<Null>	<Null>	1	24	12	0.5	<Null>	Braided cable	<Null>	486174.0355	4228705.756
MRS01-8	MRS01	MRS01-08-1159	4/10/2018 12:43	NMRD	<Null>	<Null>	<Null>	4	4	3	0.2	<Null>	Nails	<Null>	486221.7054	4228832.936
MRS01-5	MRS01	MRS01-05-1120	4/10/2018 13:00	NMRD	<Null>	<Null>	<Null>	1	14	5	0.4	<Null>	Braided cable	<Null>	485833.1353	4228839.326
MRS01-10	MRS01	MRS01-10-1161	4/10/2018 13:18	NMRD	<Null>	<Null>	<Null>	3	6	5	1	<Null>	Bolt, boards with nails	<Null>	486384.0654	4228727.726
MRS01-11	MRS01	MRS01-11-1170	4/10/2018 13:30	NMRD	<Null>	<Null>	<Null>	2	<Null>	2	<Null>	<Null>	Utility line water also	<Null>	486418.1855	4228701.836
MRS01-11	MRS01	MRS01-11-92	4/10/2018 14:07	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	5.74	No contact with both	<Null>	486699.0455	4229475.296
MRS01-11	MRS01	MRS01-11-6	4/10/2018 14:11	NMRD	<Null>	<Null>	<Null>	1	4	0	0.2	3.82	Board with nails	<Null>	486728.6956	4229574.246
MRS01-11	MRS01	MRS01-11-3	4/10/2018 14:12	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	5.8	No contact with both	<Null>	486724.9955	4229567.736
MRS01-11	MRS01	MRS01-11-4	4/10/2018 14:13	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.24	No contact with both	<Null>	486723.0754	4229566.396
MRS01-10	MRS01	MRS01-10-5	4/10/2018 14:15	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	3.6	No contact with both	<Null>	486712.7656	4229587.006
MRS01-11	MRS01	MRS01-11-91	4/10/2018 14:20	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.27	No contact with both	<Null>	486676.1555	4229402.706
MRS01-12	MRS01	MRS01-12-111	4/10/2018 14:42	NMRD	<Null>	<Null>	<Null>	3	24	4	0.5	33.93	Thick metal banding and	<Null>	486627.3554	4229114.966
MRS01-12	MRS01	MRS01-12-1183	4/10/2018 15:04	NMRD	<Null>	<Null>	<Null>	1	6	0	0.1	<Null>	Board with nails	<Null>	486484.8654	4228763.756
MRS01-11	MRS01	MRS01-11-1177	4/10/2018 15:09	NMRD	<Null>	<Null>	<Null>	2	24	6	2	<Null>	Rebar and nail	<Null>	486426.1155	4228745.896
MRS01-15	MRS01	MRS01-15-264	4/10/2018 16:54	MD	Rocket	<Null>	2.25 rocket	3	24	20	8	149.94	2. 2.25 rocket motors fin	<Null>	486775.7955	4229040.176
MRS01-15	MRS01	MRS01-15-265	4/10/2018 17:04	MD	Rocket	<Null>	Rocket motor	1	24	14	4	164.02	2.25 in rocket motor	<Null>	486781.1856	4229050.496

Table F.2 Terrestrial Dig Sheets																
GridTransID	MRS	Target_ID	Date_Dig	Anom_Type	Munition Type	AnomDesc	Additional Description	Contacts	AnomLength	Anom Depth	AnomWt	Ch2Resp	Comments	QC_Check	POINT_X	POINT_Y
MRS01-15	MRS01	MRS01-15-266	4/10/2018 17:07	NMRD	<Null>	<Null>	<Null>	1	8	20	5	18.38	Heavy equipment track	<Null>	486788.6655	4229071.786
MRS01-15	MRS01	MRS01-15-268	4/10/2018 17:14	MD	Rocket	<Null>	Rocket motor	1	24	14	4	7.88	2.25 rocket motor	<Null>	486804.0056	4229116.376
MRS01-15	MRS01	MRS01-15-269	4/10/2018 17:20	MD	Rocket	<Null>	Rocket motor	1	24	24	4	44.54	2.25 in rocket motor	<Null>	486806.0855	4229122.376
MRS01-15	MRS01	MRS01-15-267	4/10/2018 17:23	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	3127.24	Storm drain culvert	<Null>	486797.7556	4229099.526
MRS01-15	MRS01	MRS01-15-93	4/10/2018 17:35	NMRD	<Null>	<Null>	<Null>	1	36	30	0.2	4.64	Wire	<Null>	486855.4756	4229239.786
MRS01-15	MRS01	MRS01-15-125	4/10/2018 18:24	NMRD	<Null>	<Null>	<Null>	1	24	5	1	1366.93	Metal ring	<Null>	486543.7355	4228492.016
MRS01-15	MRS01	MRS01-15-124	4/10/2018 18:28	No Contact	<Null>	<Null>	<Null>	0	<Null>	<Null>	<Null>	3.64	No contacts with both	<Null>	486545.4154	4228497.336
MRS01-B	MRS01	MRS01-B-182	4/11/2018 14:00	NMRD	<Null>	<Null>	<Null>	6	6	3	0.2	3.52	Nails	<Null>	486795.7755	4228688.796
MRS01-B	MRS01	MRS01-B-302	4/11/2018 14:02	SEED	<Null>	QC Seed	EA002	1	8	12	1	54.58	Seed ea002	<Null>	486815.39	4228683.23
MRS01-B	MRS01	MRS01-B-181	4/11/2018 14:06	NMRD	<Null>	<Null>	<Null>	2	24	24	3	16.33	Fence post 2 piece	<Null>	486781.5356	4228644.926
MRS01-14	MRS01	MRS01-14-275	4/11/2018 14:46	NMRD	<Null>	<Null>	<Null>	3	2	3	0.2	3.36	Misc metal scrap	<Null>	486725.2955	4229093.036
MRS01-14	MRS01	MRS01-14-276	4/11/2018 14:48	MD	Rocket	<Null>	Rocket motor	1	24	24	4	150.28	2.25 rocket motor	<Null>	486736.7755	4229102.566
MRS01-14	MRS01	MRS01-14-277	4/11/2018 14:50	MD	Rocket	<Null>	Rocket motor	1	24	28	4	162.51	2.25 rocket motor	<Null>	486737.0255	4229107.616
MRS01-14	MRS01	MRS01-14-278	4/11/2018 14:52	MD	Rocket	<Null>	Rocket motor	2	30	25	4.5	29.81	2.25 rocket motor and piece	<Null>	486739.2555	4229112.786
MRS01-B	MRS01	MRS01-B-244	4/11/2018 15:20	MD	Rocket	<Null>	Rocket motor	1	24	24	3	10.67	2.25 rocket motor	<Null>	486850.3655	4228969.846
MRS01-B	MRS01	MRS01-B-229	4/11/2018 15:22	NMRD	<Null>	<Null>	<Null>	1	30	12	0.2	7.68	Barbed wire	<Null>	486879.5455	4228966.746
MRS01-B	MRS01	MRS01-B-292	4/11/2018 15:24	NMRD	<Null>	<Null>	<Null>	1	14	12	2	34.13	Fence post	<Null>	486892.5655	4228987.326
MRS01-B	MRS01	MRS01-B-224	4/11/2018 15:34	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	71.78	No contact with both	<Null>	486896.1955	4228951.776
MRS01-B	MRS01	MRS01-B-284	4/11/2018 15:42	NMRD	<Null>	<Null>	<Null>	1	6	24	1	6	Pipe piece	<Null>	486870.8455	4228992.796
MRS01-B	MRS01	MRS01-B-297	4/11/2018 15:44	NMRD	<Null>	<Null>	<Null>	1	8	12	0.2	4.34	Nail	<Null>	486859.3856	4228990.766
MRS01-B	MRS01	MRS01-B-248	4/11/2018 15:46	SEED	<Null>	QC Seed	EA003	1	8	12	1	44.68	Seed ea003	<Null>	486863.2755	4229013.066
MRS01-B	MRS01	MRS01-B-247	4/11/2018 15:49	NMRD	<Null>	<Null>	<Null>	1	<Null>	24	<Null>	10.67	Fence post at 30 left in place	<Null>	486872.0656	4229029.736
MRS01-B	MRS01	MRS01-B-249	4/11/2018 15:51	NMRD	<Null>	<Null>	<Null>	2	30	30	4	9.11	UXOSO identified a single	<Null>	486872.4255	4229038.036
MRS01-B	MRS01	MRS01-B-231	4/11/2018 15:53	NMRD	<Null>	<Null>	<Null>	2	48	30	4	21.08	Fence post another post left	<Null>	486881.2856	4229026.376
MRS01-B	MRS01	MRS01-B-240	4/11/2018 17:27	MD	Rocket	<Null>	Rocket motor	1	30	24	4	62.16	2.25 rocket motor	<Null>	486976.6055	4229139.726
MRS01-B	MRS01	MRS01-B-241	4/11/2018 17:43	MD	Rocket	<Null>	Rocket motor	3	12	48	5	47.93	2.25 rocket motor more in	<Null>	486968.5955	4229102.776
MRS01-B	MRS01	MRS01-B-226	4/11/2018 17:49	NMRD	<Null>	<Null>	<Null>	1	6	2	0.2	8.3	Nail	<Null>	486966.8356	4229157.776
MRS01-B	MRS01	MRS01-B-217	4/11/2018 17:52	NMRD	<Null>	<Null>	<Null>	1	48	36	4	27.85	Fence post	<Null>	486956.4556	4229176.086
MRS01-B	MRS01	MRS01-B-136	4/11/2018 17:53	NMRD	<Null>	<Null>	<Null>	1	36	12	3.5	100.51	Fence post	<Null>	486964.2856	4229185.586
MRS01-B	MRS01	MRS01-B-282	4/11/2018 17:57	NMRD	<Null>	<Null>	<Null>	1	40	36	4	12.52	Fence post	<Null>	486937.0156	4229118.066
MRS01-B	MRS01	MRS01-B-222	4/11/2018 18:00	NMRD	<Null>	<Null>	<Null>	1	48	2	15	165.83	Drainage pipe	<Null>	486954.4456	4229132.966
MRS01-B	MRS01	MRS01-B-283	4/11/2018 18:03	NMRD	<Null>	<Null>	<Null>	1	12	12	2	80.04	Fence post	<Null>	486947.2156	4229148.686
MRS01-B	MRS01	MRS01-B-144	4/11/2018 18:06	NMRD	<Null>	<Null>	<Null>	1	<Null>	60	<Null>	3.85	Fence post dug to 60 lip	<Null>	486959.9956	4229201.666
MRS01-B	MRS01	MRS01-B-227	4/11/2018 18:21	NMRD	<Null>	<Null>	<Null>	2	12	24	2	258.14	Fence post	<Null>	486948.9556	4229167.926
MRS01-B	MRS01	MRS01-B-175	4/12/2018 11:41	NMRD	<Null>	<Null>	<Null>	1	<Null>	36	<Null>	5.16	Fence post left in place	<Null>	487002.5656	4229417.906
MRS01-B	MRS01	MRS01-B-176	4/12/2018 11:52	NMRD	<Null>	<Null>	<Null>	1	<Null>	36	<Null>	7.7	Fence post at 36 left in place	<Null>	487024.4655	4229486.456
MRS01-B	MRS01	MRS01-B-177	4/12/2018 11:57	NMRD	<Null>	<Null>	<Null>	2	36	36	4	25.74	Fence post	<Null>	487026.9255	4229490.926
MRS01-B	MRS01	MRS01-B-167	4/12/2018 12:05	NMRD	<Null>	<Null>	<Null>	1	<Null>	6	<Null>	127.33	Fence post left in place	<Null>	487044.1156	4229541.156
MRS01-B	MRS01	MRS01-B-169	4/12/2018 12:09	NMRD	<Null>	<Null>	<Null>	1	24	6	0.2	7.69	Camping gear hot dog fork	<Null>	487101.0456	4229519.306
MRS01-B	MRS01	MRS01-B-168	4/12/2018 12:11	NMRD	<Null>	<Null>	<Null>	1	12	5	2	13.41	Fence post	<Null>	487094.6555	4229513.736
MRS01-B	MRS01	MRS01-B-150	4/12/2018 12:50	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	6.41	Dug 30 in no contact with	<Null>	486778.8955	4228842.526
MRS01-B	MRS01	MRS01-B-151	4/12/2018 12:51	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	7.99	Dug to 30 no contact with	<Null>	486782.3656	4228835.816
MRS01-B	MRS01	MRS01-B-293	4/12/2018 12:58	NMRD	<Null>	<Null>	<Null>	1	48	30	4	25.45	Fence post	<Null>	486896.9156	4229000.376
MRS01-B	MRS01	MRS01-B-294	4/12/2018 12:59	NMRD	<Null>	<Null>	<Null>	1	48	10	4	243.99	Fence post	<Null>	486910.7455	4229017.326
MRS01-B	MRS01	MRS01-B-259	4/12/2018 13:04	MD	Rocket	<Null>	Rocket motor	1	24	36	4	4.43	2.25 inch rocket motor	<Null>	486826.4656	4228980.476
MRS01-B	MRS01	MRS01-B-256	4/12/2018 13:18	MD	Rocket	<Null>	2.25 inch rocket	1	24	2	4	40.6	<Null>	<Null>	486807.2755	4229042.406

Table F.2 Terrestrial Dig Sheets																
GridTransID	MRS	Target_ID	Date_Dig	Anom_Type	Munition Type	AnomDesc	Additional Description	Contacts	AnomLength	Anom Depth	AnomWt	Ch2Resp	Comments	QC_Check	POINT_X	POINT_Y
MRS01-B	MRS01	MRS01-B-255	4/12/2018 13:33	MD	Rocket	<Null>	Rocket motor	1	24	30	3	5.65	2.25 rocket motor	<Null>	486839.6956	4229030.636
MRS01-B	MRS01	MRS01-B-254	4/12/2018 13:35	MD	Rocket	<Null>	Rocket motor	1	24	30	3	17.16	2.25 rocket motor	<Null>	486840.2455	4229038.606
MRS01-B	MRS01	MRS01-B-251	4/12/2018 13:38	MD	Rocket	<Null>	Rocket motor	1	24	30	3	6.68	2.25 rocket motor	<Null>	486865.5355	4229046.426
MRS01-B	MRS01	MRS01-B-250	4/12/2018 13:40	MD	Rocket	<Null>	Rocket motor	1	24	36	4	30.87	2.25 rocket motor	<Null>	486870.8856	4229041.516
MRS01-B	MRS01	MRS01-B-246	4/12/2018 13:43	MD	Rocket	<Null>	Rocket motor	1	24	36	4	3.03	2.25 rocket motor	<Null>	486882.1155	4229046.906
MRS01-B	MRS01	MRS01-B-223	4/12/2018 14:11	MD	Rocket	<Null>	Rocket motor	1	24	12	3	74.65	2.25 rocket motor	<Null>	486930.7555	4229063.906
MRS01-B	MRS01	MRS01-B-252	4/12/2018 14:41	MD	Rocket	<Null>	Rocket motor	2	30	60	8	9.81	2 rocket motors came out 1	<Null>	486877.2256	4229071.056
MRS01-B	MRS01	MRS01-B-216	4/12/2018 14:52	NMRD	<Null>	<Null>	<Null>	1	48	12	4	191.74	Fence post	<Null>	486910.3056	4229040.606
MRS01-B	MRS01	MRS01-B-228	4/12/2018 14:54	NMRD	<Null>	<Null>	<Null>	1	<Null>	36	<Null>	26.26	Fence post left in place	<Null>	486901.8355	4229031.176
MRS01-B	MRS01	MRS01-B-300	4/12/2018 14:55	NMRD	<Null>	<Null>	<Null>	1	<Null>	48	<Null>	7.08	Fence post left in place	<Null>	486890.7656	4229035.576
MRS01-B	MRS01	MRS01-B-235	4/12/2018 15:01	MD	Rocket	<Null>	Rocket motor	1	24	30	3	9.96	2.25 rocket motor	<Null>	486925.6455	4229015.106
MRS01-B	MRS01	MRS01-B-237	4/12/2018 15:17	MD	Rocket	<Null>	Rocket motor	1	12	24	2	58.29	2.25 rocket motor	<Null>	486952.4156	4229093.896
MRS01-B	MRS01	MRS01-B-299	4/12/2018 15:19	NMRD	<Null>	<Null>	<Null>	1	12	3	0.2	35.39	Wire	<Null>	486937.0656	4229094.256
MRS01-B	MRS01	MRS01-B-234	4/12/2018 15:22	NMRD	<Null>	<Null>	<Null>	1	8	0	0.1	4.24	Wire	<Null>	486949.6756	4229095.746
MRS01-B	MRS01	MRS01-B-218	4/12/2018 15:24	MD	Rocket	<Null>	Rocket motor	1	30	24	4	17.75	2.25 rocket motor	<Null>	486945.6256	4229073.946
MRS01-B	MRS01	MRS01-B-236	4/12/2018 15:28	MD	Rocket	<Null>	Rocket motor	1	30	20	4	129.92	2.25 rocket motor	<Null>	486934.7755	4229041.266
MRS01-B	MRS01	MRS01-B-258	4/12/2018 16:38	MD	Rocket	<Null>	Rocket motor	1	24	36	4	11.69	2.25 rocket motor	<Null>	486834.3256	4229060.086
MRS01-B	MRS01	MRS01-B-286	4/12/2018 16:40	MD	Rocket	<Null>	Rocket motor	1	24	36	4	11.52	2.25 rocket motor	<Null>	486853.1455	4229054.446
MRS01-B	MRS01	MRS01-B-233	4/12/2018 16:51	MD	Rocket	<Null>	Rocket motor	2	20	12	2	230.38	2.25 rocket motor and piece	<Null>	486955.0456	4229110.986
MRS01-B	MRS01	MRS01-B-238	4/12/2018 16:54	NMRD	<Null>	<Null>	<Null>	3	12	12	0.1	3.55	Barbed wire	<Null>	486961.0856	4229118.406
MRS01-B	MRS01	MRS01-B-173	4/13/2018 11:36	MD	Rocket	<Null>	Rocket motor	1	24	30	4	9.19	2.25 rocket motor	<Null>	486863.6755	4229131.736
MRS01-B	MRS01	MRS01-B-225	4/13/2018 11:40	MD	Rocket	<Null>	Rocket motor	1	24	12	4	40.75	2.25 rocket motor	<Null>	486956.0656	4229125.776
MRS01-B	MRS01	MRS01-B-G1	4/13/2018 16:03	NMRD	<Null>	<Null>	<Null>	100	6	12	5	<Null>	Tent spikes rebar misc metal	<Null>	486651.8555	4228351.856
MRS03-B	MRS03	MRS03-B-123	4/17/2018 13:27	SEED	<Null>	QC Seed	EA013	1	8	14	1	62.68	QC seed ea 013	<Null>	483148.6151	4216852.713
MRS03-B	MRS03	MRS03-B-120	4/17/2018 13:45	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	79.37	No contact with both	<Null>	483328.1851	4217323.123
MRS03-B	MRS03	MRS03-B-117	4/17/2018 13:48	NMRD	<Null>	<Null>	<Null>	1	6	6	2	9.02	Handcuffs.	<Null>	483252.0852	4217139.373
MRS03-B	MRS03	MRS03-B-114	4/17/2018 13:52	NMRD	<Null>	<Null>	<Null>	1	16	3	3	19.03	Wood with bolt in it.	<Null>	483069.9951	4216755.433
MRS03-B	MRS03	MRS03-B-113	4/17/2018 14:02	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	11.18	Dug to 60 anomaly still	<Null>	483646.4052	4218174.024
MRS03-B	MRS03	MRS03-B-118	4/17/2018 14:51	NMRD	<Null>	<Null>	<Null>	1	80	0	3	11.02	Board with nails	<Null>	483022.355	4216629.023
MRS03-B	MRS03	MRS03-B-111	4/17/2018 14:57	NMRD	<Null>	<Null>	<Null>	1	6	3	0.1	6	Tent spike	<Null>	482906.535	4216407.463
MRS03-B	MRS03	MRS03-B-110	4/17/2018 15:01	NMRD	<Null>	<Null>	<Null>	1	12	4	1	5.87	Board with screws	<Null>	482636.665	4215821.893
MRS03-B	MRS03	MRS03-B-3	4/17/2018 15:05	NMRD	<Null>	<Null>	<Null>	5	4	1	0.2	10.63	Nails	<Null>	482361.6649	4215301.933
MRS03-B	MRS03	MRS03-B-109	4/17/2018 15:06	NMRD	<Null>	<Null>	<Null>	3	4	2	0.1	4.9	Nails	<Null>	482366.0049	4215303.173
MRS03-B	MRS03	MRS03-B-119	4/17/2018 15:10	SEED	<Null>	QC Seed	EA011	1	8	12	1	52.29	Q c seed ea 011	<Null>	482264.085	4215085.603
MRS03-B	MRS03	MRS03-B-144	4/17/2018 15:12	NMRD	<Null>	<Null>	<Null>	1	24	2	1	85.6	Old protected bird caging	<Null>	482252.575	4215098.473
MRS03-B	MRS03	MRS03-B-139	4/17/2018 15:35	NMRD	<Null>	<Null>	<Null>	1	4	3	0.1	5.37	Nail	<Null>	481991.9449	4214849.953
MRS03-B	MRS03	MRS03-B-140	4/17/2018 15:38	NMRD	<Null>	<Null>	<Null>	3	4	12	0.1	5.88	Can pieces	<Null>	481971.1448	4214843.253
MRS03-B	MRS03	MRS03-B-146	4/17/2018 15:45	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	30	<Null>	4.41	Dug to 30 in no contact.	<Null>	482007.5949	4214846.433
MRS03-B	MRS03	MRS03-B-148	4/17/2018 15:51	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	30	<Null>	4.59	Dug down 30 in no contact	<Null>	482060.475	4214798.773
MRS03-B	MRS03	MRS03-B-150	4/17/2018 17:37	NMRD	<Null>	<Null>	<Null>	1	4	2	0.2	16.06	Screw	<Null>	482143.7549	4214880.833
MRS03-B	MRS03	MRS03-B-151	4/17/2018 17:42	NMRD	<Null>	<Null>	<Null>	1	4	2	0.2	67.51	Screw	<Null>	482125.8749	4214846.853
MRS03-B	MRS03	MRS03-B-2	4/17/2018 17:47	SEED	<Null>	QC Seed	EA009	1	8	12	1	44.46	Q c seed ea 09	<Null>	482179.005	4214951.153
MRS03-B	MRS03	MRS03-B-152	4/17/2018 17:57	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	30	<Null>	66.84	Dug 30 in no contact with	<Null>	482005.9249	4214620.883
MRS03-B	MRS03	MRS03-B-184	4/17/2018 18:14	NMRD	<Null>	<Null>	<Null>	1	<Null>	20	<Null>	280.1	Shipwreck timber with bolts	<Null>	481740.4148	4214075.873
MRS03-B	MRS03	MRS03-B-91	4/17/2018 18:16	NMRD	<Null>	<Null>	<Null>	1	<Null>	20	<Null>	433.47	Shipwreck timber with bolts	<Null>	481735.7049	4214075.553
MRS03-08	MRS03	MRS03-08-173	4/17/2018 18:22	NMRD	<Null>	<Null>	<Null>	1	16	12	2	19.32	Lg metal rod	<Null>	481770.5248	4214914.613

Table F.2 Terrestrial Dig Sheets																
GridTransID	MRS	Target_ID	Date_Dig	Anom_Type	Munition Type	AnomDesc	Additional Description	Contacts	AnomLength	Anom Depth	AnomWt	Ch2Resp	Comments	QC_Check	POINT_X	POINT_Y
MRS03-B	MRS03	MRS03-B-183	4/17/2018 18:52	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	24	<Null>	4.82	Dug to 24 in flag in surf area	<Null>	483055.625	4216584.953
MRS03-B	MRS03	MRS03-B-182	4/17/2018 19:01	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	24	<Null>	4.13	Dug down 24 in flag in surf	<Null>	483403.8752	4217372.213
MRS03-04	MRS03	MRS03-04-35	4/19/2018	NMRD	Other	Metal Scrap	Metal Bar	1	12	12	1	32.87	<Null>	<Null>	481238.7447	4215078.563
MRS03-11	MRS03	MRS03-11-154	4/19/2018	NMRD	Other	<Null>	Asphalt LIP	1	<Null>	36	<Null>	1138.2	Asphalt LIP	<Null>	481986.2649	4214958.223
MRS03-B	MRS03	MRS03-B-136	4/19/2018	NMRD	Other	Other	Pipe	1	36	24	5	22.92	Pipe	<Null>	481897.2749	4214576.623
MRS03-B	MRS03	MRS03-B-137	4/19/2018	NMRD	Other	Other	Dip Can	1	2	1	0.1	5.33	Dip Can	<Null>	481951.2049	4214579.263
MRS03-10	MRS03	MRS03-10-162	4/19/2018	No Contact	<Null>	<Null>	<Null>	0	<Null>	24	<Null>	4.52	No Contact	<Null>	481402.1048	4213946.613
MRS03-11	MRS03	MRS03-11-44	4/19/2018	NMRD	<Null>	Other	Wooden fence	1	<Null>	0	<Null>	8.09	LIP	<Null>	481518.8748	4214091.713
MRS03-11	MRS03	MRS03-11-45	4/19/2018	NMRD	<Null>	Other	Braided Cable	1	<Null>	30	<Null>	6.04	Braided cable LIP	<Null>	481409.6348	4213889.073
MRS03-12	MRS03	MRS03-12-157	4/19/2018	NMRD	<Null>	Other	Spike in wood	1	6	2	0.5	16.23	Spike in wood	<Null>	481866.3849	4214660.033
MRS03-12	MRS03	MRS03-12-158	4/19/2018	NMRD	<Null>	Other	Spike in wood	1	6	2	0.5	12.17	Spike in wood	<Null>	481865.8549	4214659.473
MRS03-12	MRS03	MRS03-12-159	4/19/2018	NMRD	<Null>	Metal Scrap	Sheet metal LIP	1	<Null>	6	<Null>	7	Metal LIP	<Null>	481792.0448	4214527.553
MRS03-12	MRS03	MRS03-12-161	4/19/2018	NMRD	<Null>	Other	Welding rod	1	12	12	0.1	4.7	<Null>	<Null>	481649.1548	4214292.513
MRS03-B	MRS03	MRS03-B-102	4/19/2018	No Contact	<Null>	<Null>	<Null>	0	<Null>	24	<Null>	6.08	No Contact	<Null>	481994.6949	4214738.533
MRS03-B	MRS03	MRS03-B-107	4/19/2018	No Contact	<Null>	<Null>	<Null>	0	<Null>	24	<Null>	4.07	No Contact	<Null>	481627.7048	4214153.103
MRS03-B	MRS03	MRS03-B-130	4/19/2018	No Contact	<Null>	<Null>	<Null>	0	<Null>	24	<Null>	4.57	No Contact	<Null>	481763.4348	4214480.313
MRS03-B	MRS03	MRS03-B-132	4/19/2018	No Contact	<Null>	<Null>	<Null>	1	<Null>	69	<Null>	5.45	Unrecoverable	<Null>	481897.8148	4214441.453
MRS03-B	MRS03	MRS03-B-134	4/19/2018	No Contact	<Null>	<Null>	<Null>	0	<Null>	24	<Null>	4.53	No Contact	<Null>	481868.9548	4214562.883
MRS03-B	MRS03	MRS03-B-138	4/19/2018	No Contact	<Null>	<Null>	<Null>	0	<Null>	24	<Null>	4.61	No Contact	<Null>	481884.6149	4214707.743
MRS03-B	MRS03	MRS03-B-94	4/19/2018	No Contact	<Null>	<Null>	<Null>	0	<Null>	24	<Null>	4.24	No Contact	<Null>	481661.2048	4214070.003
MRS03-B	MRS03	MRS03-B-96	4/19/2018	No Contact	<Null>	<Null>	<Null>	0	<Null>	24	<Null>	4.13	No Contact	<Null>	481673.9649	4214173.443
MRS03-07	MRS03	MRS03-07-217	4/20/2018 11:55	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.42	Dug to 24 in no contact with	<Null>	481066.1647	4213800.383
MRS03-06	MRS03	MRS03-06-207	4/20/2018 12:09	NMRD	<Null>	<Null>	<Null>	1	48	8	0	483.44	Big metal bar left in place	<Null>	481271.6348	4214624.983
MRS03-06	MRS03	MRS03-06-204	4/20/2018 12:17	NMRD	<Null>	<Null>	<Null>	5	5	24	0.5	378.64	Burn pit next to fire pit nails	<Null>	481272.3147	4214630.123
MRS03-06	MRS03	MRS03-06-205	4/20/2018 12:20	NMRD	<Null>	<Null>	<Null>	3	24	3	1	425.01	Misc metal scrap	<Null>	481272.2047	4214629.593
MRS03-06	MRS03	MRS03-06-206	4/20/2018 12:21	NMRD	<Null>	<Null>	<Null>	4	12	4	2	437.79	Misc metal scrap	<Null>	481272.1147	4214629.183
MRS03-06	MRS03	MRS03-06-209	4/20/2018 12:28	NMRD	<Null>	<Null>	<Null>	8	5	12	0.3	4.99	Nails	<Null>	481268.4247	4214616.743
MRS03-06	MRS03	MRS03-06-211	4/20/2018 13:13	NMRD	<Null>	<Null>	<Null>	2	12	5	2	101.5	Misc metal scrap	<Null>	481252.9147	4214607.893
MRS03-06	MRS03	MRS03-06-212	4/20/2018 13:16	NMRD	<Null>	<Null>	<Null>	2	36	5	2	6.21	Metal crab trap top also a	<Null>	481249.9548	4214601.263
MRS03-06	MRS03	MRS03-06-213	4/20/2018 13:19	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	5.42	Utility line 5 ft away from	<Null>	481250.1747	4214599.303
MRS03-06	MRS03	MRS03-06-214	4/20/2018 13:20	NMRD	<Null>	<Null>	<Null>	1	<Null>	<Null>	<Null>	6.48	Utility line 5 ft from flag	<Null>	481251.3047	4214597.143
MRS03-06	MRS03	MRS03-06-197	4/20/2018 13:30	NMRD	<Null>	<Null>	<Null>	7	5	24	0.3	10.27	Nail pit	<Null>	481320.9247	4214684.933
MRS03-06	MRS03	MRS03-06-196	4/20/2018 13:32	NMRD	<Null>	<Null>	<Null>	1	8	4	1	69	Metal hinge	<Null>	481319.8548	4214687.123
MRS03-06	MRS03	MRS03-06-195	4/20/2018 13:33	NMRD	<Null>	<Null>	<Null>	1	6	2	1	26.09	Metal bar	<Null>	481319.8748	4214687.573
MRS03-06	MRS03	MRS03-06-193	4/20/2018 13:35	NMRD	<Null>	<Null>	<Null>	1	108	0	1	156.53	Wood with nails	<Null>	481322.3247	4214695.253
MRS03-06	MRS03	MRS03-06-194	4/20/2018 13:36	NMRD	<Null>	<Null>	<Null>	1	108	0	1	44.99	Wood with nails	<Null>	481321.8848	4214694.253
MRS03-06	MRS03	MRS03-06-192	4/20/2018 13:38	NMRD	<Null>	<Null>	<Null>	1	108	0	1	65.43	Wood with nails	<Null>	481322.4147	4214695.683
MRS03-06	MRS03	MRS03-06-191	4/20/2018 13:40	NMRD	<Null>	<Null>	<Null>	1	12	2	1	67.76	Wood with big bolt	<Null>	481322.2848	4214695.603
MRS03-06	MRS03	MRS03-06-199	4/20/2018 13:41	NMRD	<Null>	<Null>	<Null>	10	5	12	0.3	18.46	Nail pit	<Null>	481328.0248	4214665.173
MRS03-05	MRS03	MRS03-05-190	4/20/2018 14:27	NMRD	<Null>	<Null>	<Null>	3	12	6	1	23.25	Miscellaneous metal scrap	<Null>	481231.4947	4214742.213
MRS03-07	MRS03	MRS03-07-65	4/20/2018 16:10	NMRD	<Null>	<Null>	<Null>	1	<Null>	0	<Null>	237.63	Well head shared hit with 66	<Null>	481378.2147	4214490.463
MRS03-07	MRS03	MRS03-07-64	4/20/2018 16:12	NMRD	<Null>	<Null>	<Null>	1	<Null>	0	<Null>	250.5	Well head shared hit with 66	<Null>	481378.0048	4214489.683
MRS03-07	MRS03	MRS03-07-60	4/23/2018 15:22	NMRD	<Null>	<Null>	<Null>	5	8	10	2	187.44	Wire fencing pit abandon	<Null>	481273.2548	4214285.903
MRS03-07	MRS03	MRS03-07-46	4/23/2018 15:25	NMRD	<Null>	<Null>	<Null>	1	10	0	0	15.38	Rebar left in place per park	<Null>	481266.4647	4214261.503
MRS03-07	MRS03	MRS03-07-59	4/23/2018 15:28	NMRD	<Null>	<Null>	<Null>	<Null>	10	0	0	11.96	Rebar left in place per park	<Null>	481267.8248	4214260.183
MRS03-07	MRS03	MRS03-07-58	4/23/2018 15:41	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.33	Nothing found test hole dug	<Null>	481236.2148	4214222.753

Table F.2 Terrestrial Dig Sheets																
GridTransID	MRS	Target_ID	Date_Dig	Anom_Type	Munition Type	AnomDesc	Additional Description	Contacts	AnomLength	Anom Depth	AnomWt	Ch2Resp	Comments	QC_Check	POINT_X	POINT_Y
MRS03-07	MRS03	MRS03-07-56	4/23/2018 16:08	NMRD	<Null>	<Null>	<Null>	15	4	24	2	59.54	Assorted wire and nail	<Null>	481115.7848	4214034.233
MRS03-07	MRS03	MRS03-07-57	4/23/2018 16:11	NMRD	<Null>	<Null>	<Null>	4	30	18	10	391.86	Rusted sheet metal plate	<Null>	481117.7647	4214041.763
MRS03-07	MRS03	MRS03-07-55	4/23/2018 16:18	NMRD	<Null>	<Null>	<Null>	2	6	14	1	22.83	Rusted wire	<Null>	481115.5347	4214027.253
MRS03-07	MRS03	MRS03-07-54	4/23/2018 16:23	NMRD	<Null>	<Null>	<Null>	3	6	12	1	78.4	Rusted wire	<Null>	481115.3247	4214026.303
MRS03-07	MRS03	MRS03-07-53	4/23/2018 16:25	NMRD	<Null>	<Null>	<Null>	4	6	12	1	49.96	Rusted wire	<Null>	481115.2947	4214025.813
MRS03-07	MRS03	MRS03-07-52	4/23/2018 16:26	NMRD	<Null>	<Null>	<Null>	2	6	12	1	24.88	Rusted wire	<Null>	481115.5447	4214025.233
MRS03-07	MRS03	MRS03-07-51	4/23/2018 16:27	NMRD	<Null>	<Null>	<Null>	2	6	8	1	16.74	Rusted wire	<Null>	481116.1347	4214024.293
MRS03-07	MRS03	MRS03-07-50	4/23/2018 16:31	NMRD	<Null>	<Null>	<Null>	<Null>	4	12	<Null>	11.41	Metal scrap	<Null>	481110.7247	4213937.713
MRS03-07	MRS03	MRS03-07-49	4/23/2018 16:34	NMRD	<Null>	<Null>	<Null>	2	3	12	1	13.28	Multiple nails	<Null>	481106.6847	4213930.343
MRS03-06	MRS03	MRS03-06-215	4/23/2018 16:49	NMRD	<Null>	<Null>	<Null>	1	8	16	2	4.72	Lg bolt	<Null>	481001.7547	4213980.693
MRS03-04	MRS03	MRS03-04-219	4/23/2018 16:55	NMRD	<Null>	<Null>	<Null>	1	8	0	1	4.16	Aluminum can	<Null>	480877.7647	4214024.593
MRS03-04	MRS03	MRS03-04-218	4/23/2018 16:58	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.01	No contact.. test hole dug	<Null>	480912.8447	4213981.213
MRS03-04	MRS03	MRS03-04-16	4/23/2018 19:40	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	6.26	No contact. Test hole dug	<Null>	481225.7847	4215060.543
MRS03-04	MRS03	MRS03-04-17	4/23/2018 19:44	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	6.54	Under water dug down 2 ft	<Null>	481235.8548	4215072.083
MRS03-04	MRS03	MRS03-04-36	4/23/2018 19:47	NMRD	<Null>	<Null>	<Null>	<Null>	24	12	5	19.95	Lg metal rod	<Null>	481239.4447	4215075.403
MRS03-04	MRS03	MRS03-04-18	4/23/2018 19:51	NMRD	<Null>	<Null>	<Null>	<Null>	12	12	<Null>	41.49	Metal bar	<Null>	481239.2047	4215077.453
MRS03-04	MRS03	MRS03-04-34	4/23/2018 19:53	NMRD	<Null>	<Null>	<Null>	<Null>	8	12	1	20.37	Bolt	<Null>	481238.3603	4215079.078
MRS03-04	MRS03	MRS03-04-20	4/23/2018 19:55	NMRD	<Null>	<Null>	<Null>	<Null>	8	12	1	35.53	Bolt	<Null>	481237.4147	4215081.693
MRS03-04	MRS03	MRS03-04-19	4/23/2018 19:59	NMRD	<Null>	<Null>	<Null>	<Null>	10	8	1	5.11	Metal bar	<Null>	481237.6347	4215080.423
MRS03-04	MRS03	MRS03-04-21	4/23/2018 20:01	NMRD	<Null>	<Null>	<Null>	<Null>	12	12	4	22.14	Metal chunks	<Null>	481232.4447	4215091.203
MRS03-05	MRS03	MRS03-05-6	4/24/2018 12:27	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.64	No contact. Test hole dug	<Null>	481424.5647	4215158.523
MRS03-05	MRS03	MRS03-05-7	4/24/2018 12:28	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	6.21	No contact. Test hole dug	<Null>	481421.6447	4215155.263
MRS03-05	MRS03	MRS03-05-8	4/24/2018 12:34	NMRD	<Null>	<Null>	<Null>	1	6	8	1	6.74	Bolt	<Null>	481404.0348	4215053.393
MRS03-06	MRS03	MRS03-06-38	4/24/2018 12:40	NMRD	<Null>	<Null>	<Null>	<Null>	54	36	<Null>	7.97	Board with nails left in	<Null>	481442.5547	4214992.383
MRS03-04	MRS03	MRS03-04-22	4/24/2018 12:58	NMRD	<Null>	<Null>	<Null>	<Null>	6	12	2	5.98	Brick	<Null>	481233.4748	4215097.533
MRS03-04	MRS03	MRS03-04-23	4/24/2018 13:00	NMRD	<Null>	<Null>	<Null>	<Null>	10	12	5	5.32	Lg bolt	<Null>	481236.3347	4215103.133
MRS03-04	MRS03	MRS03-04-33	4/24/2018 13:02	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	5.66	No contact. Test hole dug	<Null>	481235.3747	4215099.013
MRS03-04	MRS03	MRS03-04-24	4/24/2018 13:03	NMRD	<Null>	<Null>	<Null>	4	8	12	4	38.53	4 pieces of flat metal	<Null>	481241.3347	4215106.173
MRS03-04	MRS03	MRS03-04-25	4/24/2018 13:10	NMRD	<Null>	<Null>	<Null>	<Null>	14	18	3	5.1	Metal bar	<Null>	481244.5347	4215112.113
MRS03-04	MRS03	MRS03-04-26	4/24/2018 13:16	NMRD	<Null>	<Null>	<Null>	<Null>	8	13	2	5.6	Metal bolt	<Null>	481246.5747	4215114.533
MRS03-04	MRS03	MRS03-04-32	4/24/2018 13:18	NMRD	<Null>	<Null>	<Null>	<Null>	8	6	1	9	Bolt	<Null>	481250.7947	4215117.873
MRS03-04	MRS03	MRS03-04-31	4/24/2018 13:20	NMRD	<Null>	<Null>	<Null>	<Null>	10	8	1	19.45	Bolt	<Null>	481254.6648	4215118.753
MRS03-04	MRS03	MRS03-04-30	4/24/2018 13:22	NMRD	<Null>	<Null>	<Null>	5	4	18	2	15.76	5 nails	<Null>	481270.6247	4215123.823
MRS03-04	MRS03	MRS03-04-28	4/24/2018 13:26	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.63	No contact. Test hole dug	<Null>	481294.1248	4215134.663
MRS03-04	MRS03	MRS03-04-29	4/24/2018 13:27	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	5.29	No contact. Test hole dug	<Null>	481292.5647	4215131.563
MRS03-06	MRS03	MRS03-06-39	4/24/2018 13:45	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.38	No contact. Test hole dug,	<Null>	481558.1148	4215073.033
MRS03-04	MRS03	MRS03-04-27	4/24/2018 14:09	NMRD	<Null>	<Null>	<Null>	<Null>	8	6	1	10.92	Bolt	<Null>	481250.8248	4215117.843
MRS03-B	MRS03	MRS03-B-87	4/24/2018 14:47	NMRD	<Null>	<Null>	<Null>	<Null>	80	24	<Null>	46.96	Cement foundation. Left in	<Null>	481873.6549	4214363.003
MRS03-B	MRS03	MRS03-B-77	4/24/2018 14:51	NMRD	<Null>	<Null>	<Null>	<Null>	60	36	<Null>	16.11	Pipe left in place	<Null>	481871.8048	4214369.833
MRS03-B	MRS03	MRS03-B-86	4/24/2018 14:53	NMRD	<Null>	<Null>	<Null>	<Null>	36	24	<Null>	94.56	Concrete foundation with	<Null>	481871.4049	4214359.153
MRS03-B	MRS03	MRS03-B-85	4/24/2018 14:56	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	6	<Null>	247.93	Tile floor with concrete and	<Null>	481870.5548	4214356.953
MRS03-B	MRS03	MRS03-B-84	4/24/2018 14:57	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	24	<Null>	62.65	Tile floor concrete and	<Null>	481870.0848	4214355.573
MRS03-B	MRS03	MRS03-B-83	4/24/2018 14:59	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	102.15	Tile connected to B84left in	<Null>	481869.6949	4214354.483
MRS03-B	MRS03	MRS03-B-82	4/24/2018 15:01	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	266.48	Concrete pier left in place.	<Null>	481868.7149	4214351.683
MRS03-B	MRS03	MRS03-B-88	4/24/2018 15:03	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	19.08	Reinforced concrete. Left in	<Null>	481873.7949	4214350.173
MRS03-B	MRS03	MRS03-B-129	4/24/2018 15:05	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.08	No contact. Test hole dug,	<Null>	481857.7448	4214368.983

Table F.2 Terrestrial Dig Sheets																
GridTransID	MRS	Target_ID	Date_Dig	Anom_Type	Munition Type	AnomDesc	Additional Description	Contacts	AnomLength	Anom Depth	AnomWt	Ch2Resp	Comments	QC_Check	POINT_X	POINT_Y
MRS03-B	MRS03	MRS03-B-128	4/24/2018 15:06	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	28.78	Tile reinforced concrete.	<Null>	481844.6248	4214363.603
MRS03-B	MRS03	MRS03-B-92	4/24/2018 15:08	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	5.85	Tile reinforced concrete.	<Null>	481843.7649	4214364.843
MRS03-B	MRS03	MRS03-B-89	4/24/2018 15:10	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	36	<Null>	7.74	Concrete pier left in place.	<Null>	481874.9449	4214346.313
MRS03-B	MRS03	MRS03-B-153	4/24/2018 15:13	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	46	<Null>	6.87	Reinforced concrete, left in	<Null>	481863.1449	4214361.893
MRS03-B	MRS03	MRS03-B-90	4/24/2018 15:25	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	24	<Null>	<Null>	MRS03-B-90 (Point not in	<Null>	481877.1836	4214337.031
MRS03-B	MRS03	MRS03-B-1	4/24/2018 15:29	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	16.94	Below 4 feet.	<Null>	481861.3848	4214362.113
MRS03-B	MRS03	MRS03-B-78	4/24/2018 15:31	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	12	<Null>	116.57	Lg timber with nails. Left in	<Null>	481869.6548	4214360.543
MRS03-B	MRS03	MRS03-B-79	4/24/2018 15:34	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	36	<Null>	203.33	Reinforced concrete left in	<Null>	481868.6249	4214358.243
MRS03-B	MRS03	MRS03-B-80	4/24/2018 15:36	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	36	<Null>	78.89	Concrete pier left in place	<Null>	481867.4548	4214355.633
MRS03-B	MRS03	MRS03-B-81	4/24/2018 15:39	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	24	<Null>	405.27	Concrete pier left in place	<Null>	481866.4549	4214352.953
MRS03-B	MRS03	MRS03-B-75	4/24/2018 15:41	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	40	<Null>	113.17	Concrete with rebar left in	<Null>	481865.1549	4214357.533
MRS03-B	MRS03	MRS03-B-74	4/24/2018 15:46	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	38	77.02	Reinforced concrete left in	<Null>	481863.6948	4214354.783
MRS03-B	MRS03	MRS03-B-76	4/24/2018 15:47	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	40	<Null>	36.48	Cable left in place	<Null>	481867.5249	4214361.793
MRS03-11	MRS03	MRS03-11-40	4/25/2018 11:08	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	5.22	No contact. Test hole dug,	<Null>	481762.3749	4214528.413
MRS03-12	MRS03	MRS03-12-160	4/25/2018 11:09	NMRD	<Null>	<Null>	<Null>	<Null>	12	18	1	4.19	Rebar	<Null>	481788.1949	4214519.213
MRS03-B	MRS03	MRS03-B-131	4/25/2018 11:12	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.1	No contact. Test hole dug	<Null>	481823.4348	4214475.243
MRS03-B	MRS03	MRS03-B-108	4/25/2018 11:14	NMRD	<Null>	<Null>	<Null>	<Null>	34	6	2	104.5	Metal fencing	<Null>	481716.8149	4214324.753
MRS03-B	MRS03	MRS03-B-135	4/25/2018 11:16	NMRD	<Null>	<Null>	<Null>	<Null>	6	8	1	50.38	Metal chunk	<Null>	481827.2649	4214604.993
MRS03-B	MRS03	MRS03-B-97	4/25/2018 11:17	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	17.43	No contact. Test hole dug	<Null>	481982.7648	4214692.943
MRS03-B	MRS03	MRS03-B-141	4/25/2018 11:19	NMRD	<Null>	<Null>	<Null>	<Null>	34	36	3	7.99	Metal fencing. Left in place	<Null>	482124.1849	4215046.863
MRS03-B	MRS03	MRS03-B-142	4/25/2018 11:20	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4	No contact. Test hole dug	<Null>	482144.11	4215124.57
MRS03-B	MRS03	MRS03-B-143	4/25/2018 11:22	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.12	No contact. Test hole dug	<Null>	482193.0849	4215115.833
MRS03-B	MRS03	MRS03-B-145	4/25/2018 11:24	NMRD	<Null>	<Null>	<Null>	<Null>	0	<Null>	<Null>	10.51	Vertical pipe left in place	<Null>	482240.1349	4215108.033
MRS03-08	MRS03	MRS03-08-171	4/25/2018 11:36	NMRD	<Null>	<Null>	<Null>	<Null>	6	2	1	15	Nails	<Null>	481834.2348	4215042.363
MRS03-08	MRS03	MRS03-08-170	4/25/2018 11:40	NMRD	<Null>	<Null>	<Null>	<Null>	4	10	1	4.31	Nail/bolt	<Null>	481844.1648	4215057.953
MRS03-08	MRS03	MRS03-08-169	4/25/2018 11:41	NMRD	<Null>	<Null>	<Null>	<Null>	6	12	1	10.53	Metal can	<Null>	481851.4549	4215065.123
MRS03-08	MRS03	MRS03-08-172	4/25/2018 11:42	NMRD	<Null>	<Null>	<Null>	<Null>	8	12	1	55.86	Bolt	<Null>	481807.1948	4214989.733
MRS03-07	MRS03	MRS03-07-69	4/25/2018 11:49	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.57	<Null>	<Null>	481570.1348	4214746.423
MRS03-07	MRS03	MRS03-07-70	4/25/2018 11:50	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	11.1	No contact. Test hole dug	<Null>	481558.6748	4214772.393
MRS03-07	MRS03	MRS03-07-71	4/25/2018 11:50	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	11.62	No contact. Test hole dug	<Null>	481559.1248	4214772.393
MRS03-07	MRS03	MRS03-07-72	4/25/2018 11:51	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	14.55	No contact. Test hole dug	<Null>	481559.0048	4214772.693
MRS03-07	MRS03	MRS03-07-68	4/25/2018 11:52	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	10.09	Trash pit. Left in place.	<Null>	481466.8447	4214643.713
MRS03-08	MRS03	MRS03-08-176	4/25/2018 11:53	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.03	No contact. Test hole dug	<Null>	481691.0948	4214752.223
MRS03-06	MRS03	MRS03-06-216	4/25/2018 11:54	NMRD	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	6.63	Board with nails 12 ft long	<Null>	481372.0848	4214768.753
MRS03-06	MRS03	MRS03-06-198	4/25/2018 11:55	NMRD	<Null>	<Null>	<Null>	<Null>	6	10	2	7.54	Bolt	<Null>	481321.5248	4214679.903
MRS03-09	MRS03	MRS03-09-180	4/26/2018 14:09	NMRD	<Null>	<Null>	<Null>	<Null>	24	24	<Null>	8.35	Board with nails. Left in	<Null>	481754.4749	4214785.973
MRS03-09	MRS03	MRS03-09-179	4/26/2018 14:19	NMRD	<Null>	<Null>	<Null>	<Null>	8	8	2	14.01	Scrap metal	<Null>	481662.3649	4214600.243
MRS03-10	MRS03	MRS03-10-163	4/26/2018 14:29	NMRD	<Null>	<Null>	<Null>	<Null>	10	8	15	34.91	Car part hub perhaps	<Null>	481707.5148	4214581.423
MRS03-10	MRS03	MRS03-10-164	4/26/2018 14:45	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.72	No contact. Test hole dug	<Null>	481910.6348	4214979.883
MRS03-10	MRS03	MRS03-10-165	4/26/2018 14:50	NMRD	<Null>	<Null>	<Null>	<Null>	14	8	10	221.07	Old Dutch oven. Rust flakes	<Null>	481966.0549	4215026.703
MRS03-10	MRS03	MRS03-10-167	4/26/2018 14:58	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	10.86	No contact. Test hole dug	<Null>	481991.5349	4215066.213
MRS03-10	MRS03	MRS03-10-166	4/26/2018 14:59	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	821.56	Abandon due to water	<Null>	481990.5749	4215066.053
MRS03-08	MRS03	MRS03-08-168	4/26/2018 15:15	NMRD	<Null>	<Null>	<Null>	<Null>	36	12	12	30.12	Metal bar with bolt broke	<Null>	481927.6749	4215141.233
MRS03-09	MRS03	MRS03-09-178	4/26/2018 16:28	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	4.71	No contact. Test hole dug	<Null>	481422.3548	4214090.083
MRS03-08	MRS03	MRS03-08-177	4/26/2018 16:34	NMRD	<Null>	<Null>	<Null>	<Null>	10	12	2	17.9	Lg bolt	<Null>	481381.8548	4214179.413
MRS03-12	MRS03	MRS03-12-156	4/30/2018 15:11	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	158.55	No contact. Test hole dug	<Null>	481882.9649	4214735.953

Table F.2 Terrestrial Dig Sheets																
GridTransID	MRS	Target_ID	Date_Dig	Anom_Type	Munition Type	AnomDesc	Additional Description	Contacts	AnomLength	Anom Depth	AnomWt	Ch2Resp	Comments	QC_Check	POINT_X	POINT_Y
MRS03-11	MRS03	MRS03-11-41	4/30/2018 15:18	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	59.52	No contact test hole dug	<Null>	481755.5849	4214508.183
MRS03-B	MRS03	MRS03-B-73	4/30/2018 15:51	SEED	<Null>	QC Seed	EA014	<Null>	<Null>	<Null>	<Null>	43.99	Seed ea o14	<Null>	481803.2849	4214248.353
MRS03-07	MRS03	MRS03-07-47	4/30/2018 17:19	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	5.29	No contact spot hole dug	<Null>	481195.0547	4214102.063
MRS03-07	MRS03	MRS03-07-48	4/30/2018 17:21	No Contact	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	10.53	No contact test hole and	<Null>	481162.3847	4214063.833

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Appendix G - Risk Management Methodology Tables

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New Risk Management Methodology Feedback Form

Formerly Used Defense Site (FUDS) Property/Project Number: Rocket Range North and Burial North (MRS 01)

Property Name: Assateague Island

Project Name: Assateague Island Remedial Investigation through Decision Document

Munitions Response Site Prioritization Protocol (MRSPP) Overall Score: Alternate Rating – No Known or Suspected Hazard

1. List historically known or suspected munitions and specify what evidence of Munitions and explosives of concern (MEC) was found during characterization.

Munitions Response Site (MRS) 01 was formerly an air-to-ground practice rocket, bombing, and strafing range. After use of the range was discontinued, surface debris in the target area was reportedly cleaned up and buried onsite. Known or suspected munitions that were historically used at MRS 01 include practice rockets, practice bombs, and 20-millimeter (mm) Training Practice (TP) projectiles (one TP projectile and one casing). Over ninety-nine percent of the documented munitions debris (MD) was from practice rockets, with less than one percent of the documented MD being associated with inert 20-mm projectiles and practice bombs. All the MD from practice rockets and 20-mm practice projectiles had been fired and practice bombs contained no evidence of spotting charges; and thus, had no explosive content.

Amount of MEC Justification (refer to Matrix 1): During previous investigations and the Remedial Investigation (RI), MD from the following munitions was identified at MRS 01: 2.25-inch (in.) practice rockets, 3.25-in. practice rockets, 3.5-in. practice rockets, 5-in. practice rockets, 3-pound (lb) Mark (Mk) 23 practice bomb, 4.5-lb Mk 43 practice bomb, and 20-mm TP projectiles (one TP projectile and one casing). No evidence of the use of live munitions (i.e., containing explosives) has been found at MRS 01. The 2.25-in. practice rockets, 3.25-in. practice rockets, 3.5-in. practice rockets, 5-in. practice rockets and the 20-mm TP projectile can contain propellant and the 3-lb Mk 23 practice bombs, 4.5-lb Mk 43 practice bombs can contain spotting charges, if they did not function as intended. Over ninety-nine percent of the documented MD was from practice rockets, with less than one percent of the documented MD being associated with inert 20-mm projectiles and practice bombs. All MD identified to date has been fired, expending the potential explosive components and have been determined to be material documented as safe (MDAS). MDAS from a 3-lb Mk 23 and 4.5-lb Mk 43 was observed without spotting charges; however, if a practice bomb contained a spotting charge that did not function as intended, it would be considered MEC. The RI at MRS 01 did not identify evidence of a MEC presence; however, MEC presence is possible based on historical evidence of munitions use.

Sensitivity Justification (refer to Matrix 3): All of the MD found to date are from practice munitions that contain no explosive components. Once fired, the practice rockets, inert 20-mm projectiles, and practice bombs no longer present an explosive hazard as the only explosive component is expended when fired. The 20-mm practice projectile, fired/spent practice bombs and fired practice rockets are not sensitive to detonation. If a practice bomb contained a spotting charge which did not function, the sensitivity of the spotting charge would be considered low.

Severity Justification (refer to Matrix 2): Only MD from the following munitions have been identified at MRS 01: 2.25-in. practice rockets, 3.25-in. practice rockets, 3.5-in. practice rockets, 5-in. practice rockets, 3-lb Mk 23 practice bomb, 4.5-lb Mk 43 practice bomb, and 20-mm projectile (one TP projectile and one casing). Over ninety-nine percent of the MD was from practice rockets with less than one percent from practice bombs and 20-mm practice projectiles. All the practice rockets, inert 20-mm projectiles, and practice bombs had been fired; and thus, had no explosive content. If MD from 20-mm TP projectiles (or casings), practice bombs without spotting charges, and practice rockets were encountered, injury would be Improbable. If a practice bomb with a spotting charge that did not function as intended were encountered injury would be modest. Given the findings to date (practice bombs with no spotting charges) a modest injury would be a rare occurrence: No injury is anticipated.

2. Specify Land Use and Site Receptors. If multiple Land Use/Receptors exist at different areas, these areas may be identified separately.

The current and future land use for the National Seashore/State Park is recreational. Site receptors are site workers and visitors/recreational users.

Access Conditions Justification (refer to Matrix 1): Assateague Island is open to the public year round; therefore, regular access conditions were selected.

Likelihood to Impart Energy Justification (refer to Matrix 3): Based on the current use of MRS 01, which is a National Seashore/Park, the likelihood to impart energy on an item is Modest because it is a National Seashore/Park and is not planned for development.

3. For each area having separate conditions above, indicate the Risk Management Results for the following:

Matrix 1: Seldom

Matrix 2: C

Matrix 3: 3

Matrix 4: ACCEPTABLE.

Risk Determination: ACCEPTABLE.

4. Other Comments (Please identify limitations or suggestions, if any).

None.

5. Compare of use of RAO methodology to MEC Hazard Assessment, if applied.

The MEC Hazard Assessment (HA) has not been applied as no MEC was identified at the MRS.

Matrix 1. Likelihood of Encounter

Likelihood of Encounter, Matrix 1: Amount of MEC vs. Access Conditions		Access Conditions (Frequency of Use) ^(c)			
		Regular (e.g., daily use, open access)	Often (e.g., less regular or periodic use, some access)	Intermittent (e.g., some irregular use, or access limited)	Rare (e.g., very limited use, access prevented)
Amount of MEC (a)(b)	• MEC is visible on the surface and detected in the subsurface.	Frequent	Frequent	Likely	Occasional
	• The area is identified as a CMUA where MEC is known or suspected (e.g., MD indicative of MEC is identified) to be present in the surface and subsurface.	Frequent	Likely	Occasional	Seldom
	• MEC presence based on physical evidence (e.g., MD indicative of MEC), although the area is not a CMUA, or • The MEC concentration is below a project-specific threshold to support this selection (e.g., less than 1.0/acre at 95 percent confidence).	Likely	Occasional	Seldom	Unlikely
	• MEC presence is based on isolated historical discoveries (e.g., EOD report) prior to investigation, or • A DERP response action has been conducted to physically remove MEC and known or suspected hazard remains to support this selection, (e.g., surface removal where subsurface was not addressed), or • The MEC concentration is below a project-specific threshold to support this selection (e.g., less than 0.5/acre at 95 percent confidence).	Occasional	Seldom	Unlikely	Unlikely
	• MEC presence is suspected based on historical evidence of munitions use only, or • A DERP response action has been conducted to physically remove surface and subsurface MEC (evidence that some residual hazard remains to support this selection), or • The MEC concentration is below a project-specific threshold to support this selection (e.g., less than 0.25/acre at 95 percent confidence).	Seldom	Seldom	Unlikely	Unlikely
	• Investigation of the MRS did not identify evidence of MEC presence, or • A DERP response action has been conducted that will achieve UU/UE.	Unlikely	Unlikely	Unlikely	Unlikely
Comments: To date no MEC associated with MRS 01 has been identified at Assateague Island. MD recovered from MRS 01 during the Remedial Investigation and previous investigations has only included MD from 2.25-in. practice rockets, 3.25-in. practice rockets, 3.5-in. practice rockets, 5-in. practice rockets, practice bombs (3-lb Mk 23 practice bomb and 4.5-lb Mk 43 practice bomb), and 20-mm TP projectiles. All the practice rockets and inert 20-mm TP projectiles had been fired. There was no evidence of spotting charges in the practice bombs; therefore, they had no explosive content. The RI at MRS 01 did not identify evidence of a MEC presence; however, MEC presence is possible based on historical evidence of munitions use only. MRS 01 is used daily as it is open to the public for recreational use, but the likelihood of encounter is considered seldom.					

Matrix 1. Likelihood of Encounter

- (a) The “Amount of MEC” selection in Matrix 1 differs from the MEC HA’s input factor for “Amount of MEC,” which is based solely on the MRS “type” historically identified. Instead, the “Amount of MEC” in Matrix 1 is initially dependent on the results of characterization data regarding MEC and MD distribution. The Matrix is then used to assess anticipated or completed results of a remedial action (physical removal of MEC) to a “reduced” amount.
- (b) For example, historical information indicating an area has been extensively developed and used for years with no MEC encounters, and therefore support a lower “Likelihood of Encounter.”
- (c) A site may be accessible but may have a relatively low frequency of use due to difficult terrain, which results in lower possible contact hours or “access” for the MRS. This scale of “access conditions” may include several factors, including number of visitors or receptor hours per year, nearby population, or residential versus industrial use. Each of these factors may have different justifications depending on the facts at the site. The concept of calculation of “receptor hours per year” is provided in the MEC HA document.

NOTES: CMUA = Concentrated Munitions Use Area.
DERP = Defense Environmental Restoration Program.
EOD = Explosive Ordnance Disposal.
HA = Hazard Assessment.
MD = Munitions Debris.
MEC = Munitions and Explosives of Concern.
MRS = Munition Response Sites.
UU/UE = Unlimited Use Unrestrictive Exposure.

Matrix 2. Severity of Incident

Severity of Explosive Incident, Matrix 2: Severity vs. Likelihood of Encounter		Access Conditions (Frequency of Use) ^(b)				
		Frequent: Regular, or inevitable occurrences	Likely: Several or numerous occurrences	Occasional: Sporadic or intermittent occurrences	Seldom: Infrequent; rare occurrences	Unlikely: Not probable
Severity Associated with Specific Munitions Items ^(a)	Catastrophic/Critical: May result in 1 or more deaths, permanent total or partial disability, or hospitalization	A	A	B	B	D
	Modest: May result in 1 (or more) injury resulting in emergency medical treatment, without hospitalization	B	B	B	C	D
	Minor: May result in 1 or more injuries requiring first aid or medical treatment	B	C	C	C	D
	Improbable: No injury is anticipated	D	D	D	D	D
<p>Comments: At MRS 01, historical documentation and the Remedial Investigation confirmed the presence of munitions debris from the following munitions: 20-mm practice projectiles (one TP projectile and one casing), practice bombs (3 lb Mk 23 and 4.5 lb Mk 43 with no evidence of spotting charges), and practice rockets (2.25-in. Mk 6; 3.25-in. M2, M2A1, M2A2; 3.5-in. and 5-in. Mk 8). All the practice rockets, 20-mm TP projectiles, and practice bombs had been fired; and thus, had no explosive content. If MD from 20-mm TP projectiles (or casings), practice bombs, and practice rockets were encountered, injury would be Improbable: No injury is anticipated. If a practice bomb containing a spotting charge was encountered, injury would be modest resulting in emergency medical treatment. As determined by Matrix 1 Access Conditions were considered Seldom (rare occurrence as no practice bombs with evidence of spotting charges were found).</p> <p>(a) There is currently no scale for ranking the explosive nature of munitions, and it; therefore, requires coordination with qualified UXO professionals on the project team. Initiatives are underway to evaluate these considerations of scale. There must be a defined munitions item having an explosive nature and a defined exposure scenario. Additionally, the degrees of hazards differentiate between intact UXO and munitions components such as rocket motors, fuzes, discarded military munitions, and explosive soils. Decision logic to support the selection on this scale must be supported by the CSM, and documented in the project reports. Additional research in this subject area in the future may allow for additional refinement within these categories so that site-specific conditions will be the primary factor for project team determination once MEC types onsite have been determined.</p> <p>(b) Note that with data collected from physical remediation, it is possible to support an unlikely determination for Matrix 1 and Matrix 2.</p> <p>NOTES: CSM = Conceptual Site Model. in. = Inch(es). lb = Pound(s). MEC = Munitions and Explosives of Concern. Mk = Mark. mm = Millimeter. UXO = Unexploded Ordnance.</p> <p>"A" indicates conditions most likely to result in determination of an unacceptable risk. "D" indicates conditions most likely to result in determination of an acceptable risk.</p>						

Matrix 3. Likelihood of Detonation

Likelihood of Detonation, Matrix 3: Munitions Sensitivity vs. Likelihood of Energy to be Imparted		Likelihood to Impart Energy on an Item ^(b)		
		High: (e.g., areas planned for development, or seasonally tilled)	Modest: (e.g., undeveloped, wildlife refuge, parks)	Inconsequential: (e.g., not anticipated, prevented, mitigated)
Sensitivity: ^(a) Susceptibility to Detonation	High: (e.g., classified as sensitive)	1	1	3
	Moderate: (e.g., high explosive or pyrotechnics)	1	2	3
	Low: (e.g., propellant of bulk secondary explosives)	1	3	3
	Not Sensitive	2	3	3
<p>Comments: At MRS 01, historical documentation and the Remedial Investigation confirmed the presence of munitions debris from the following munitions: 20-mm TP projectiles (one TP projectile and one casing), practice bombs (3 lb Mk 23 and the 4.5 lb Mk 43 with no evidence of spotting charges), and practice rockets (2.25-in. Mk 6; 3.25-in. M2, M2A1, M2A2; 3.5-in. and 5-in. Mk 8). All the practice rockets, inert 20-mm projectiles, and practice bombs had been fired; and thus, had no explosive content. The fired/spent 20 mm practice projectile, and fired practice rockets are not sensitive to detonation. A practice bomb with an intact spotting charge would have a low sensitivity to detonation. Based on the current use of MRS 01, which is a National Seashore/Park, the likelihood to impart energy on an item is Modest.</p> <p>(a) The Sensitivity categories are scaled highest to lowest, similar to the MRSP Table 1: Munitions Type Data Elements Table. While the scale of sensitivity in Matrix 3 is similar to MRSP Table 1, the matrix must have the flexibility to consider the inclusion of unlisted or undefined items, such as fuzes having small amounts of primary charge and not attached to a booster charge, which may be less sensitive than fuzes with large amounts of primary charge or any fuze connected to a booster charge. Selections must be supported by identifying the specific munitions on the MRS (listed with correct nomenclature).</p> <p>(b) The likelihood to impart energy on an item can be high for farmed land that is regularly tilled or areas where development is planned. Moderate areas may include parks or areas where digging is manual or limited. Areas that are inconsequential will include areas where digging is not anticipated, or otherwise mitigated to prevent imparting energy on an item. The project team will consider land use, specifically types and amount of energy imparted at the site that will result in an interaction with a munitions item. The project team will document the justification for selection on the scale.</p> <p>NOTES: in. = Inch(es). lb = Pound(s). Mk = Mark. mm = Millimeter. MRS = Munition Response Site. MRSP = Military Munitions Response Site Prioritization Protocol.</p>				

Matrix 4. Acceptable and Unacceptable Site Conditions

Acceptable and Unacceptable Site Conditions		Result from Matrix 2			
		A	B	C	D
Result from Matrix 3	1	Unacceptable	Unacceptable	Unacceptable	Acceptable
	2	Unacceptable	Unacceptable	Acceptable	Acceptable
	3	Unacceptable	Acceptable	Acceptable	Acceptable
<p>Comments: Based on the results from Matrix 2 (C) and the results from Matrix 3 (3) current conditions at MRS 01 are acceptable.</p> <p>NOTES: MRS = Munition Response Site.</p> <p>Multiple conditions may exist within an MRS such that unique baseline risks can be established for the multiple explosive hazards that are present within the same property. Acceptable conditions indicate input factors are collectively determined to support a negligible risk.</p>					

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New Risk Management Methodology Feedback Form

Formerly Used Defense Site (FUDS) Property/Project Number: Rocket Range South and Burials (MRS 03)

Property Name: Assateague Island

Project Name: Assateague Island Remedial Investigation through Decision Document

Munitions Response Site Prioritization Protocol (MRSP) Overall Score: Alternate Rating – No Known or Suspected Hazard

1. List historically known or suspected munitions and specify what evidence of Munitions and explosives of concern (MEC) was found during characterization.

Munitions Response Site (MRS) 03 was reportedly a former air-to-ground practice rocket, bombing, and strafing range. After use of the range was discontinued, surface debris in the target area was reportedly cleaned up and buried onsite. Known or suspected munitions that were historically used at MRS 03 include practice rockets.

Amount of MEC Justification (refer to Matrix 1): During previous investigations and the remedial investigation (RI) two pieces of munitions debris (MD) from 5-inch (in.) practice rockets were identified at MRS 03. None of the MD found were MEC. Once fired, the practice rockets no longer present an explosive hazard as the only explosive component (propellant) is expended when fired. The RI at MRS 03 did not identify evidence of a MEC presence.

Sensitivity Justification (refer to Matrix 3): The two pieces of MD found to date are from practice rockets in MRS 03 that contained no explosive components. Once fired, the practice rockets no longer present an explosive hazard as the only explosive component (propellant) is expended when fired. Fired practice rockets are not Sensitive (i.e., susceptible to detonation).

Severity Justification (refer to Matrix 2): Only two pieces of MD from 5-in. practice rockets have been identified at MRS 03. The practice rockets appeared to have been fired and thus had no explosive content. Injury would be considered Improbable: No injury is anticipated.

2. Specify Land Use and Site Receptors. If multiple Land Use/Receptors exist as different areas, these areas may be identified separately.

The current and future land use for the National Seashore/State Park is recreational. Site receptors are site workers and visitors/recreational users.

Access Conditions Justification (refer to Matrix 1): Assateague Island is open to the public all year round; therefore, regular access conditions were selected. However, MRS 03 is used minimally because it is remotely located.

Likelihood to Impair Energy Justification (refer to Matrix 3): Based on the current use of MRS 03, which is a National Seashore/Park, the likelihood to impart energy on an item is Modest because it is a National Seashore/Park and is not planned for development.

3. For each area having separate conditions above, indicate the Risk Management Results for the following:

Matrix 1: Unlikely

Matrix 2: D

Matrix 3: 3

Matrix 4: ACCEPTABLE.

Risk Determination: ACCEPTABLE.

4. Other Comments (Please identify limitations or suggestions, if any):

None.

5. Compare of use of RAO methodology to MEC Hazard Assessment, if applied.

The MEC Hazard Assessment (HA) has not been applied as no MEC was identified at the MRS.

Matrix 1. Likelihood of Encounter

Likelihood of Encounter, Matrix 1: Amount of MEC vs. Access Conditions		Access Conditions (Frequency of Use) ^(c)			
		Regular (e.g., daily use, open access)	Often (e.g., less regular or periodic use, some access)	Intermittent (e.g., some irregular use, or access limited)	Rare (e.g., very limited use, access prevented)
Amount of MEC (a)(b)	• MEC is visible on the surface and detected in the subsurface.	Frequent	Frequent	Likely	Occasional
	• The area is identified as a CMUA where MEC is known or suspected (e.g., MD indicative of MEC is identified) to be present in the surface and subsurface.	Frequent	Likely	Occasional	Seldom
	• MEC presence based on physical evidence (e.g., MD indicative of MEC), although the area is not a CMUA, or • The MEC concentration is below a project-specific threshold to support this selection (e.g., less than 1.0/acre at 95 percent confidence).	Likely	Occasional	Seldom	Unlikely
	• MEC presence is based on isolated historical discoveries (e.g., EOD report) prior to investigation, or • A DERP response action has been conducted to physically remove MEC and known or suspected hazard remains to support this selection, (e.g., surface removal where subsurface was not addressed), or • The MEC concentration is below a project-specific threshold to support this selection (e.g., less than 0.5/acre at 95 percent confidence).	Occasional	Seldom	Unlikely	Unlikely
	• MEC presence is suspected based on historical evidence of munitions use only, or • A DERP response action has been conducted to physically remove surface and subsurface MEC (evidence that some residual hazard remains to support this selection), or • The MEC concentration is below a project-specific threshold to support this selection (e.g., less than 0.25/acre at 95 percent confidence).	Seldom	Seldom	Unlikely	Unlikely
	• Investigation of the MRS did not identify evidence of MEC presence, or • A DERP response action has been conducted that will achieve UU/UE.	Unlikely	Unlikely	Unlikely	Unlikely
Comments: During the Remedial Investigation no MEC or MD was identified at MRS 03. Historically, two pieces of MD were identified from 5-inch practice rockets. The RI at MRS 03 did not identify evidence of a MEC presence. The results of the RI suggest the MRS may not have been used as a practice range. MRS 03 is used minimally because it is remote; however, it is open to the public for recreational use.					

Matrix 1. Likelihood of Encounter

- (a) The “Amount of MEC” selection in Matrix 1 differs from the MEC HA’s input factor for “Amount of MEC,” which is based solely on the MRS “type” historically identified. Instead, the “Amount of MEC” in Matrix 1 is initially dependent on the results of characterization data regarding MEC and MD distribution. The Matrix is then used to assess anticipated or completed results of a remedial action (physical removal of MEC) to a “reduced” amount.
- (b) For example, historical information indicating an area has been extensively developed and used for years with no MEC encounters, and therefore support a lower “Likelihood of Encounter.”
- (c) A site may be accessible but may have relatively low frequency of use due to difficult terrain, which results in lower possible contact hours or “access” for the MRS. This scale of “access conditions” may include several factors, including number of visitors or receptor hours per year, nearby population, or residential versus industrial use. Each of these factors may have different justifications depending on the facts at the site. The concept of calculation of “receptor hours per year” is provided in the MEC HA document.

NOTES: CMUA = Concentrated Munitions Use Area.
DERP = Defense Environmental Restoration Program.
EOD = Explosive Ordnance Disposal.
HA = Hazard Assessment.
MD = Munitions Debris.
MEC = Munitions and Explosives of Concern.
MRS = Munition Response Sites.
UU/UE = Unlimited Use Unrestrictive Exposure.

Matrix 2. Severity of Incident

Severity of Explosive Incident, Matrix 2: Severity vs. Likelihood of Encounter		Access Conditions (Frequency of Use) ^(b)				
		Frequent: Regular, or inevitable occurrences	Likely: Several or numerous occurrences	Occasional: Sporadic or intermittent occurrences	Seldom: Infrequent; rare occurrences	Unlikely: Not probable
Severity Associated with Specific Munitions Items ^(a)	Catastrophic/Critical: May result in 1 or more deaths, permanent total or partial disability, or hospitalization	A	A	B	B	D
	Modest: May result in 1 (or more) injury resulting in emergency medical treatment, without hospitalization	B	B	B	C	D
	Minor: May result in 1 or more injuries requiring first aid or medical treatment	B	C	C	C	D
	Improbable: No injury is anticipated	D	D	D	D	<u>D</u>
<p>Comments: At MRS 03, historical documentation indicated that two pieces of munitions debris from 5-in. Mk 8 practice rockets were reportedly present. The practice rockets (having been fired) were spent and contained no explosives. No MEC or MD was encountered during the RI and all anomalies identified through digital geophysical mapping were investigated. If debris from 5-in. practice rockets were encountered, injury would be Improbable: No injury is anticipated. As determined by Matrix 1 Access Conditions were Unlikely.</p> <p>(a) There is currently no scale for ranking the explosive nature of munitions, and it therefore requires coordination with qualified UXO professionals on the project team. Initiatives are underway to evaluate these considerations of scale. There must be a defined munitions item having an explosive nature and a defined exposure scenario. Additionally, the degrees of hazards differentiate between intact UXO and munitions components such as rocket motors, fuzes, discarded military munitions, and explosive soils. Decision logic to support the selection on this scale must be supported by the CSM and documented in the project reports. Additional research in this subject area in the future may allow for additional refinement within these categories so that site-specific conditions will be the primary factor for project team determination once MEC types onsite have been determined.</p> <p>(b) Note that with data collected from physical remediation, it is possible to support an unlikely determination for Matrix 1 and Matrix 2.</p> <p>NOTES: CSM = Conceptual Site Model. in. = Inch(es). MEC = Munitions and Explosives of Concern. Mk = Mark. UXO = Unexploded Ordnance.</p> <p>"A" indicates conditions most likely to result in determination of an unacceptable risk. "D" indicates conditions most likely to result in determination of an acceptable risk.</p>						

Matrix 3. Likelihood of Detonation

Likelihood of Detonation, Matrix 3: Munitions Sensitivity vs. Likelihood of Energy to be Imparted		Likelihood to Impart Energy on an Item ^(b)		
		High: (e.g., areas planned for development, or seasonally tilled)	Modest: (e.g., undeveloped, wildlife refuge, parks)	Inconsequential: (e.g., not anticipated, prevented, mitigated)
Sensitivity: ^(a) Susceptibility to Detonation	High: (e.g., classified as sensitive)	1	1	3
	Moderate: (e.g., high explosive or pyrotechnics)	1	2	3
	Low: (e.g., propellant of bulk secondary explosives)	1	3	3
	Not Sensitive	2	3	3
<p>Comments: At MRS 03, historical documentation indicated that two pieces of munitions debris from 5-in. Mk 8 practice rockets were reportedly present. The practice rockets (having been fired) were spent and contained no explosives. No MEC or MD was encountered during the RI. A fired 5-in. practice rocket is not sensitive (susceptible to detonation). Based on the current use of MRS 03, which is a National Seashore/Park, the likelihood to impart energy on an item is Modest. Although it should be noted that the MRS is in located on a remote portion of the island and is not frequently accessed by visitors.</p> <p>(a) The Sensitivity categories are scaled highest to lowest, similar to the MRSP Table 1: Munitions Type Data Elements Table. While the scale of sensitivity in Matrix 3 is similar to MRSP Table 1, the matrix must have the flexibility to consider the inclusion of unlisted or undefined items, such as fuzes having small amounts of primary charge and not attached to a booster charge, which may be less sensitive than fuzes with large amounts of primary charge or any fuze connected to a booster charge. Selections must be supported by identifying the specific munitions on the MRS (listed with correct nomenclature).</p> <p>(b) The likelihood to impart energy on an item can be high for farmed land that is regularly tilled, or areas where development is planned. Moderate areas may include parks or areas where digging is manual or limited. Areas that are inconsequential will include areas where digging is not anticipated, or otherwise mitigated to prevent imparting energy on an item. The project team will consider land use, specifically types and amount of energy imparted at the site that will result in an interaction with a munitions item. The project team will document the justification for selection on the scale.</p> <p>NOTES: in. = Inch(es). Mk = Mark. MRS = Munition Response Site. MRSP = Military Munitions Response Site Prioritization Protocol.</p>				

Matrix 4. Acceptable and Unacceptable Site Conditions

Acceptable and Unacceptable Site Conditions		Result from Matrix 2			
		A	B	C	D
Result from Matrix 3	1	Unacceptable	Unacceptable	Unacceptable	Acceptable
	2	Unacceptable	Unacceptable	Acceptable	Acceptable
	3	Unacceptable	Acceptable	Acceptable	Acceptable
<p>Comments: Based on the results from Matrix 2 (D) and the results from Matrix 3 (3) current conditions at MRS 03 are acceptable.</p> <p>NOTES: MRS = Munition Response Site.</p> <p>Multiple conditions may exist within an MRS, such that unique baseline risks can be established for the multiple explosive hazards that are present within the same property. Acceptable conditions indicate input factors are collectively determined to support a negligible risk.</p>					

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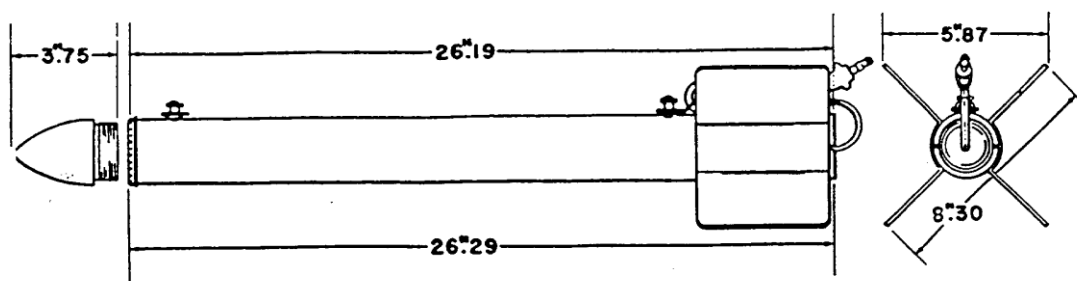
Appendix H - Munitions Technical Data Sheets

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APPENDIX H-1: Practice Rockets

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ROCKET, 2.25-INCH PRACTICE



Use. These rockets were used for practice firing against surface targets. The rocket is forward fired from aircraft and simulated the trajectories of the 5 inch rockets.

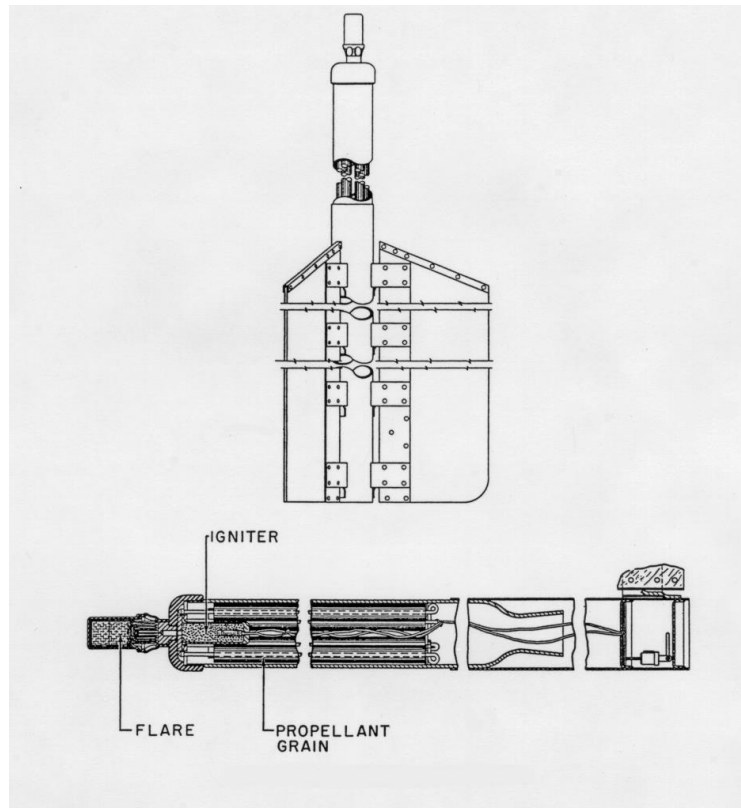
Description. The 2.25 inch practice rockets originally came in two different Marks (Mk) or models, the Mk II and Mk III. The acronym associated with them was SCAR, or sub-caliber aerial rocket. Other models followed. They consisted of a head, rocket motor, fins, igniter, and an electrical cable. The heads are solid steel, zinc die cast, or cast iron and contain no fuzes,

Motor. Mk 15 Mod 0,2, is 26.18 inches long and weighs to 10.90 pounds (max). The item's explosive hazard is the propellant (Mk 16 Mod 0,1) in the rocket motor and the igniter (Mk 112 Mod 0,1,2).

Weight 12.47 pounds
Diameter of Body 2.25 inches
Length 29.07 inches

Reference: NAVSEA OP 1415, *Rocket Assemblies*, May 1955

ROCKET, TARGET, 3.25", M2



3.35-inch Target Rocket M2A2

Description. This rocket, target, A.A., 3.25", M2, was designed for use as a high-speed target for firing practice with automatic antiaircraft weapons. The rocket consists of a motor, a motor extension, a nose, and three plywood fins. The propellant is a solvent-extruded double-base powder (40% nitrocellulose) extruded into cylindrical sticks 5" long and 7/8" in diameter with a 5/16" hole through the center. The propelling charge is ignited by an electric squib assembled within the rocket.

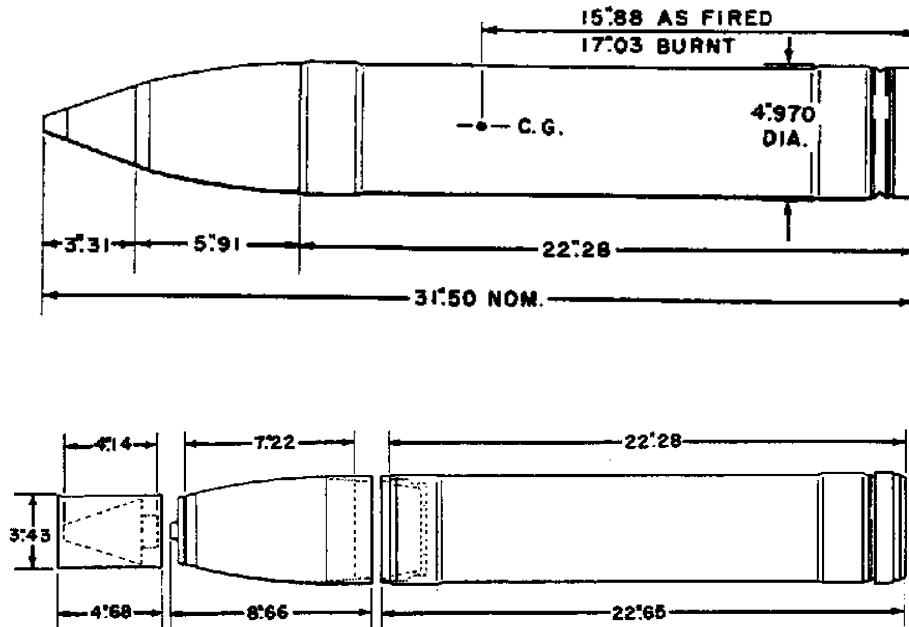
M2A1 When a flare is added to the rocket for antiaircraft target practice at night, the projectile is designated as M2A1. The flare burns for 30 seconds from the beginning of flight.

M2A2: This design has a flat nose, to which is threaded a yellow flare for both day and night tracking.

Length	59 inches
Diameter	3.25 inches
Width across fins	24 inches
Weight	37.5 pounds
Propelling charge	3.2 pounds
Igniter (black powder)	0.78 ounces

Reference: NAVSEA OP 1664, Volume 1, *US Explosive Ordnance*, May 1947

ROCKET, 5 INCH, Mk 8 Mod 0, PRACTICE, (SURFACE)



Purpose. The Mk 8 Mod 0 is the practice round for the 5.0-inch Rocket Mk 7 all Mods. It consists of an inert, plaster-filled 5.0" rocket head Mk 7 all Mods, and a live-loaded 5.0-inch Rocket Motor Mk 3 Mod 1. The rocket is fired from Surface Craft, PT, LSMR, and IFS ships, from trainable and automatic launchers.

Total Weight	49.61 pounds (nominal)
Diameter of Body	4.97 inches
Filler	Plaster
Fuze	None
Length	31.50 inches
Propellant	Mk 21 Mod 0,2 10.32 lbs
Propellant Weight	10.32 pounds

Reference: NAVSEA OP 1415, *Rocket Assemblies*, May 1955

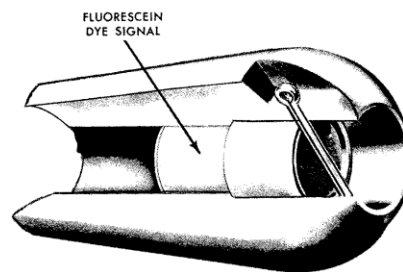
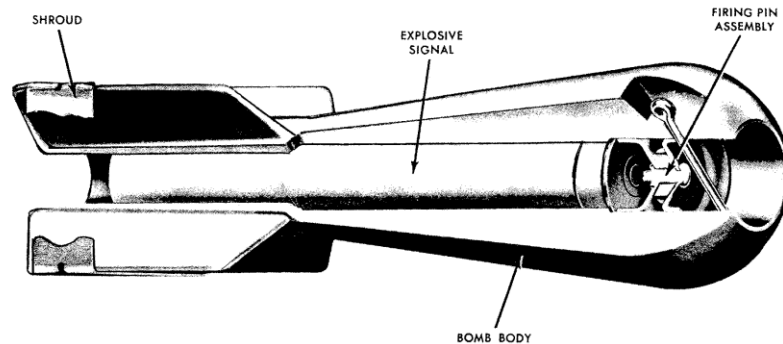
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APPENDIX H-2: Practice Bombs

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MINIATURE PRACTICE BOMBS

AN-Mk 5 Mod 1, AN-Mk 23, AN-Mk 43



ORD D1160

Description. These bombs are used for low-altitude horizontal, or dive-bombing practice. The three bombs are similar in physical appearance, but differ basically in the metal used to cast the body. Bombs are used with the AN-Mk 4 practice bomb signal that is a blank 10-gauge shotgun shell (extended length). Signals contain a black powder expelling charge and a red phosphorous pyrotechnic mixture. These bombs also are used with the MK5 signal that contains a fluorescein dye and is actuated by impact on water. When the Mk5 signal is installed, the firing pin assembly is not used.

Over-all length	8.25 inches
Body Diameter	2.18 inches
Fin Dimension	2.5 inches
Weight	AN-Mk 5 Mod 1 - 2 lb. 11 oz. \pm 1 oz
	AN-Mk 23 - 3 lb. \pm 2 oz
	AN-Mk 43 - 4 lb. 7 oz. \pm 2 oz.
Signal	AN-Mk 4, Black powder/pyro- Technic charge Mk 5, Fluorescein dye

Reference: OP 1280, *Aircraft Bombs*, February 1945; TM 9-1325-200, *Bombs and Bomb Components*, April 1966

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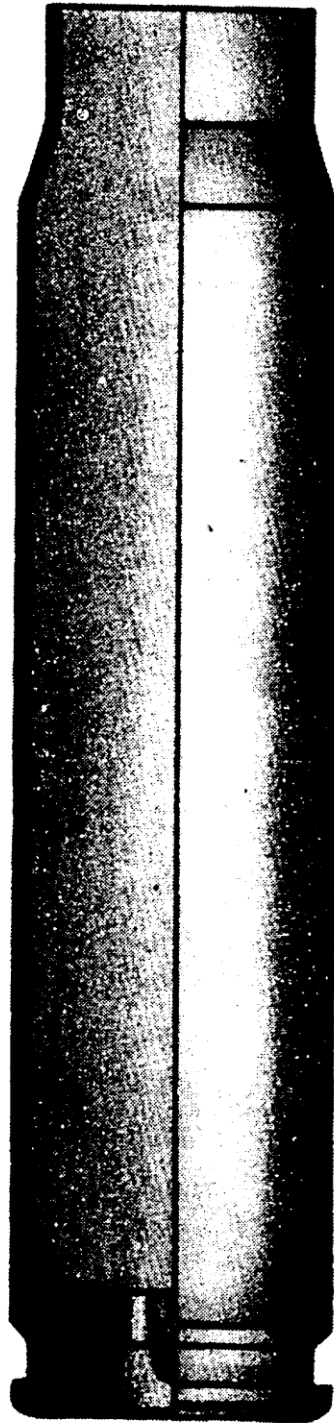
APPENDIX H-3: 20-mm Projectiles

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CARTRIDGE CASE, 20MM, Mk I

CARTRIDGE CASE DATA

NATIONALITY:	U.S. NAVY	INFORMATION	DATE:	April, 1943
DESIGNATION:	20 mm. Mk I	GUN:	Hispano Suiza Type	

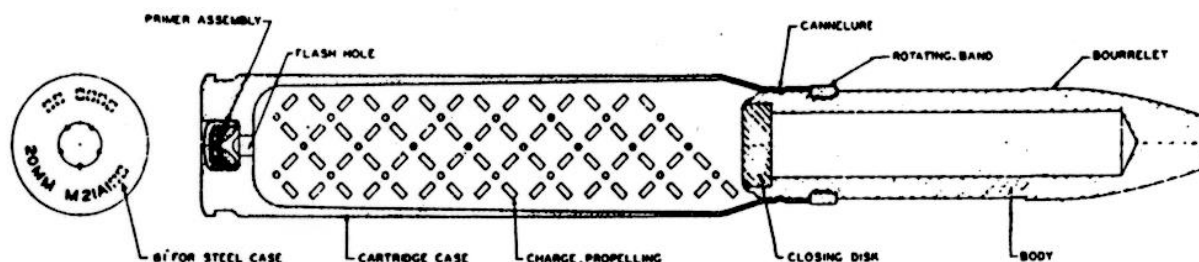


Mk. I

CARTRIDGE CASE DATA

NATIONALITY: U.S. NAVY		INFORMATION DATE: April, 1943
DESIGNATION: 20 mm. Mk I		GUN: Hispano Suiza Type
1.	OVERALL LENGTH	4.342"
2.	MAXIMUM OUTSIDE DIAMETER (Base)	.976"
3.	INSIDE DIAMETER AT NECK (Proj. end)	.766"
4.	THICKNESS CASE AT PROJECTILE END	.023"
5.	BEGINNING OF TAPER FROM BASE	.610"
6.	DIAMETER OF CAP CONTAINER	.388"
7.	DEPTH OF EXTRACTING GROOVE	.055"
8.	MATERIAL	Brass
9.	VOLUME OF CASE	2.4 cu.in.
10.	MARKINGS	Stamped with letters and figures 1/16" high and .01" deep the initials or symbols of mfg, year of mfg. and caliber and mark of case.
11.	WEIGHT EMPTY	.206 lbs
12.	PROPELLANT	Smokeless Powder
13.	PROPELLANT WEIGHT	30 grams
14.	EXPLOSIVE IN CAP	37 $\frac{1}{2}$ % Fulminate of Mercury 37 $\frac{1}{2}$ % Potassium Chloride 25% Antimony Sulfide
15.	EXPLOSIVE WEIGHT IN CAP	2 $\frac{1}{2}$ to 2 $\frac{1}{2}$ grams
16.	REMARKS:	The anvil is .3102 in. diameter. The primer cap chamber contains two fire holes which lead directly to the smokeless powder propellant.

CARTRIDGE, 20mm, BALL, MK I



Use. This cartridge was fired in the M1, AN-M2 and British Hispano guns that were mounted in WW II aircraft. Originally designed as a training practice round to simulate the high explosive incendiary round, it proved successful in combat and was redesignated as a ball cartridge.

Description. The cartridge is a fixed type with an overall length of 7.23 inches (unfired). The projectile is machined from bar steel and has a hollow cavity through most of its length. There is a steel closing disc at the base and the nose has a template that makes it appear as though it was cut off about one quarter inch from the tip. The round uses the M21-series cartridge case, which may be of brass or steel. No tracer element is fitted.

Overall Length	7.23 inch
Projectile Length	3.31 inch
Diameter	0.784 inch
Weight of complete round	0.56 pound
Filler	None
Fuze	None

Reference: TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944; NAVSEA OP 1664, *U.S. Explosive Ordnance*, 28 May 1947

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Appendix I - MRSPP Tables

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APPENDIX I-1: MRSPP Tables for MRS 01

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Table A

MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from DoD databases, such as RMIS. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the MRS summary, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental non-munitions related contaminants found at the MRS (e.g., benzene, trichloroethylene), and any potentially exposed human and ecological receptors. Include a map of the MRS, if one is available.

Munitions Response Site Name: Rocket Range North & Burial North – MRS 01

Component: US Army Corps of Engineers, Formerly Used Defense Site (FUDS) Program

Installation/Property Name: Assateague Island

Location (City, County, State): Ocean City, Worcester County, MD

Site Name (RMIS ID)/Project Name (Project No.): C03MD093001R01 Rocket Range North & Burial North

Date Information Entered/Updated: 10/19/2018

Point of Contact (Name/Phone): Christopher Gardner - (410) 962-2809

Project Phase (check only one):

<input type="checkbox"/> PA	<input type="checkbox"/> SI	<input checked="" type="checkbox"/> RI	<input type="checkbox"/> FS	<input type="checkbox"/> RD
<input type="checkbox"/> RA-C	<input type="checkbox"/> RIP	<input type="checkbox"/> RA-O	<input type="checkbox"/> RC	<input type="checkbox"/> LTM

Media Evaluated (check all that apply):

<input checked="" type="checkbox"/> Groundwater	<input checked="" type="checkbox"/> Sediment (human receptor)
<input checked="" type="checkbox"/> Surface Soil	<input checked="" type="checkbox"/> Surface Water (ecological receptor)
<input checked="" type="checkbox"/> Sediment (ecological receptor)	<input checked="" type="checkbox"/> Surface Water (human receptor)

MRS Summary: MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM (by type of munition, if known) or munitions constituents (by type, if known) known or suspected to be present):

Assateague Island is a 37-mile-long barrier island that parallels the Atlantic Coast of Maryland and Virginia. MRS 01 is located on the northern part of the island and is comprised of 3,412.2 acres. The Navy used MRS 01 for air-to-ground practice bombing, rocket, and strafing range for land based aircraft from 1944 to 1947. To date, only MD from 2.25-in. practice rockets, 3.25-in. practice rockets, 3.5-in. practice rockets, 5-in. practice rockets, 3-lb Mk 23 practice bombs, 4.5-lb Mk 43 practice bombs, and 20 mm (TP projectile and casing) have been identified at MRS 01. No MEC has been identified at MRS 01. During the 2007 Site Inspection surface water, sediment, surface soil, subsurface soil, and groundwater were sampled. To date, no MC source has been identified, nor is one anticipated (i.e., SI detections are not related to munitions activities at the MRS).

Description of Pathways for Human and Ecological Receptors: **Based on the findings of the RI there is no evidence that MEC is present, and therefore the MEC pathway is incomplete for human and ecological receptors. Furthermore, only MDAS has been found at MRS 01. Based on the findings of the RI and SI Reports an MC source has not been identified. Therefore the MC pathway is incomplete for human and ecological receptors. The HHE Module was ranked, but an alternate rating of "No Known or Suspected Hazard" has been selected for the HHE Module. No MC sampling was conducted during the RI. The HHE Module was completed using SI data.**

Description of Receptors (Human and Ecological): **Potential human receptors are expected to be visitors/recreational users, site workers, and construction workers. Ecological receptors of concern include terrestrial plants, terrestrial invertebrates (e.g., insects and worms), benthic organisms, aquatic organisms, terrestrial-feeding/predatory animals, terrestrial-feeding/predatory birds, aquatic-feeding mammals, and aquatic-feeding birds.**

Note: USACE – Baltimore District has coordinated with MDE and the local community as documented in the Uniform Federal Policy (UFP) Quality Assurance Project Plan (QAPP) prepared for the Remedial Investigation (EA 2017). Refer to Worksheet #9, pages 25-34 of the UFP-QAPP.

Table 1**EHE Module: Munitions Type Data Element Table**

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the score(s) that correspond with all munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions*, *small arms*, *physical evidence*, and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	<ul style="list-style-type: none"> ♦ All UXO that are considered likely to function upon any interaction with exposed persons [e.g., submunitions, 40mm high-explosive (HE) grenades, white phosphorus (WP) munitions, high-explosive antitank (HEAT) munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions]. ♦ All hand grenades containing energetic filler. ♦ Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard. 	30
High explosive (used or damaged)	<ul style="list-style-type: none"> ♦ All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." ♦ All DMM containing a high-explosive filler that have: <ul style="list-style-type: none"> ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability. 	25
Pyrotechnic (used or damaged)	<ul style="list-style-type: none"> ♦ All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). ♦ All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: <ul style="list-style-type: none"> ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability. 	20
High explosive (unused)	<ul style="list-style-type: none"> ♦ All DMM containing a high explosive filler that: <ul style="list-style-type: none"> ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability. 	15
Propellant	<ul style="list-style-type: none"> ♦ All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). ♦ All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: <ul style="list-style-type: none"> ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability. 	15
Bulk secondary high explosives, pyrotechnics, or propellant	<ul style="list-style-type: none"> ♦ All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor), that are deteriorated. ♦ Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard. 	10
Pyrotechnic (not used or damaged)	<ul style="list-style-type: none"> ♦ All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: <ul style="list-style-type: none"> ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability. 	10
Practice	<ul style="list-style-type: none"> ♦ All UXO that are practice munitions that are not associated with a sensitive fuze. ♦ All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: <ul style="list-style-type: none"> ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability 	5
Riot control	<ul style="list-style-type: none"> ♦ All UXO or DMM containing a riot control agent filler (e.g., tear gas). 	3
Small arms	<ul style="list-style-type: none"> ♦ All used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.]. 	2
Evidence of no munitions	<ul style="list-style-type: none"> ♦ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present. 	0
MUNITIONS TYPE	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 30).	0

DIRECTIONS: Document any MRS-specific data used in selecting the *Munitions Type* classifications in the space provided. As documented in the RI Report, there is no physical evidence UXO or DMM are present at MRS 01. Munitions used on the MRS included 20 mm ammunition, practice rockets, and practice bombs. The only explosive component associated with practice rockets is propellant, which is expended when fired. The notable presence of the MDAS from practice rockets in the target area confirms that they were fired, expending the propellant. A practice bomb could have an intact spotting charge; however, no evidence of an intact spotting charge was found with the limited MD associated with practice bombs that was identified. The 20-mm TP projectile/casing were practice/inert. Refer to Section 5.2/page 5-2 of the RI Report.

Table 10
Determining the EHE Module Rating

	Source	Score	Value	
DIRECTIONS: 1. From Tables 1–9, record the data element scores in the Score boxes to the right. 2. Add the Score boxes for each of the three factors and record this number in the Value boxes to the right. 3. Add the three Value boxes and record this number in the EHE Module Total box below. 4. Circle the appropriate range for the EHE Module Total below. 5. Circle the EHE Module Rating that corresponds to the range selected and record this value in the EHE Module Rating box found at the bottom of the table. Note: An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.	Explosive Hazard Factor Data Elements			
	Munitions Type	Table 1		N/A
	Source of Hazard	Table 2		
	Accessibility Factor Data Elements			
	Location of Munitions	Table 3		N/A
	Ease of Access	Table 4		
	Status of Property	Table 5		
	Receptor Factor Data Elements			
	Population Density	Table 6		N/A
	Population Near Hazard	Table 7		
	Types of Activities/Structures	Table 8		
	Ecological and /or Cultural Resources	Table 9		
	EHE MODULE TOTAL			N/A
	EHE Module Total		EHE Module Rating	
	92 to 100		A	
	82 to 91		B	
	71 to 81		C	
	60 to 70		D	
	48 to 59		E	
	38 to 47		F	
less than 38		G		
Alternative Module Ratings	Evaluation Pending			
	No Longer Required			
	No Known or Suspected Explosive Hazard			
EHE MODULE RATING		No Known or Suspected Explosive Hazard		

Table 11
CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the score(s) that correspond to all CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO*, *CWM/DMM*, *physical evidence*, and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, explosive configuration either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: <ul style="list-style-type: none"> Explosively configured CWM that are UXO (i.e., CWM/UXO). Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged. 	30
CWM mixed with UXO	<ul style="list-style-type: none"> The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO. 	25
CWM, explosive configuration that are undamaged DMM	<ul style="list-style-type: none"> The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged. 	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: <ul style="list-style-type: none"> Nonexplosively configured CWM/DMM. Bulk CWM/DMM (e.g., ton container). 	15
CAIS K941 and CAIS K942	<ul style="list-style-type: none"> The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11. 	12
CAIS (chemical agent identification sets)	<ul style="list-style-type: none"> Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS. 	10
Evidence of no CWM	<ul style="list-style-type: none"> Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS. 	0
CWM CONFIGURATION	DIRECTIONS: Record the single highest score from above in the box to the right (maximum score = 30).	0
DIRECTIONS: Document any MRS-specific data used in selecting the CWM Configuration classifications in the space provided. CWM was never used or stored and is not present at the MRS. Refer to Section 1.4/page 1-15 of the RI Report. Therefore tables 12-19 are intentionally omitted in accordance with Army guidance.		

Table 20**Determining the CHE Module Rating**

	Source	Score	Value
DIRECTIONS:			
1. From Tables 11–19, record the data element scores in the Score boxes to the right.			
2. Add the Score boxes for each of the three factors and record this number in the Value boxes to the right.			
3. Add the three Value boxes and record this number in the CHE Module Total box below.			
4. Circle the appropriate range for the CHE Module Total below.			
5. Circle the CHE Module Rating that corresponds to the range selected and record this value in the CHE Module Rating box found at the bottom of the table.			
Note: An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.			
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12		
Accessibility Factor Data Elements			
Location of CWM	Table 13		0
Ease of Access	Table 14		
Status of Property	Table 15		
Receptor Factor Data Elements			
Population Density	Table 16		0
Population Near Hazard	Table 17		
Types of Activities/Structures	Table 18		
Ecological and /or Cultural Resources	Table 19		
CHE MODULE TOTAL			0
CHE Module Total		CHE Module Rating	
92 to 100		A	
82 to 91		B	
71 to 81		C	
60 to 70		D	
48 to 59		E	
38 to 47		F	
less than 38		G	
Alternative Module Ratings	Evaluation Pending		
	No Longer Required		
	No Known or Suspected CWM Hazard		
CHE MODULE RATING		No Known or Suspected CWM Hazard	

Table 21
HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional groundwater contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
Lead (7439-92-1)	0.67	15	0.0447
Titanium (7440-32-6)	2.6	150000	0
Zinc (7440-66-6)	25.8	11000	0.0023
CHF Scale	CHF Value	Sum the Ratios	0.047
CHF > 100	H (High)	$\text{CHF} = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).		L

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to the presence of geological structures or physical controls.)	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the ground water is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

No Known or Suspected Groundwater MC Hazard

☐

Comments: The MC data for groundwater at MRS 01 is presented in Section 5.4.1/pages 5-7 and Table 5-2 of the SI Report. Background data was not collected for groundwater.

Table 22
HHE Module: Surface Water – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface water contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record **CHF Value**. If there is no known or suspected MC hazard with human endpoints present in the surface water, select the box at the bottom of the table.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
Lead (7439-92-1)	0.39	15	0.026
Titanium (7440-32-6)	3.1	150000	0
Zinc (7440-66-6)	12.3	11000	0.0011
CHF Scale	CHF Value	Sum the Ratios	0.0271
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).	L
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Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to the presence of geological structures or physical controls.)	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

No Known or Suspected Surface Water (Human Endpoint) MC Hazard

☐

Comments: The MC data for surface water at MRS 01 is presented in Section 5.4.2/page 5-7 Table 5-3 of the SI Report. Background data was not collected for surface water.

Table 23
HHE Module: Sediment – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional sediment contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record **CHF Value**. If there is no known or suspected MC hazard with human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
Antimony and compounds (7440-36-0)	0.34	31	0.011
Lead (7439-92-1)	2.8	400	0.007
Titanium (7440-32-6)	115	100000	0.0011
Zinc (7440-66-6)	3.5	23000	0.0002
CHF Scale	CHF Value	Sum the Ratios	0.0193
CHF > 100	H (High)	CHF = ∑ [Maximum Concentration of Contaminant] [Comparison Value for Contaminant]	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).		L

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to the presence of geological structures or physical controls.)	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

No Known or Suspected Sediment (Human Endpoint) MC Hazard ☐

Comments: The MC data for sediment at MRS 01 is presented in Section 5.4.2/page 5-8 and Table 5-4 of the SI Report. Background data was not collected for sediment.

Table 24
HHE Module: Surface Water – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface water contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record **CHF Value**. If there is no known or suspected MC hazard with ecological endpoints present in the surface water, select the box at the bottom of the table.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
Lead (7439-92-1)	0.39	8.1	0.0481
Zinc (7440-66-6)	12.3	81	0.1519
CHF Scale	CHF Value	Sum the Ratios	0.2
CHF > 100	H (High)	CHF = ∑ [Maximum Concentration of Contaminant] [Comparison Value for Contaminant]	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).		L

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to the presence of geological structures or physical controls.)	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard ☐

Comments: The MC data for surface water at MRS 01 is presented in Section 5.4.2/page 5-7 Table 5-3 of the SI Report. Background data was not collected for surface water.

Table 25
HHE Module: Sediment – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional sediment contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record **CHF Value**. If there is no known or suspected MC hazard with ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
Antimony (7440-36-0)	0.34	9.3	0.0366
Lead (7439-92-1)	2.8	30.2	0.0927
Zinc (7440-66-6)	3.5	124	0.0282
CHF Scale	CHF Value	Sum the Ratios	0.1575
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record the CHF Value from above in the box to the right (maximum value = H).	L
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Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to the presence of geological structures or physical controls.)	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard ☐

Comments: The MC data for sediment at MRS 01 is presented in Section 5.4.2/page 5-8 and Table 5-4 of the SI Report. Background data was not collected for sediment.

Table 26
HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface soil contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record **CHF Value**. If there is no known or suspected MC hazard with present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios		
CHF Scale	CHF Value	Sum the Ratios			
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$			
100 > CHF > 2	M (Medium)				
2 > CHF	L (Low)				
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).				
<u>Migratory Pathway Factor</u>					
DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.					
Classification	Description	Value			
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H			
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M			
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to the presence of geological structures or physical controls.)	L			
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).				
<u>Receptor Factor</u>					
DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.					
Classification	Description	Value			
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H			
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M			
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	L			
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).				
No Known or Suspected Surface Soil MC Hazard			<input checked="" type="checkbox"/>		

HHE Module: Supplemental Contaminant Hazard Factor Table

DIRECTIONS: Only use this table if there are more than five contaminants in any given medium present at the MRS. This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B of the Primer) in the table below. Calculate and record the **ratio** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

[illegible]

Table 28**Determining the HHE Module Rating****DIRECTIONS:**

1. Record the letter values (H, M, L) for the **Contaminant Hazard, Migration Pathway, and Receptor Factors** for the media (from Tables 21-26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the **HHE Ratings** provided below, determine each media's rating (A-G) and record the letter in the corresponding **Media Rating** box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value	Three-Letter Combination (Hs-Ms-Ls)	Media Rating (A-G)
Groundwater (Table 21)	L	M	M	MML	E
Surface Water/Human Endpoint (Table 22)	L	M	M	MML	E
Sediment/ Human Endpoint (Table 23)	L	M	M	MML	E
Surface Water/Ecological Endpoint (Table 24)	L	M	M	MML	E
Sediment/Ecological Endpoint (Table 25)	L	M	M	MML	E
Surface Soil (Table 26)					

DIRECTIONS (cont.): 4. Select the single highest Media Rating (A is the highest; G is the lowest) and enter the letter in the HHE Module Rating box. Note: An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.	HHE MODULE RATING	E
	HHE Ratings (for reference only)	
	Combination	Rating
	HHH	A
	HHM	B
	HHL	C
	HMM	
	HML	D
	MMM	
	HLL	E
MML		
MLL	F	
LLL	G	
Alternative Module Ratings	Evaluation Pending	
	No Longer Required	
	No Known or Suspected MC Hazard	

Table 29**MRS Priority**

DIRECTIONS: In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this number in the **MRS or Alternative Priority** box at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	2	B	2	A	2
B	3	C	3	B	3
C	4	D	4	C	4
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			G	8
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		No Known or Suspected CWM Hazard		No Known or Suspected MC Hazard	
MRS or ALTERNATIVE PRIORITY				No Known or Suspected Hazard	

APPENDIX I-2: MRSPP Tables for MRS 03

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Table A

MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from DoD databases, such as RMIS. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the MRS summary, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental non-munitions related contaminants found at the MRS (e.g., benzene, trichloroethylene), and any potentially exposed human and ecological receptors. Include a map of the MRS, if one is available.

Munitions Response Site Name: **Rocket Range South & Burials – MRS 03**
 Component: **US Army Corps of Engineers, Formerly Used Defense Site (FUDS) Program**
 Installation/Property Name: **Assateague Island**
 Location (City, County, State): **Ocean City, Worcester County, MD**
 Site Name (RMIS ID)/Project Name (Project No.): **C03MD093001R02 Rocket Range South & Burials**

Date Information Entered/Updated: **10/19/2018**
 Point of Contact (Name/Phone): **Christopher Gardner - (410) 962-2809**
 Project Phase (check only one):

<input type="checkbox"/> PA	<input type="checkbox"/> SI	<input checked="" type="checkbox"/> RI	<input type="checkbox"/> FS	<input type="checkbox"/> RD
<input type="checkbox"/> RA-C	<input type="checkbox"/> RIP	<input type="checkbox"/> RA-O	<input type="checkbox"/> RC	<input type="checkbox"/> LTM

Media Evaluated (check all that apply):

<input checked="" type="checkbox"/> Groundwater	<input checked="" type="checkbox"/> Sediment (human receptor)
<input checked="" type="checkbox"/> Surface Soil	<input checked="" type="checkbox"/> Surface Water (ecological receptor)
<input checked="" type="checkbox"/> Sediment (ecological receptor)	<input checked="" type="checkbox"/> Surface Water (human receptor)

MRS Summary: MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM (by type of munition, if known) or munitions constituents (by type, if known) known or suspected to be present):

Assateague Island is a 37-mile-long barrier island that parallels the Atlantic Coast of Maryland and Virginia. MRS 03 is located on the central part of the island and comprised of 3,245.5 acres. The Navy reportedly used MRS 03 for air-to-ground practice bombing, rocket, and strafing for land based aircraft from 1944 to 1947. However, to date only 2 piece of MD form 5-inch practice rockets have been identified at MRS 03. No MEC has been identified at MRS 03. During the 2007 Site Inspection surface water, sediment, surface soil, subsurface soil, and groundwater were sampled. To date, no MC source has been identified, nor is one anticipated (i.e. SI detections are not related to munitions activities at the MRS).

Description of Pathways for Human and Ecological Receptors: **Based on the findings of the RI there is no evidence MEC is present, and therefore the MEC pathway is incomplete for human and ecological receptors. Based on the findings of the RI and SI Reports an MC source has not been identified, and therefore the MC pathway is incomplete for human and ecological receptors. No Known or Suspected Hazard has been selected for the HHE Module.**

Description of Receptors (Human and Ecological): **Potential human receptors are expected to be visitors/recreational users, site workers, and construction workers. Ecological receptors of concern include terrestrial plants, terrestrial invertebrates (e.g., insects and worms), benthic organisms, aquatic organisms, terrestrial-feeding/predatory animals, terrestrial-feeding/predatory birds, aquatic-feeding mammals, and aquatic-feeding birds.**

Note: USACE – Baltimore District has coordinated with MDE and the local community as documented in the Uniform Federal Policy (UFP) Quality Assurance Project Plan (QAPP) prepared for the Remedial Investigation (EA 2017). Refer to Worksheet #9, pages 25-34 of the UFP-QAPP.

Table 1**EHE Module: Munitions Type Data Element Table**

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the score(s) that correspond with all munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions*, *small arms*, *physical evidence*, and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	<ul style="list-style-type: none"> ♦ All UXO that are considered likely to function upon any interaction with exposed persons [e.g., submunitions, 40mm high-explosive (HE) grenades, white phosphorus (WP) munitions, high-explosive antitank (HEAT) munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions]. ♦ All hand grenades containing energetic filler. ♦ Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard. 	30
High explosive (used or damaged)	<ul style="list-style-type: none"> ♦ All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." ♦ All DMM containing a high-explosive filler that have: <ul style="list-style-type: none"> ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability. 	25
Pyrotechnic (used or damaged)	<ul style="list-style-type: none"> ♦ All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). ♦ All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: <ul style="list-style-type: none"> ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability. 	20
High explosive (unused)	<ul style="list-style-type: none"> ♦ All DMM containing a high explosive filler that: <ul style="list-style-type: none"> ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability. 	15
Propellant	<ul style="list-style-type: none"> ♦ All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). ♦ All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: <ul style="list-style-type: none"> ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability. 	15
Bulk secondary high explosives, pyrotechnics, or propellant	<ul style="list-style-type: none"> ♦ All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor), that are deteriorated. ♦ Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard. 	10
Pyrotechnic (not used or damaged)	<ul style="list-style-type: none"> ♦ All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: <ul style="list-style-type: none"> ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability. 	10
Practice	<ul style="list-style-type: none"> ♦ All UXO that are practice munitions that are not associated with a sensitive fuze. ♦ All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: <ul style="list-style-type: none"> ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability 	5
Riot control	<ul style="list-style-type: none"> ♦ All UXO or DMM containing a riot control agent filler (e.g., tear gas). 	3
Small arms	<ul style="list-style-type: none"> ♦ All used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.]. 	2
Evidence of no munitions	<ul style="list-style-type: none"> ♦ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present. 	0
MUNITIONS TYPE	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 30).	0

DIRECTIONS: Document any MRS-specific data used in selecting the *Munitions Type* classifications in the space provided. As documented in the RI Report, there is no physical evidence UXO or DMM are present at MRS 03. Only two pieces of MD from 5-in. practice rockets were identified at MRS 03. Once fired, the practice rockets no longer present an explosive hazard because the only explosive component (propellant) is expended when fired. Since no MEC has actually been identified at MRS 03 and only two pieces of MD have been identified, this suggests the MRS may not have been used as a practice range and, if it was, very minimally. None of the MD found were MEC. Refer to Section 5.3/page 5-2 of the RI Report.

Table 10
Determining the EHE Module Rating

	Source	Score	Value	
DIRECTIONS: 1. From Tables 1–9, record the data element scores in the Score boxes to the right. 2. Add the Score boxes for each of the three factors and record this number in the Value boxes to the right. 3. Add the three Value boxes and record this number in the EHE Module Total box below. 4. Circle the appropriate range for the EHE Module Total below. 5. Circle the EHE Module Rating that corresponds to the range selected and record this value in the EHE Module Rating box found at the bottom of the table. Note: An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.	Explosive Hazard Factor Data Elements			
	Munitions Type	Table 1		N/A
	Source of Hazard	Table 2		
	Accessibility Factor Data Elements			
	Location of Munitions	Table 3		N/A
	Ease of Access	Table 4		
	Status of Property	Table 5		
	Receptor Factor Data Elements			
	Population Density	Table 6		N/A
	Population Near Hazard	Table 7		
	Types of Activities/Structures	Table 8		
	Ecological and /or Cultural Resources	Table 9		
	EHE MODULE TOTAL			N/A
	EHE Module Total		EHE Module Rating	
	92 to 100		A	
	82 to 91		B	
	71 to 81		C	
	60 to 70		D	
	48 to 59		E	
	38 to 47		F	
less than 38		G		
Alternative Module Ratings	Evaluation Pending			
	No Longer Required			
	No Known or Suspected Explosive Hazard			
EHE MODULE RATING		No Known or Suspected Explosive Hazard		

Table 11
CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the score(s) that correspond to all CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO*, *CWM/DMM*, *physical evidence*, and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, explosive configuration either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: <ul style="list-style-type: none"> Explosively configured CWM that are UXO (i.e., CWM/UXO). Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged. 	30
CWM mixed with UXO	<ul style="list-style-type: none"> The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO. 	25
CWM, explosive configuration that are undamaged DMM	<ul style="list-style-type: none"> The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged. 	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: <ul style="list-style-type: none"> Nonexplosively configured CWM/DMM. Bulk CWM/DMM (e.g., ton container). 	15
CAIS K941 and CAIS K942	<ul style="list-style-type: none"> The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11. 	12
CAIS (chemical agent identification sets)	<ul style="list-style-type: none"> Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS. 	10
Evidence of no CWM	<ul style="list-style-type: none"> Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS. 	0
CWM CONFIGURATION	DIRECTIONS: Record the single highest score from above in the box to the right (maximum score = 30).	0
DIRECTIONS: Document any MRS-specific data used in selecting the CWM Configuration classifications in the space provided. CWM was never used or stored and is not present at the MRS. Refer to Section 1.4/page 1-15 of the RI Report. Therefore tables 12-19 are intentionally omitted in accordance with Army guidance.		

Table 20
Determining the CHE Module Rating

	Source	Score	Value	
DIRECTIONS: 1. From Tables 11–19, record the data element scores in the Score boxes to the right. 2. Add the Score boxes for each of the three factors and record this number in the Value boxes to the right. 3. Add the three Value boxes and record this number in the CHE Module Total box below. 4. Circle the appropriate range for the CHE Module Total below. 5. Circle the CHE Module Rating that corresponds to the range selected and record this value in the CHE Module Rating box found at the bottom of the table. Note: An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.	CWM Hazard Factor Data Elements			
	CWM Configuration	Table 11	0	0
	Sources of CWM	Table 12		
	Accessibility Factor Data Elements			
	Location of CWM	Table 13		0
	Ease of Access	Table 14		
	Status of Property	Table 15		
	Receptor Factor Data Elements			
	Population Density	Table 16		0
	Population Near Hazard	Table 17		
	Types of Activities/Structures	Table 18		
	Ecological and /or Cultural Resources	Table 19		
	CHE MODULE TOTAL			0
	CHE Module Total	CHE Module Rating		
	92 to 100	A		
	82 to 91	B		
	71 to 81	C		
	60 to 70	D		
48 to 59	E			
38 to 47	F			
less than 38	G			
Alternative Module Ratings	Evaluation Pending			
	No Longer Required			
	No Known or Suspected CWM Hazard			
CHE MODULE RATING	No Known or Suspected CWM Hazard			

Table 21
HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional groundwater contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
Lead (7439-92-1)	8.8	15	0.5867
Titanium (7440-32-6)	483	150000	0.0032
Zinc (7440-66-6)	44.9	11000	0.0041
CHF Scale	CHF Value	Sum the Ratios	0.594
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).		L

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to the presence of geological structures or physical controls.)	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the ground water is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

No Known or Suspected Groundwater MC Hazard ☐

Comments: The MC data for groundwater at MRS 03 is presented in Section 5.5.1/pages 5-9 and 5-10 and Table 5-2 of the SI Report. Background data was not collected for groundwater.

Table 22
HHE Module: Surface Water – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface water contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record **CHF Value**. If there is no known or suspected MC hazard with human endpoints present in the surface water, select the box at the bottom of the table.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
Antimony and compounds (7440-36-0)	1.4	15	0.0933
CHF Scale	CHF Value	Sum the Ratios	0.0933
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).	L
----------------------------------	--	----------

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to the presence of geological structures or physical controls.)	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

No Known or Suspected Surface Water (Human Endpoint) MC Hazard

☐

Comments: The MC data for surface water at MRS 03 is presented in Section 5.5.2/page 5-10 and Table 5-3 of the SI Report. Background data was not collected for surface water.

Table 23
HHE Module: Sediment – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional sediment contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record **CHF Value**. If there is no known or suspected MC hazard with human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
Lead (7439-92-1)	3.6	400	0.009
Titanium (7440-32-6)	124	100000	0.0012
Zinc (7440-66-6)	3.9	23000	0.0002
CHF Scale	CHF Value	Sum the Ratios	0.0104
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).		L

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to the presence of geological structures or physical controls.)	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

No Known or Suspected Sediment (Human Endpoint) MC Hazard ☐

Comments: The MC data for sediment at MRS 03 is presented in Section 5.5.2/page 5-10 and Table 5-4 of the SI Report. Background data was not collected for sediment.

Table 24
HHE Module: Surface Water – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface water contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record **CHF Value**. If there is no known or suspected MC hazard with ecological endpoints present in the surface water, select the box at the bottom of the table.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
Antimony (7440-36-0)	1.4	500	0.0028
CHF Scale	CHF Value	Sum the Ratios	0.0028
CHF > 100	H (High)	CHF = ∑ [Maximum Concentration of Contaminant] [Comparison Value for Contaminant]	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).		L

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to the presence of geological structures or physical controls.)	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard

☐

Comments: The MC data for surface water at MRS 03 is presented in Section 5.5.2/page 5-10 and Table 5-3 of the SI Report. Background data was not collected for surface water.

Table 25
HHE Module: Sediment – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional sediment contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record **CHF Value**. If there is no known or suspected MC hazard with ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
Lead (7439-92-1)	3.6	30.2	0.1192
Zinc (7440-66-6)	3.9	124	0.0315
CHF Scale	CHF Value	Sum the Ratios	0.1507
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).	L
----------------------------------	--	----------

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to the presence of geological structures or physical controls.)	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	M

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard ☐

Comments: The MC data for sediment at MRS 03 is presented in Section 5.5.2/page 5-10 and Table 5-4 of the SI Report. Background data was not collected for sediment.

Table 26
HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface soil contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record **CHF Value**. If there is no known or suspected MC hazard with present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios												
CHF Scale	CHF Value	Sum the Ratios													
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$													
100 > CHF > 2	M (Medium)														
2 > CHF	L (Low)														
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).														
<p align="center"><u>Migratory Pathway Factor</u></p> <p>DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.</p> <table border="1"> <thead> <tr> <th>Classification</th><th>Description</th><th>Value</th></tr> </thead> <tbody> <tr> <td>Evident</td><td>Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.</td><td align="center">H</td></tr> <tr> <td>Potential</td><td>Contamination in surface soil has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.</td><td align="center">M</td></tr> <tr> <td>Confined</td><td>Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to the presence of geological structures or physical controls.)</td><td align="center">L</td></tr> </tbody> </table>				Classification	Description	Value	Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H	Potential	Contamination in surface soil has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M	Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to the presence of geological structures or physical controls.)	L
Classification	Description	Value													
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H													
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M													
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to the presence of geological structures or physical controls.)	L													
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).														
<p align="center"><u>Receptor Factor</u></p> <p>DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.</p> <table border="1"> <thead> <tr> <th>Classification</th><th>Description</th><th>Value</th></tr> </thead> <tbody> <tr> <td>Identified</td><td>Identified receptors have access to surface soil to which contamination has moved or can move.</td><td align="center">H</td></tr> <tr> <td>Potential</td><td>Potential for receptors to have access to surface soil to which contamination has moved or can move.</td><td align="center">M</td></tr> <tr> <td>Limited</td><td>Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.</td><td align="center">L</td></tr> </tbody> </table>				Classification	Description	Value	Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H	Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M	Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	L
Classification	Description	Value													
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H													
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M													
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	L													
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).														
No Known or Suspected Surface Soil MC Hazard			<input checked="" type="checkbox"/>												

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Only use this table if there are more than five contaminants in any given medium present at the MRS. This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B of the Primer) in the table below. Calculate and record the **ratio** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

Note: Do not add ratios from different media.

[illegible]

Table 28
Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard, Migration Pathway, and Receptor Factors** for the media (from Tables 21-26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the **HHE Ratings** provided below, determine each media's rating (A-G) and record the letter in the corresponding **Media Rating** box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value	Three-Letter Combination (Hs-Ms-Ls)	Media Rating (A-G)
Groundwater (Table 21)	L	M	M	MML	E
Surface Water/Human Endpoint (Table 22)	L	M	M	MML	E
Sediment/ Human Endpoint (Table 23)	L	M	M	MML	E
Surface Water/Ecological Endpoint (Table 24)	L	M	M	MML	E
Sediment/Ecological Endpoint (Table 25)	L	M	M	MML	E
Surface Soil (Table 26)					

DIRECTIONS (cont.): 4. Select the single highest Media Rating (A is the highest; G is the lowest) and enter the letter in the HHE Module Rating box. Note: An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.	HHE MODULE RATING	E
	HHE Ratings (for reference only)	
	Combination	Rating
	HHH	A
	HHM	B
	HHL	C
	HMM	
	HML	D
	MMM	
	HLL	E
MML		
MLL	F	
LLL	G	
Alternative Module Ratings	Evaluation Pending	
	No Longer Required	
	No Known or Suspected MC Hazard	

Table 29**MRS Priority**

DIRECTIONS: In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this number in the **MRS or Alternative Priority** box at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	2	B	2	A	2
B	3	C	3	B	3
C	4	D	4	C	4
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			G	8
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		No Known or Suspected CWM Hazard		No Known or Suspected MC Hazard	
MRS or ALTERNATIVE PRIORITY				No Known or Suspected Hazard	

Appendix J - Lease Documentation

Note: This additional information is provided to help confirm the eligibility and former use of the site by the Navy.

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WOL-5/WI-1/12-11
(50-Cats)

4182

21 MAY 1946

End-1 on 03 May Chincoteague via WI-9(2)/24-5 (WOL-5) Com. 579 to BuDocks via
ComNavAirBase SMD and ComFive 201 14 May 1946.

From: ComNavAirBase SMD
To: BuDocks
Via: ComFive

Subj: NAAS CHINCOTEAGUE, VA. - GENERAL INFORMATION AND UTILIZATION OF VESSEL AND
LOCAL PROXIMITY, INFORMATION CONCERNING.

1. Forwarded.

J. M. SHOEMAKER

CC
CC NAAS Chincoteague

ND5(45)(CR)/WI-9(2)/vdm
L-456/L-497/L-624/P-21

28 MAY 1946

End-2

From: ComFive
To: BuDocks

1. Forwarded.

P. J. Halloran
P. J. HALLORAN
By direction

CC:
CO, NASNor
ComNAB, SMD
CO, NAAS Chincoteague

26 71

E 1001

B1309

7

IN REPLY
REFER TO N1-2(2)/L4-3
Address (GE:bjj)
Commanding Officer

U. S. NAVAL AUXILIARY AIR STATION
Chincoteague, Virginia

Serial No. 573

N1-1/A2-11

14 MAY 1946

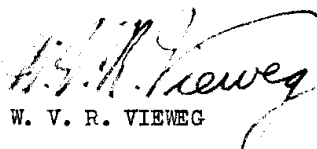
From: Commanding Officer
To: Chief BuDocks
Via: (1) ComNavAirBases 5ND NAS NorVa.
(2) ComFive

Subj: RENEWAL OF LEASES AND UTILIZATION OF OWNED AND REAL PROPERTY,
INFORMATION CONCERNING.

Ref: (a) Secretary of the Navy Directive to BuDocks, dtd 2 Apr 46.
(b) Bureau of Yards and Docks Cir. Let. 27-46, dtd 5 Apr 46.

Encl: (A) Questionnaire on Rocket Range, Target #32. ✓
(B) Questionnaire on Obstruction Light.
(C) Questionnaire on YA-2 Localizer Station. ✓
(D) Questionnaire on Bombing & Strafing, Target #25-25A. ✓
(E) Questionnaire on Rocket Range, Target #33. ✓

1. By reference (a) the Secretary of the Navy directed that the Bureau of Yards and Docks, in consultation with cognizant Bureaus and Offices, investigate the practicability of moving activities from leased space into either Navy-owned or other Government-owned space.
2. Reference (b) directed Commandants and field activities to investigate every possible source to determine whether either Navy-owned property, including property constructed through facility contracts, and other Government property could be found which could be used in lieu of leased space.
3. In accordance with reference (b) all leased property utilized in connection with NAAS and NAOTS, Chincoteague, Virginia, has been reviewed. It was found that all the leased property was used for rocket ranges, YA-2 localizer and obstruction lights. Due to the particular use of the property involved, it would be impossible to utilize Navy-owned property in lieu of leased property.
4. Enclosures (A), (B), (C), (D) & (E) give a full description of all property investigated.


W. V. R. VIEWEG

QUESTIONNAIRE ON NAVY PROPERTIES OWNED, LEASED, RENTED OR OCCUPIED BY
PERMIT

1. Name of Activity **Rocket Range, Target #42 (NAAS Chincoteague, Va.)**
2. Location **Assateague Island, Worcester County, Md.**
Beach land - approx. 16 miles south of North Beach Coast Guard Station.
3. Administrative Jurisdiction **Naval Air Bases, AND.**
4. Brief Description, including approximate area, lease or permit number if available, utilities at site, general condition
Lands used for Rocket Target site.
Owner - Ocean Beach Land & Improvement Company, Baltimore, Md.
Approximately - 90 acres.
5. Function of activity occupying the parcel
Rocket Range.
6. When can parcel be vacated? **No.**
7. Can the activity be transferred to government owned property if on land occupied by lease or permit. **No.**
8. Indicate if this activity is:
(a) To be maintained as a post-war activity
(b) To be disestablished by a definite date
(c) Future indeterminate
9. If indeterminate, what higher authority is involved for abandonment or transfer of the activity?
10. What personnel, both civilian and naval, are now employed for a maintenance by caretaker status? **None.**
11. What Bureau or Office has technical control? **BuAer**
12. If renewal is required, submit justification.
Yes - leasehold acquired by condemnation expiring 30 June 1946.

~~NOTE: Continuation of this questionnaire is required only if the property is to be renewed after 30 June 1946.~~

This property acquired by condemnation proceedings leasehold estate should be renewed before 30 June.

ComNAB AND has requested leasehold interest for fiscal year 1947.

Encl. (B)

QUESTIONNAIRE ON NAVY PROPERTIES OWNED, LEASED, RENTED OR OCCUPIED BY
PERMIT

1. Name of Activity NAAS Chincoteague, Va.
2. Location Chincoteague, Va.
3. Administrative Jurisdiction Naval Air Bases
4. Brief Description, including approximate area, lease or permit number if available, utilities at site, general condition
Revocable permit granting permission to erect pole and obstruction light in vicinity of dwelling on J. Maurice Justice property.
5. Function of activity occupying the parcel
Obstruction light in approach zone - runway - No. 4-
NAAS Chincoteague, Va.
6. When can parcel be vacated? When station disestablished.
7. Can the activity be transferred to government owned property if on land occupied by lease or permit. No.
8. Indicate if this activity is:
(a) To be maintained as a post-war activity
(b) To be disestablished by a definite date
(c) Future indeterminate
9. If indeterminate, what higher authority is involved for abandonment or transfer of the activity? BuAer
10. What personnel, both civilian and naval, are now employed for a maintenance by caretaker status? None.
11. What Bureau or Office has technical control? BuAer
12. If renewal is required, submit justification.
Revocable permit - duration plus six months.

~~NOTE: Submission of this questionnaire does not constitute an agreement to transfer property to the Navy.~~

ComNAAB has requested BuDocks to renegotiate revocable permit prior to execution of present permit if continued use is desired at that time.

~~0-48-240-14~~
X-48-241

REPRODUCED AT THE NATIONAL ARCHIVES

1. Name of Activity NAAS Chincoteague, Va.
2. Location Accomack County, Oak Hall, Va.
3. Administrative Jurisdiction Naval Air Bases SMD
4. Brief Description, including approximate area, lease or permit number if available, utilities at site, general condition
Lands for site - YA2 Radio Localizer Station, complete in place - acreage 0.33 acres - Lease NOY(R) 37950 - \$150.00 per annum. Elwood M. & Rita A. Taylor lessors, utility - Radio station complete with electric services, generators, antennas, etc. Condition - new.
5. Function of activity occupying the parcel

YA2- Localizer Radio Station
Installed by CAA
6. When can parcel be vacated? No.
7. Can the activity be transferred to government owned property if on land occupied by lease or permit. No.
8. Indicate if this activity is:
(a) To be maintained as a post-war activity
(b) To be disestablished by a definite date
(c) Future indeterminate
9. If indeterminate, what higher authority is involved for abandonment or transfer of the activity?
10. What personnel, both civilian and naval, are now employed for a maintenance by caretaker status? None.
11. What Bureau or Office has technical control? BuAer
12. If renewal is required, submit justification.
Lease expires June 30, 1946. Rental payment annually. This facility is required as long as the station operates as an airport. Renewal notice required 30 days prior to execution.

REPRODUCED AT THE NATIONAL ARCHIVES

QUESTIONNAIRE ON NAVY PROPERTIES OWNED, LEASED, RENTED OR OCCUPIED BY
PERMIT

1. Name of Activity Bombing & Strafing Target #25-25A.
2. Location On Barnard Island, Pocomoke Sound, Accomack County, Va.
3. Administrative Jurisdiction Naval Air Bases 5ND.
4. Brief Description, including approximate area, lease or permit number if available, utilities at site, general condition
Lands for target site - owner unknown - 13.0 acres.
5. Function of activity occupying the parcel
Bombing and strafing target.
6. When can parcel be vacated? No.
7. Can the activity be transferred to government owned property if on land occupied by lease or permit. No.
8. Indicate if this activity is:
(a) To be maintained as a post-war activity
(b) To be disestablished by a definite date
(c) Future indeterminate
9. If indeterminate, what higher authority is involved for abandonment or transfer of the activity?
10. What personnel, both civilian and naval, are now employed for a maintenance by caretaker status? None.
11. What Bureau or Office has technical control? BuAer
12. If renewal is required, submit justification.
Yes - Leasehold estate expires June 30, 1946.

~~NOTE: This property is to be vacated by June 30, 1946.~~

This property acquired by condemnation proceedings leasehold estate should be renewed before 30 June 1946.

ComNAB 5ND has requested BuCoks to renew leasehold interest for fiscal year 1947.

Encl: (E)

QUESTIONNAIRE ON NAVY PROPERTIES OWNED, LEASED, RENTED OR OCCUPIED BY
PERMIT

1. Name of Activity Rocket Range, Target #33 (NAAS Chincoteague, Va.)
2. Location Assateague Island, Worcester County, Md. - beach lands.
Approximately one mile north of North Beach Coast Guard Station.
3. Administrative Jurisdiction Naval Air Bases END
4. Brief Description, including approximate area, lease or permit number if available, utilities at site, general condition
Lands used for rocket target site.
Owner - Ocean Beach Land & Improvement Company, Baltimore, Md.
5. Function of activity occupying the parcel
Rocket Range.
6. When can parcel be vacated? No.
7. Can the activity be transferred to government owned property if on land occupied by lease or permit. No.
8. Indicate if this activity is:
(a) To be maintained as a post-war activity
(b) To be disestablished by a definite date
(c) Future indeterminate
9. If indeterminate, what higher authority is involved for abandonment or transfer of the activity?
10. What personnel, both civilian and naval, are now employed for a maintenance by caretaker status? None.
11. What Bureau or Office has technical control? BuAer.
12. If renewal is required, submit justification.
Yes - leasehold interest acquired by condemnation expiring
30 June 1946.

~~Not to be used for this questionnaire as provided by 15 March 1946.~~

This property acquired by condemnation proceedings leasehold estate should be renewed before 30 June 1946.

ComNAB END has requested leasehold interest for fiscal year 1947.

NC139-5/N1-1/A2-11
(50-Cm:rw)

4182

24 MAY 1946

End-1 on CO NAAS Chincoteague ltr N1-9(2)/L4-3 (GE:bjj) Ser. 573 to BuDocks via
ComNavAirBases 5ND and ComFive dtd 14 May 1946.

From: ComNavAirBases 5ND
To: BuDocks
Via: ComFive

Subj: NAAS CHINCOTEAGUE, VA. - RENEWAL OF LEASES AND UTILIZATION OF OWNED AND
REAL PROPERTY, INFORMATION CONCERNING.

1. Forwarded.

J. M. SHOEMAKER

CC

CO NAAS Chincoteague

ND5(45)(CR)/N1-9(2)/vda
L-456/L-497/L-624/P-21

End-2

28 MAY 1946

From: ComFive
To: BuDocks

1. Forwarded.

P. J. HALLORAN
By direction

CC:
CO, NASNor
ComNAB, 5ND
CO, NAAS Chincoteague

01/14-3
(G:bjj)

Commanding Officer

Serial No. 573

U. S. NAVAL AUXILIARY AIR STATION
Chincoteague, Virginia

14 MAY 1946

From: Commanding Officer
To: Chief BuBocks
Via: (1) ComNavAirSases SML N. Va.
(2) ComFive

Subj: REQUEST BY LEASED AIR UTILITY FIRM OF OWNED AND LEASED PROPERTY,
RECONSTRUCTION CONCERNING.

Ref: (a) Secretary of the Navy Directive to BuBocks, dtd 2 Apr 46.
(b) Bureau of Yards and Docks Cir. Let. 57-46, dtd 5 Apr 46.

Encl: (A) Questionnaire on Rocket Range, Target #32.
(B) Questionnaire on Obstruction Light.
(C) Questionnaire on YA-2 Localizer Station.
(D) Questionnaire on Bombing & Strafing, Target #25-25A.
(E) Questionnaire on Rocket Range, Target #33.

1. By reference (a) the Secretary of the Navy directed that the Bureau of Yards and Docks, in consultation with cognizant Bureaus and Offices, investigate the practicability of moving activities from leased space into either Navy-owned or other Government-owned space.

2. Reference (b) directed Commandants and field activities to investigate every possible source to determine whether either Navy-owned property, including property constructed through facility contracts, and other Government property could be found which could be used in lieu of leased space.

3. In accordance with reference (b) all leased property utilized in connection with NAS and NAOT, Chincoteague, Virginia, has been reviewed. It was found that all the leased property was used for rocket range, YA-2 localizer and obstruction lights. Due to the particular use of the property involved, it would be impossible to utilize Navy-owned property in lieu of leased property.

4. Enclosures (A), (B), (C), (D) & (E) give a full description of all property investigated.

W. V. R. VISEG

100 K
E
P. 3377
FNA(1)

Maintenance Division
Aer-M4-326-MEM
H20/HAS(1)
H12/HAS(1)
HAS(1)

End-3 on ComNavAirBases, 5th NavDist 1tr
H2139-5/H28, dtd 13 Apr, 1945 to
CNO via (1)ComFive and (2)BuDocks,
Ser. 1898 (restr) with encls. (1)
and (2) and ComFive's 2nd end.
H25(20)/H28-1 dtd 24 Apr, 1945 to
CNO via BuDocks, and BuDocks 2nd
end. H28/H28-1 C-6-2A dtd 15 May, 1945
To CNO via Buair thereto.

RESTRICTED

93653

From: Chief, Buair
To: CNO

4 - JUN 1945

Subj: Naval Auxiliary Air Stations Oceana, Creeds and Chincoteague -
Telephone facilities for rocket ranges; Request for.

1. Forwarded, requesting instructions relative to the desirability of establishing direct land wire communication facilities from NAAS Oceana and Creeds to target No. 12 near Duck, N. C., and between NAAS Chincoteague and the two rocket ranges at Assateague Island near North Beach Coast Guard Station. Attention is invited to the possibility of using radio communications for contact between the ranges and the above auxiliary air stations in the same manner as proposed between NAS Edenton and target R3 at Ship Point.

2. In the event that radio communication is considered undesirable, it is suggested that the use of H type carrier equipment be considered provided that it can be procured without undue delay to interfere with the training program. Informal conversation with the U. S. Coast Guard, Washington, D. C. indicates that the present Coast Guard lines are suitable for H type carrier without excessive additional transportation work. It is estimated that an installation involving four (4) H carrier terminals at Coast Guard stations Virginia Beach, Duck, N. C., North Beach, Md. and Chincoteague, Va. should not exceed \$7500 or approximately one-half the cost of constructing the additional open-wire as proposed.

3. The bureau has approved the additional training ranges referred to in paragraph one of the basic letter and funds have been allocated for the construction of the targets by separate correspondence.

CC: BuDocks
ComFIVE
ComNavAirBases, 5th NavDist
ComFair, Norfolk
ComAirant
DistCGO

A. G. L. Kuff

Capt. USN
By Direction Chief of Bureau

lt. Wiss - 5512
31 May, 1945
D. Sirabian S 1/c

SYMBOL: 1751502.3 "AVIATION NAVY, 1945" (Bureau and Field)

16-23149-1 u

PREVIOUS BALANCE	DATE OF ENTRY	SYMBOL	REFERENCE No.	DESCRIPTION	NET DISBURSEMENT VOUCHERS	OBLIGATIONS		ALLOTMENTS
						LIQUIDATED	INCURRED	
				Brought forward from Sheet #25 BuAer Reqn. EN11-203619-PW-45			180,385.15	285,000.00
April 5, 1946	7/26/44	to	6/30/45	Military purposes, San Bernardino Co., Calif.	39571		69.05	ND 11
April 5, 1946	6/18/45	to	6/30/45	Naval purposes, Assateague Island, Md. - 182.114 acres	576		12.72	ND 5
April 11, 1946	7/1/45	to	6/30/45	Aerial Gunnery Range, Bernice Mining District, Churchill Co., Nev.	39394		2,168.10	ND 12
April 11, 1946	Easement			U.S. v. 112 acres, Cook Co., Ill. Flight zone, NAS, Glenview.	Civil #45-8-307		10,000.00	S&A
April 11, 1946	Avigation easement			Approach zone, NAAS, Franklin, Va.	37382 Ex. Acc. 45513		150.00	ND 5
April 14, 1946	12/29/44	to	6/30/45	Dive Bombing target, NAAS, Santa Rosa, Calif. (Obligated to date of cancellation on 3-1-46.)	39640 Ex. Acc. 45521		192.06	ND 12
April 15, 1946	Payment of Taxes			Taxes on 218.6 acres, Valley Stream, L.I., N.Y. Exp. Columbia Aircraft Corp. (Properly chargeable to Aviation Navy, 1945, Subhead #1.)	Civil #9 Ex. Acc. 45513		3,125.90	ND 3
April 18, 1946	7/1/45	to	6/30/46	Aerial Gunnery Range, Benton Co., Wash.	39442 Ex. Acc. 45521		8.00	ND 13
April 30, 1946	Avigation easement			112 acres of land, Cook Co. Illinois, unobstructed flight zone, NAS, Glenview (Reduction in deposit -	Civ 45 C 307 Ex. Acc. 45513		- 3,000.00	S&A

REPRODUCED FROM THE NATIONAL ARCHIVES

				Brought forward from Sheet #25 BuAer Reqn. EN11-203619-PW-45		180,385.15	285,000.00
April 5, 1946	7/26/44	to	6/30/45	Military purposes, San Bernardino Co., Calif.	39571	69.05 ✓	ND 11
April 5, 1946	6/18/45	to	6/30/45	Naval purposes, Assateague Island, Md. - 182.114 acres	39571	12.72 ✓	ND 5
April 11, 1946	7/1/45	to	6/30/45	Aerial Gunnery Range, Bernice Mining District, Churchill Co., Nev.	39394	2,168.10 ✓	ND 12
April 11, 1946	Easement			U.S. v. 112 acres, Cook Co., Ill. Flight zone, NAS, Glenview.	Civil #45-6-307	10,000.00 ✓	S&A
April 11, 1946	Avigation easement			Approach zone, NAAS, Franklin, CVA.	37382 Ex Acc. 45513	150.00 ✓	ND 5
April 14, 1946	12/29/44	to	6/30/45	Dive Bombing target, NAAS, Santa Rosa, Calif. (Obligated to date of cancellation on 3-1-46.)	39640 Ex Acc. 45521	192.06	ND 12
April 15, 1946	Payment of Taxes			Taxes on 218.6 acres, Valley Stream, L.I., N.Y. Exp. Columbia Aircraft Corp. (Properly chargeable to Aviation Navy, 1945, Subhead #1.)	Civil #9 Ex Acc. 45513	3,125.90	ND 3
April 18, 1946	7/1/45	to	6/30/46	Aerial Gunnery Range, Benton Co., Wash.	39442 Ex Acc. 45521	8.00 ✓	ND 13
April 30, 1946	Avigation easement			112 acres of land, Cook Co. Illinois, unobstructed flight zone, NAS, Glenview (Reduction in deposit - Funds not required are deleted)	Civ 45 C 307 Ex Acc. 45513	- 3,000.00	S&A
April 30, 1946				Additional anticipated sums as shown on "A" report attached.....		186,859.19 ✓	285,000.00
						166,998.59 ✓	
						353,857.78	285,000.00