FINAL
DECISION DOCUMENT

NANTUCKET BEACH, FORMER NANTUCKET ORDNANCE SITE A.K.A. TOM NEVERS ROCKET PROJECTILE TARGET; TOM NEVERS AREA, FORMERLY USED DEFENSE SITE PROJECT NUMBER D01MA045601AND D01MA045602 AERIAL ROCKET RANGE TARGET #1 MUNITIONS RESPONSE SITE AERIAL ROCKET RANGE FAN MUNITIONS RESPONSE SITE NANTUCKET, MASSACHUSETTS

MILITARY MUNITIONS RESPONSE PROGRAM

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Prepared For:

U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, Massachusetts 01742

Contracted by:

U.S. Army Corps of Engineers
Baltimore District
10 South Howard Street
Room 10040-E
Baltimore, Maryland 21201

December 2015

Work Order No. 03886.551.004

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LIST OF ACRONYMS AND ABBREVIATIONS

ARAR	Applicable or Relevant and Appropriate Requirement
ASR	Archives Search Report
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COPC	chemical of potential concern
DD	Decision Document
DERP	Defense Environmental Restoration Program
DGM	digital geophysical mapping
DMM	discarded military munitions
DoD	Department of Defense
EOD	Explosive Ordnance Disposal
EPA	United States Environmental Protection Agency
ft	feet
FS	Feasibility Study
FUDS	Formerly Used Defense Site
IR	information repository
ISM	Incremental Sampling Methodology
HE	high explosive
HFA	Human Factors Applications, Inc.
LTM	Long-term Management
LUC	Land Use Controls
Mass Zone II WPA	Massachusetts Zone II Wellhead Protection Area
MC	munitions constituents
MD	munitions debris
MDAS	material documented as safe
MEC HA	Munitions and Explosives of Concern Hazard Assessment
MEC	munitions and explosives of concern
mg/kg	milligrams per kilogram
µg/L	micrograms per liter
MMRP	Military Munitions Response Program
MRS	munitions response site
NCF	Nantucket Conservation Foundation

LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

NCP	National Oil and Hazardous Substances Pollution Contingency Plan
MassDEP	Massachusetts Department of Environmental Protection
PP	Proposed Plan
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
SARA	Superfund Amendments and Reauthorization Act
SI	Site Inspection
TBC	to be considered
TMV	toxicity, mobility, or volume
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	U. S. Code
UU/UE	unlimited use and unrestricted exposure
UXO	unexploded ordnance
WAA	Wide Area Assessment
WESTON®	Weston Solutions, Inc.
WOE	weight-of-evidence
WPA	Wellhead Protection Area

EXECUTIVE SUMMARY

This Decision Document (DD) addresses two Munitions Response Sites (MRS) (Aerial Rocket Range Target #1 MRS-Project Number D01MA045601 and Aerial Rocket Range Fan MRS-Project Number D01MA045601) at the Nantucket Beach, Former Nantucket Ordnance Site, a.k.a. Tom Nevers Rocket Projectile Target; Tom Nevers Area, Formerly Used Defense Site, Project Number D01MA045601, located on Nantucket Island, Massachusetts. This DD documents a decision of no action for the Aerial Rocket Range Fan MRS and presents the final remedy for the Aerial Rocket Range Target #1 MRS.

The Remedial Action Objective (RAO) for the Aerial Rocket Range Target #1 MRS is to reduce the probability of residents, Nantucket Conservation Foundation personnel, contractor or maintenance workers, visitors, and recreational users from moving, disturbing, or handling munitions encountered during residential, construction, maintenance, or recreational activities performed on the ground surface or that include ground disturbing or intrusive activities at the Aerial Rocket Range Target #1 MRS. To address the low potential risk of encountering military munitions that pose an explosive hazard at the MRS, six remedial alternatives were developed and compared against the nine criteria established by the Comprehensive Environmental Response, Compensation, and Liability Act and the National Oil and Hazardous Substance Pollution Contingency Plan. The remedial alternatives considered included No Action (Alternative 1); Land Use Controls (LUCs) and Long-term Management (LTM) (Alternative 2); Surface Clearance/Removal (25.7 acres) with LUCs and LTM (Alternative 3); Surface Clearance/Removal (25.7 acres) and Subsurface Clearance/Removal to 4 feet (ft) (3 acres) with LUCs and LTM (Alternative 4); Surface Clearance/Removal (25.7 acres) and Subsurface Clearance/Removal to 10 ft below ground surface (bgs) (3 acres) with LUCs and LTM (Alternative 5); and Surface Clearance/Removal and Subsurface Clearance/Removal to 10 ft bgs (88.8 acres) (Alternative 6). The remedy selected was Alternative 2 – LUCs and LTM.

The Selected Remedy will meet the RAO, with risk managed by LUCs that will include developing and distributing 3Rs (Recognize, Retreat, Report) explosives safety educational information materials (e.g., brochures, fact sheets) and other information packages to the public

and emergency management agencies, installation of signs, and implementation of an 3Rs Explosives Safety Educational Program.

The total present-worth cost estimated to perform LUCs and LTM as part of the selected remedy as well as Five-Year Reviews at the Aerial Rocket Range Target #1 MRS is $359,579 over a 30-year period.

Note: Definitions are provided for terms shown in ***italic, bold-font*** in the Glossary located at the end of the document.

December 2015

PART 1: DECLARATION

PROJECT NAME AND LOCATION

Site Name: Aerial Rocket Range Target #1 Munitions Response Site
Aerial Rocket Range Fan Munitions Response Site

Address: Nantucket Beach Formerly Used Defense Site, Nantucket, Massachusetts

FUDS Project Numbers: D01MA045601 and D01MA045602

STATEMENT OF BASIS AND PURPOSE

This ***Decision Document*** (DD) presents the Selected Remedy for two Munitions Response Sites (MRSs) (Aerial Rocket Range Target #1 MRS and Aerial Rocket Range Fan MRS) at the Former Nantucket Ordnance Site, a.k.a. Tom Nevers Rocket Projectile Target; Tom Nevers Area, Formerly Used Defense Site (FUDS), Project Numbers D01MA045601 and D01MA045602, located on Nantucket Island, Massachusetts, which was chosen in accordance with ***Comprehensive Environmental Response, Compensation, and Liability Act*** **(**CERCLA), as amended by Superfund Amendments and Reauthorization Act, and, to the extent practicable, the ***National Oil and Hazardous Substance Pollution Contingency Plan*** (NCP). This decision is based on the Administrative Record file for this site. This DD documents a decision of no action for the Aerial Rocket Range Fan MRS and presents the selected remedy for the Aerial Rocket Range Target #1 MRS.

The Former Nantucket Ordnance Site, a.k.a. Tom Nevers Rocket Projectile Target; Tom Nevers Area, FUDS, shall be referred to henceforth as the Nantucket Beach FUDS. The Nantucket Beach FUDS is located on the southeastern side of Nantucket Island in what is referred to as the Tom Nevers area of Nantucket County in Massachusetts.

This DD documents a decision of no action for the Aerial Rocket Range Fan MRS.

The Aerial Rocket Range Target #1 MRS is one of the FUDS included in the ***Defense Environmental Restoration Program*** (DERP) – ***Military Munitions Response Program***

(MMRP). The remedy presented in this DD was selected following an opportunity for public participation in accordance with the CERCLA (42 United States Code 960 et seq.) of 1980, and its amendments, and the NCP (40 Code of Federal Regulations 300). The Selected Remedy decision for the Aerial Rocket Range Target #1 MRS is based on the site investigation documents, which are available in the ***Administrative Record file*** for the FUDS project. The DD is being issued by the United States (U.S.) Army Corps of Engineers (USACE), the lead agency managing remediation of ***unexploded ordnance*** (UXO)***, discarded military munitions (DMM), and munitions constituents (MC)*** at the FUDS, in accordance with CERCLA as required by the DERP.

Neither the Aerial Rocket Range Target #1 MRS nor the Aerial Rocket Range Fan MRS are included on the National Priorities List promulgated under CERCLA and the NCP and maintained by the U.S. Environmental Protection Agency. The Army is the executive agent for the FUDS Program, and USACE is the Program's executing agent. The FUDS Program addresses the potential explosives safety, health, and environmental issues resulting from past munitions use at former defense sites under the Department of Defense (DoD) MMRP, established by the U.S. Congress under the DERP. The FUDS Program only applies to properties that transferred from DoD before 17 October 1986.

ASSESSMENT OF PROJECT SITE

The 2012 Nantucket Beach FUDS ***Remedial Investigation*** (RI) conducted in accordance with CERCLA did not encounter UXO or DMM that after evaluation were determined to pose an explosive hazard and as such be considered to be munitions and explosives of concern (MEC). However, a significant amount of ***munitions debris*** (MD) consisting of partial and intact practice rockets and miscellaneous components were recovered, evaluated, and determined not to pose an explosive hazard. This MD was removed during characterization within the vicinity of former Target #1 (WESTON, 2013). After evaluation per DoD procedures, the recovered MD was classified as ***material documented as safe*** (MDAS) prior to its removal from the MRS.

Following the RI, the MRS was further delineated into two MRSs as follows:

- Aerial Rocket Range Target #1 MRS — This MRS is approximately 97 acres and includes the delineated impact area around former Target #1 where MD, for which the explosives safety status was determined to be MDAS, was identified during the RI and military munitions have been encountered and responded to during explosives and munitions emergency responses historically at the FUDS. Munitions and explosives of concern was not encountered during the RI. Based on the extent of MD recovered, this MRS includes the 1.5-acre area formerly suspected to have been used as a burial pit; however, the RI did not find features indicative of a burial pit.

- Aerial Rocket Range Fan MRS — This MRS (recommended for no further action following the RI) includes the approximately 5,060 acres of remaining land and coastal water area following impact area delineation. This MRS includes the locations of where the suspected former Target #2 and Target #3 were located and the associated range fan area. The RI did not find evidence of military munitions in this MRS.

At the Aerial Rocket Range Target #1 MRS, the RI determined there was a low statistical potential for MEC to be present; therefore, a MEC source is possible. The amount of MD identified within the MRS and the high volume of receptors does indicate that munitions will continue to be encountered at this site in the future.

USACE has determined that the selected ***remedial action*** presented in the DD for remaining munitions at the Aerial Rocket Range Target #1 MRS is necessary to protect human health and the environment from the potential hazards associated with military munitions that may remain present based on the current and intended future use of the MRS.

DESCRIPTION OF THE SELECTED REMEDY

Aerial Rocket Range Target #1 MRS

The Selected Remedy for the Aerial Rocket Range Target #1 MRS is Alternative 2 – ***Land Use Controls*** (LUCs) **and Long-term Management** (LTM). Under the Selected Remedy, potential exposure hazards to the public will be managed through public awareness. Specific LUC

components of the Selected Remedy includes three forms of public informational materials for education:

- Development and annual distribution of 3Rs (Recognize, Retreat, Report) explosives safety educational materials (e.g., brochures, fact sheets,) and other information packages to provide awareness to property owners [e.g., residents, the Nantucket Conservation Foundation (NCF)], local responders, and Town officials of the potential presence of military munitions and the actions to take should they encounter or suspect they have encountered a military munition. Information is to be distributed annually for the first 5 years prior to the 5-year review period. After the first 5 years, USACE will make a determination on the frequency of future LUCs. The proposed determination will be provided to Massachusetts Department of Environmental Protection for review and comment.

- Installation and maintenance of signage at strategic access points in the MRS to alert users of the site's history and potential to encounter military munitions. Signage is provided for the general public accessing the MRS for recreational or other purposes. Implementation of a targeted 3Rs Explosives Safety Education Program that is focused on the property owners (e.g., residents, the NCF), local responders, and Town officials. This would provide 3Rs explosives safety education material (e.g., videos, brochures, and fact sheets), training, and other information to provide awareness and to advise people of actions to take should a munition be encountered.

- Further details on LUCS and Soil Management Guidance will be provided in the Land Use Control Implementation Plan.

Aerial Rocket Range Fan MRS

There is no action required for the Aerial Rocket Range Fan MRS.

STATUTORY DETERMINATION

The Selected Remedy attains the mandates of CERCLA §121, and, to the extent practicable, the NCP. Specifically, the Selected Remedy for the Aerial Rocket Range Target #1 MRS is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective, and uses permanent solutions and alternative treatment technologies to the maximum extent practicable.

The Selected Remedy does not satisfy the statutory preference for treatment as a principal element of the remedy. The Selected Remedy is based on the fact that, although military munitions are known to be present, none recovered to date have, after evaluation, been

determined to pose an explosive hazard. Additionally, based on historical use of the site, there is no evidence to indicate military munitions that would pose an explosive hazard to those with access to the site are present. Therefore, the higher costs associated with recovery and destruction of types of munitions potentially present is not warranted, given the Selected Remedy is protective of human health and the environment. The Selected Remedy provides the best balance of trade-offs in terms of balancing criteria while also considering state and community acceptance.

Because the remedy may result in hazardous substances, pollutants or contaminants remaining at the Aerial Rocket Range Target #1 MRS above levels that allow for unlimited use and unrestricted exposure (UU/UE), a Five-Year Review is required to be conducted by NCP §300.430(f)(4)(ii). A Five-Year Review will be conducted within 5 years after initiation of the remedial action to ensure that the remedy is, or will be, protective of human health and the environment. Five-Year Reviews will continue to be conducted every 5 years until UU/UE is achieved or determined no longer required.

The Selected Remedy of LUCs and LTM for the Aerial Rocket Range Target #1 MRS is consistent with the recommendations of the ***Feasibility Study***.

There is no further remedial action necessary to ensure protection of human health and the environment at the Aerial Rocket Range Fan MRS.

DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of the DD. Additional information can be found in the project ***information repository*** and Administrative Record file for the Nantucket Beach FUDS project.

- **Nature and extent of MEC present**: Subsection 5.3 – Nature and Extent of MEC.
- **Hazard represented by MEC**: Section 7 – Summary of Site Risks.
- **Remediation objectives**: Section 8 – Remedial Action Objectives.
- **How MEC will be addressed**: Section 12 – Selected Remedy.

- **Current and reasonably anticipated future land use assumptions used in the hazard assessment and DD**: Section 6 – Current and Potential Future Land Use.
- **Potential land use that will be available at the site as a result of the Selected Remedy**: Subsection 12.4 – Expected Outcome of Selected Remedy.
- **Total present worth costs, and the number of years over which the remedy cost estimates are projected**: Section 9 – Description of Alternatives.
- **Key factors that led to selecting the remedy** (i.e., describe how the Selected Remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision): Section 10 – Comparative Analysis of Alternatives, Section 12 – Selected Remedy, and Section 13 – Statutory Determinations.

AUTHORIZING SIGNATURE

This DD presents the selected remedy for the Aerial Rocket Range Target #1 MRS and documents a no action decision for the Aerial Rocket Range Fan MRS at the Nantucket Beach FUDS in Nantucket, Massachusetts. USACE is the lead agency under the DERP at the Nantucket Beach FUDS, and has developed this DD consistent with the CERCLA, as amended, and the NCP. This decision document will be incorporated into the larger Administrative Record file for Nantucket Beach, which is available for public view at Nantucket Atheneum, 1 India Street, Nantucket, Massachusetts, 02554. This DD, which presents a selected remedy with a present worth cost estimate of $359,579, is approved by the undersigned, pursuant to Memorandum, DAIM-ZA, September 9, 2003, subject: Policies for Staffing and Approving Decision Documents (DDs), and to Engineer Regulation 200-3-1, Formerly Used Defense Sites (FUDS) Program Policy.

APPROVED:

Date: 16JAN 16

Christopher J. Barron
Colonel, Corps of Engineers
District Engineer

Note: Definitions are provided for terms shown in ***italic, bold-font*** in the Glossary located at the end of the document.

December 2015

PART 2: DECISION SUMMARY

1. PROJECT NAME, LOCATION, AND DESCRIPTION

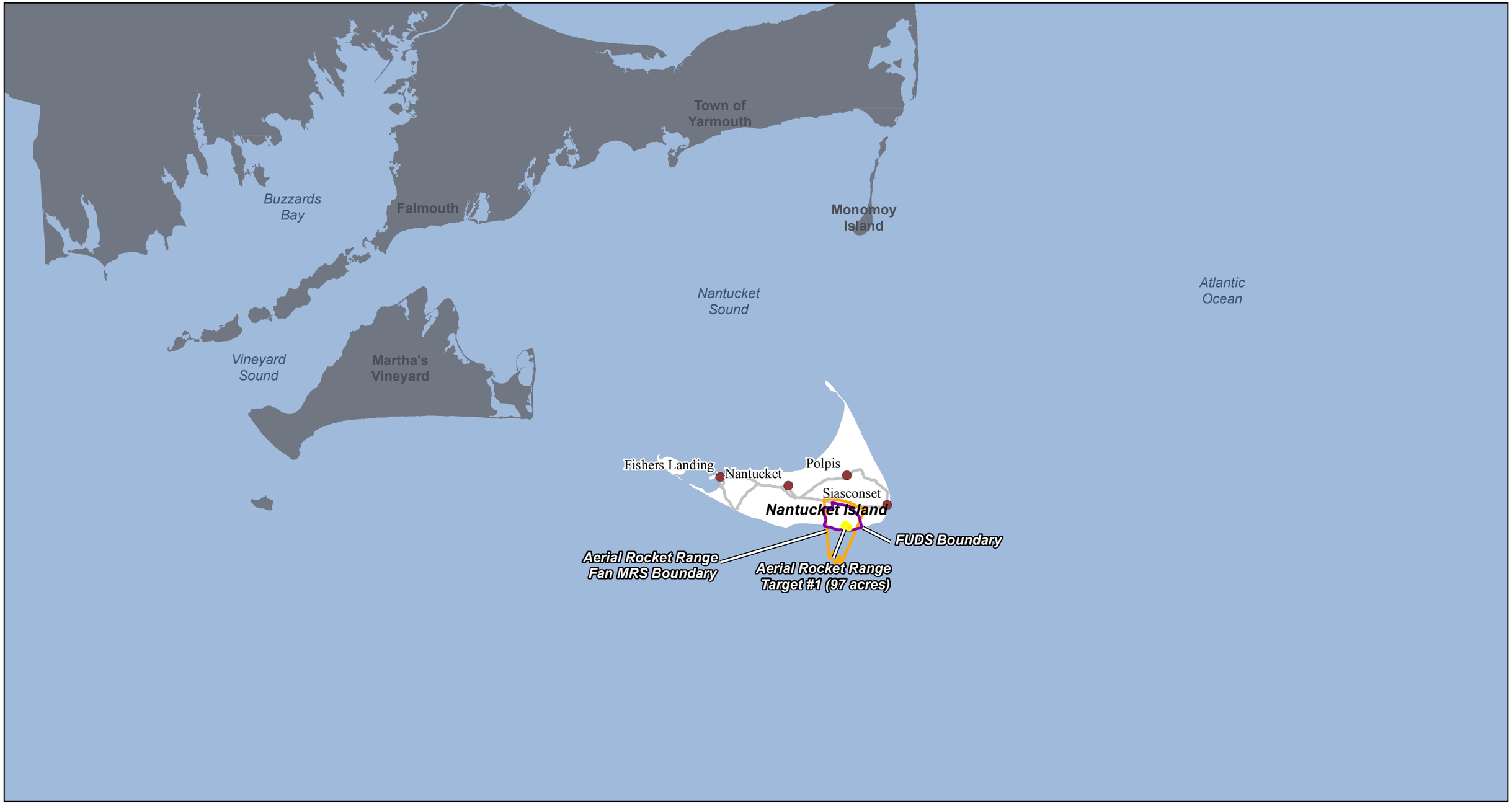
1.1 PROJECT NAME AND LOCATION

This ***Decision Document*** (DD) addresses two ***munitions response sites*** (MRS) at the Nantucket Beach FUDS that is located on Nantucket Island, Massachusetts (see **Figure 1-1**). This MRS is also known as Tom Nevers Rocket Projectile Target; Tom Nevers Area, Formerly Used Defense Site (FUDS), Project Number D01MA045601. Prior to the ***Remedial Investigation*** (*RI*) conducted between 2012 and 2013, this FUDS was realigned at the program-level by United States (U.S.) Army Corps of Engineers (USACE) as the 5,157-acre Nantucket Beach Burial Pit & Rocket Range (under Identification Number: 01MA045601R01). The site included the former Nantucket Beach FUDS property (2,896 acres) where three potential former targets were used for aerial rocket training, a location for a burial pit, and the range fans depicted for all three targets including area extending into the Atlantic Ocean.

Following the 2012 RI, a boundary for the Aerial Rocket Range Target #1 MRS was delineated to over 97 acres where military munitions have been historically encountered ***and munitions debris*** (MD) was recovered, evaluated, and determined to not pose an explosive hazard. This delineation separated to this MRS from the remaining 5,059.9 acres (see **Figure 1-2)**.

The Aerial Rocket Range Target #1 MRS (see **Figure 1-3**) was recommended for a ***Feasibility Study*** (FS) and continued tracking under the FUDS Identification Number of D01MA045601R01.

The remaining 5,059.9 acres was identified as the Aerial Rocket Range Fan MRS and recommended for no action following the RI based on the fact that neither military munitions nor MD was encountered. [Weston Solutions Inc., (WESTON®), 2013].



Aerial Rocket Range Target #1

Aerial Rocket Range Fan MRS Boundary

FUDS Boundary

Coordinate System: UTM, Z19N, NAD83, US Foot

US Army Corps of Engineers

Nantucket Beach Formerly Used Defense Site

WESTON SOLUTIONS

FIGURE 1-1
FUDS and MRS Regional Location
Nantucket, MA

N

0 4.5 9 18 Kilometers

0 2.5 5 10 15 Miles

NOTES:
Base Data: USACE (2004)

2/3/2014	NT_Site_Location
Drawn: johna	PROJ: 03886.551.004

File: Y:\Nantucket\mxd\FS_Report\NT_Site_Location.mxd, 2/3/2014 11:22:28 AM, johna

Nantucket Memorial Airport

Siasconset

T-3

T-2

T-1

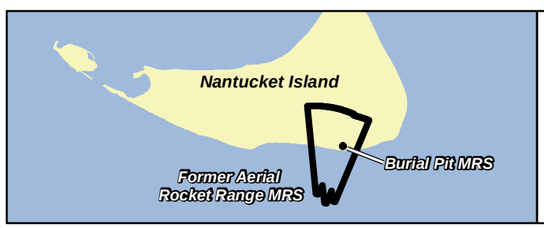
Potential Burial Pit

Aerial Rocket Range Target #1 MRS (97 acres)

Aerial Rocket Range Fan MRS (5,059.9 acres)

Atlantic Ocean

Atlantic Ocean



T-X T(Former Target Location)-X(Target No.)

Potential Burial Pit

Aerial Rocket Range Fan MRS Boundary

Aerial Rocket Range Target #1 MRS Boundary

FUDS Boundary

Coordinate System: UTM, Z19N, NAD83, US Foot

US Army Corps of Engineers

Nantucket Beach Formerly Used Defense Site

N

0 1,900 3,800 5,700 Feet

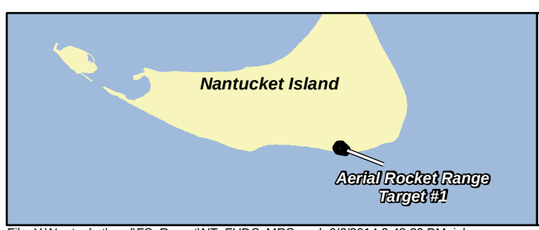
0 720 1,440 2,160 Meters

NOTES:
Aerial Data Source: ESRI iCubed Imagery Prime World 2D (2004)
Base Data: USACE (2004)

FIGURE 1-2
FUDS and MRS Boundaries
Nantucket, MA

6/11/2014 | NT_FUDS_MRS_2V

Drawn: johna | PROJ: 03886.551.004



T-1 Former Target

Aerial Rocket Range Target #1 MRS Boundary

FUDS Boundary

Coordinate System:
UTM, Z19N, NAD83, US Foot

US Army Corps of Engineers

Nantucket Beach Formerly Used Defense Site

N

0 380 760 1,140 Feet

0 140 280 420 Meters

NOTES:
Aerial Data Source: ESRI, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP and swisstopo.
Base Data: USACE (2004)

FIGURE 1-3
Aerial Rocket Range Target 1 MRS [D01MA045601] Boundary
Nantucket, MA

6/6/2014	NT_FUDS_MRS_2V
Drawn: johna	PROJ: 03886.551.004

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1.2 PROJECT DESCRIPTION

Based on the available data collected through historical document reviews and on-site investigations conducted to date, there was no MEC, specifically ***unexploded ordnance*** (UXO) or ***discarded military munitions*** (DMM), encountered within the Aerial Rocket Range Target #1.

However, a significant amount of MD consisting of partial and intact practice rockets and miscellaneous components that after evaluation was determined not to pose an explosive hazard was removed during RI in the vicinity of former Target #1 (WESTON, 2013). There were no complete exposure pathways for UXO or DMM, because none of the MD recovered was determined after evaluation to pose an explosive hazard. There was no unacceptable risk posed by munitions constituents (MC) for human health and ecological receptors. Prior to its removal from the MRS, the MD recovered during the RI was evaluated, determined not to pose an explosive hazard, and subsequently classified as ***material documented as safe*** (MDAS). If UXO or DMM had been encountered, the exposure pathway to human receptors would be considered complete.

Funding for the implementation of the Selected Remedy for the Aerial Rocket Range Target #1 MRS will be provided by the Environmental Restoration-FUDS account, a source of funding approved by the U.S. Congress to clean up contaminated sites and sites known to contain military munitions on Department of Defense (DoD) installations under the ***Defense Environmental Restoration Program*** (DERP). The Army is the lead agency for the FUDS Program, and USACE executes the FUDS Program on behalf of the Army, including drafting and implementing DDs. Specifically, USACE's New England District is the lead agency for investigating, reporting, and implementing **remedial actions** regarding UXO, DMM, or MC at the Aerial Rocket Range Target #1 MRS and the Aerial Rocket Range Fan MRS with technical support provided by USACE's Baltimore District. The Massachusetts Department of Environmental Protection (MassDEP) is the support agency and lead regulator for the Nantucket Beach FUDS. USACE is issuing the DD in coordination with MassDEP.

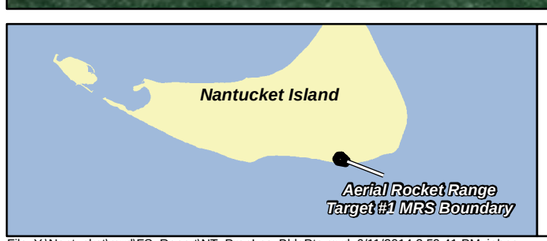
The FUDS Program only applies to properties that transferred from DoD before 17 October 1986. The FUDS Program addresses UXO, DMM, and MC located on former defense sites

under the ***Military Munitions Response Program*** (MMRP), established by the U.S. Congress under DERP. USACE must comply with the DERP statute [10 United States Code (U.S.C.) § 2701 et seq.], the ***Comprehensive Environmental Response, Compensation, and Liability Act*** (CERCLA) (42 U.S.C. § 9601 et seq.) of 1980, as amended by the ***Superfund Amendment and Reauthorization Act*** (SARA), Executive Orders 12580 and 13016, the ***National Oil and Hazardous Substances Pollution Contingency Plan*** (NCP) (40 Code of Federal Regulations [CFR] 300), and all applicable DoD (e.g., EP 1110-1-18, ER 200-3-1, DoD *Management Guidance for the DERP* [9 March 2012]) and Army policies in managing and executing the FUDS Program (USACE, 2004). The ultimate objective under the FUDS program is to protect human health, welfare, and the environment from hazards associated with both MEC and MC.

The Nantucket Beach FUDS is largely undeveloped with current residential and recreational land use. Potential receptors include the general public and contractors performing maintenance activities within the MRS boundary. There is no anticipated future change in the type of land use. The 97-acre Aerial Rocket Range Target #1 MRS boundary where MD has been confirmed to be present includes portions of parcels owned by private residents and the Nantucket Conservation Foundation (NCF) (see **Figure 1-4**).

Residential activities including construction or property maintenance may include surface and ground disturbing or other intrusive activities. On non-residential portions of the MRS, recreational use of the beach and along established paths in the uplands portion of the MRS is allowed. Recreational activities typically involve foot and vehicle traffic, with limited intrusive activities (e.g., children digging in the sand).

The land within the MRS boundary consists of maintained landscaping, upland scrub vegetation, beach grass dunes, and bluffs. It also includes the beach below the bluffs where MD has been encountered due to extensive and on-going coastal erosion that periodically causes subsurface MD to surface and fall onto the beach. Based on the property line for the FUDS recorded on a survey map from 1943 (USACE, 1997), the beach has eroded approximately 800 feet (ft) between the time of active use and present day.



Building
T-1 Former Target
FUDS Boundary
Aerial Rocket Range Target #1 MRS Boundary
Nantucket Conservation Foundation
Nantucket Island Land Bank
Nantucket Housing Authority
Private Residence
Town of Nantucket

Coordinate System: UTM, Z19N, NAD83, US Foot

US Army Corps of Engineers

Nantucket Beach Formerly Used Defense Site

N

0 380 760 1,140 Feet

0 140 280 420 Meters

NOTES:
Aerial Data Source: ESRI, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP and swisstopo.
Base Data: USACE (2004)
County of Nantucket (2011)

FIGURE 1-4
Property Lines and Buildings
Nantucket, MA

6/11/2014	NT_PropLns_BldgPts
Drawn: johna	PROJ: 03886.551.004

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2. SITE HISTORY AND ENFORCEMENT ACTIVITIES

2.1 SITE HISTORY

The Nantucket Beach FUDS was leased by the U.S. Government between September 1943 and 30 June 1946, and was used as a practice aerial rocket range. Training ceased on 1 September 1945. This was one of the three ranges on Nantucket used by the Navy pilots out of the Quonset Naval Air Station for training purposes. The Aerial Rocket Range and a potential 1.5-acre burial pit area located within the range were first identified via the Archives Search Report (ASR) prepared by USACE in September 1997. Since that time, multiple investigations to identify historical uses and potential residual impacts have been conducted including research of records, anecdotal information collection, the ***Site Inspection*** (SI) conducted in 2010, and the RI conducted in 2012 (WESTON, 2013).

The Nantucket Beach FUDS property consists of 2,896 acres located on the southeastern side of Nantucket Island in what is referred to as the Tom Nevers area in Nantucket, Nantucket County, Massachusetts. The island of Nantucket is approximately 48 square miles and runs 14 miles east to west and 3.5 miles north to south. It can be accessed via ferry or airplane and is approximately 45 miles from Hyannis, Massachusetts and 30 miles from Falmouth, Massachusetts. During historical training exercises, pilots fired air-to-ground rockets at three potential targets (impact areas) (designated as Target #1, Target #2, and Target #3). These targets were identified during archival research and through imagery. Historical records regarding range structures and their intended purposes (e.g., main firing target, markers, glide indicators), potential improvements, and total number of targets and structures used during training exercises are unclear.

The USACE site visit team located remnants of structures at potential Target #1 and Target #3 in 1996 based on the ASR. The team did not locate Target #2 during the ASR site visit because it was underwater due to the significant coastal erosion that has occurred since active use of the range. Historical photographs of the area indicate that Target #2 was evident on land through 1970 but had eroded into the ocean by the time the next available photograph was reviewed from 1978 (USACE, 1997).

2.2 SITE INSPECTION

Historical records review and field investigations were performed as part of the SI phase of activities. Military munitions including MD in the vicinity of Target #1 that was discovered by the public has been historically reported to local law enforcement and subsequently addressed by emergency officials and Explosive Ordnance Disposal (EOD). This was consistent with the 3Rs (Recognize, Retreat, and Report) explosives safety educational program implemented by USACE. The SI references two EOD incident reports that occurred in April 2010 (EOD, 2010a; and EOD, 2010b) after the field work was completed for that investigation. The EOD incident reports from April 2010 state that high explosive (HE) rockets were recovered and destroyed by EOD. USACE subsequently reviewed these reports.

Field activities during the SI included a qualitative reconnaissance using a Schonstedt magnetometer, but no intrusive investigations were performed. A borehole gradiometer was used for underwater anomaly detection applications. Although no MEC was identified, 532 subsurface anomalies were detected. Additionally, MD was observed in the vicinity of Target #1. The MD recovered and evaluated included one empty, 3.5-inch rocket warhead, three 3.5-inch rocket heads, and one empty 2.25-inch practice rocket. One cylindrical item (tapered on one end) approximately 2.25 inches in diameter and 35 inches long was also found in addition to four partially-exposed ferrous items that could not be positively identified (Human Factors Applications, Inc. [HFA], 2011).

As part of the MC sampling conducted during the SI, explosives and metals were detected within soil, but not at hazardous levels. Five metal analytes (aluminum, barium, iron, magnesium, and zinc) and nitroglycerin were detected in soil. Only iron was detected in excess of its residential screening level [5,500 milligrams per kilogram (mg/kg)] at a concentration of 6,700 mg/kg. Zinc was detected at a concentration of 50 mg/kg in one sample, above its interim ecological screening level (46 mg/kg); however, no human health screening levels were exceeded. Nitroglycerin was detected at a concentration of 8.9 mg/kg in one sample, which exceeds all screening levels currently adopted, including its residential screening level of 0.61 mg/kg. Although the screening level evaluation identified iron and nitroglycerin as chemical of potential concern (COPC) in subsurface soil, and zinc was determined to be a COPC for surface soil, a

weight-of-evidence (WOE) evaluation did not identify any unacceptable risks for these munitions constituents (HFA, 2011).

No explosives were detected in groundwater samples collected from residential drinking water wells within the MRS during the SI. Perchlorate was detected at an estimated concentration of 0.02 micrograms per liter (µg/L) (below laboratory quantitation limits), which is two orders of magnitude below the human health screening level (HFA, 2011).

All explosive compounds in sediment samples collected from the MRS were detected at estimated concentrations below project screening levels. Additionally, all metal analytes were detected in sediment at concentrations less than human health and ecological screening levels (HFA, 2011).

Similarly, all explosive compounds and metal analytes were detected in surface water collected during the SI; but almost all of the detections were estimated by the laboratory because they were below the quantitation levels employed. The estimated concentrations of aluminum in all three surface water samples (results between 200 and 260 µg/L) exceeded the interim ecological screening level of 87 µg/L, but not the human health level (37,000 µg/L). Only magnesium was detected at non-estimated concentrations between 1,500 and 4,300 µg/L; however, these concentrations are less than its human health and ecological screenings levels. Although zinc was determined to be a chemical of potential ecological concern for surface water, a WOE evaluation did not identify any unacceptable risks were present (HFA, 2011).

Although MD was observed near Target #1, the nature and extent of munitions were not fully understood following the SI. Given the use of this area as a target and the potential for UXO or DMM to be present in the subsurface, MC would be expected to be found on the ground surface or subsurface soils. Unexploded ordnance or DMM that are underwater or past training may also be a source of MC at Target #2 and along the shoreline spanning the MRS. Potentially complete pathways for UXO, DMM, and MC were identified in the preliminary Conceptual Site Models developed as part of the SI Report. The SI recommended proceeding to RI/FS with a focus on MEC (i.e., UXO, DMM) (HFA, 2011).

Based on the results of the SI, the Aerial Rocket Range was conservatively realigned to include 5,157 acres of land and coastal water. This acreage encompasses the three potentially-used targets and the 1.5- acre potential burial pit area.

2.3 REMEDIAL INVESTIGATION/FEASIBILITY STUDY

An RI/FS, conducted in accordance with the NCP (40 CFR 300.430(d) (e)), was completed in November 2013 to characterize the MRS and bound (determine the nature and extent of) areas where UXO or DMM may be present and determine the nature and extent of MC. The sources of data evaluated as part of the RI to characterize contamination and bound areas where UXO or DMM may be present at the Aerial Rocket Range Target #1 MRS included historical information and archival searches, results of the RI field effort, site layouts based on historical maps and photos, and the visual inspection of terrain and structures. The data collected during the field investigation and the conclusions drawn in the RI regarding hazards and risks to human health and the environment were used to develop the FS, finalized in October 2014 (WESTON, 2014a).

Field activities were conducted between 01 March and 31 August 2012, at the MRS to achieve the project Data Quality Objectives established in the *Final Work Plan* (WESTON, 2012), and to determine if further action is required under the CERCLA process. The RI did not identify complete exposure pathways for UXO or DMM since no UXO or DMM were encountered. Additionally, there was no risk associated with MC from MD for potential receptors identified during the human health or ecological risk assessments.

The RI determined that UXO and DMM were not present at the MRS, only MD was found within the Aerial Rocket Range Target #1 MRS. This determination serves as the basis for future remedial decision making at the MRS. The results of the RI are fully reported in the *Final Remedial Investigation Report, Nantucket Beach, Former Nantucket Ordnance Site A.K.A. Tom Nevers Rocket Projectile Target; Tom Nevers Area, Formerly Used Defense Site, Nantucket, MA* (WESTON, 2013).

Primary components of the FS that were important in determining a Selected Remedy for the Aerial Rocket Range Target #1 MRS included development of a ***remedial action objective*** (RAO) to protect human health and the environment, followed by the development and

evaluation of remedial alternatives to address residual military munitions (i.e., UXO, DMM) at the MRS. Six remedial alternatives were developed for the MRS, including:

- Alternative 1 – No Action.
- Alternative 2 – Land Use Controls (LUCs) and Long-term Management (LTM).
- Alternative 3 – Surface clearance/removal to address the beach and NCF trails for recreational use and portions of residential properties where ground surface is accessible (approximately 25.7 acres) with LUCs.
- Alternative 4 – Surface clearance/removal per Alternative 3 with additional subsurface clearance/removal to 4 ft below ground surface (bgs) over 3 acres of residential properties in accessible areas to support future construction/maintenance activities with LUCs.
- Alternative 5 – Surface clearance/removal and subsurface clearance/removal per Alternative 4 with additional subsurface clearance/removal (up to 10 ft bgs) of all munitions over 3 acres of residential properties in accessible areas to support future construction or maintenance activities with LUCs.
- Alternative 6 – Surface and subsurface clearance/removal (up to 10 ft bgs) within the boundary of the MRS (approximately 88.8 acres).

These alternatives provided a range of options for comparison in their ability to meet the nine criteria prescribed by the NCP (40 CFR 300.430(e)(9)(iii)(A)-(I)) that are considered for remedy selection.

The results of the FS were presented in the *Final Feasibility Study, Nantucket Beach, Former Nantucket Ordnance Site A.K.A. Tom Nevers Rocket Projectile Target; Tom Nevers Area, Formerly Used Defense Site, Nantucket, Massachusetts* (WESTON, 2014a), and summarized in the *Proposed Plan, Nantucket Beach, Former Nantucket Ordnance Site A.K.A. Tom Nevers Rocket Projectile Target; Tom Nevers Area, Formerly Used Defense Site, Nantucket, Massachusetts* (WESTON, 2014b). As required by the NCP (40 CFR 300.800(a)), both technical documents are available as part of the ***Administrative Record file***.

3. COMMUNITY PARTICIPATION

Pursuant to CERCLA Section 113(k)(2)(B) and Section 117 and Section 300.430(f)(2) and (3) of the NCP, the ***Proposed Plan*** (PP) for the Aerial Rocket Range Target #1 MRS was released for public comment on 3 October 2014. The PP and the RI/FS reports are available to the public in the project ***information repository*** (IR), located near the MRS at the Nantucket Atheneum Library. The project IR provides copies of documentation included in the Administrative Record file for the Aerial Rocket Range Target #1 MRS. The official Administrative Record file for the MRS is located at the USACE New England District (696 Virginia Road, Concord, Massachusetts 01742) and is maintained by the Army.

A public meeting was held on 9 October 2014, to present the preferred alternative to the public. In addition, a public comment period was held from 3 October 2014 to 4 December 2014. The original public comment period was extended from 4 November 2014 to 4 December 2014, per public request noted during the public meeting in order to provide Nantucket residents, specifically seasonal residents currently off-island, more time to evaluate the PP. Comments were received by USACE during this time. Comments were addressed directly by USACE at the public meeting and through the Responsiveness Summary. The comments generally support the implementation of the Selected Remedy presented in this DD. The Responsiveness Summary for community participation is provided as Part 3 of this DD.

The notification for the PP public comment period and the public meeting was published in the "Inquirer and Mirror," Nantucket, Massachusetts on 2 October 2014, and repeated on 9 October 2014. Similarly, the extended public comment period was published on 23 October 2014, with wider distribution including in the "Cape Cod Times," "Cape Codder," "Sandwich Enterprise," "Cape Cod Chronicle," and "MV Times." Copies of these announcements are provided in Appendix A to this DD and in the Administrative Record file.

4. SCOPE AND ROLE OF RESPONSE ACTION

The Aerial Rocket Range Target #1 MRS DD addresses the remedial alternative selected by USACE to manage the risks that have been identified specifically at the Aerial Rocket Range Target #1 MRS. Based on the information and data collected for this MRS, USACE anticipates that this Selected Remedy will be the final ***remedial action*** needed at the Aerial Rocket Range Target #1 MRS. The role of this remedial action will be to manage the potential hazards identified to date by preventing or minimizing human interaction with military munitions (i.e., UXO or DMM) that may remain present at the MRS through implementation of a robust 3Rs Explosives Safety Educational Program. This is necessary because the public is not qualified to differentiate practice munitions, which are known to be present within the MRS, from military munitions that may contain HE or other energetic fills.

During the 2012 RI, no UXO, DMM, or MD were encountered within the Aerial Rocket Range Fan MRS. Additionally, the baseline risk assessment concluded that there were no explosive or environmental hazards present within this MRS. As a result, no action was recommended for the Aerial Rocket Range Fan MRS (WESTON, 2013). UXO, DMM, and MD were not encountered within the MRS and environmental contamination, including MC, was determined not to pose a risk to human health or the environment, As a result, a CERCLA action is not required for this MRS.

5. PROJECT SITE CHARACTERISTICS

The following information documents the site characteristics of the Aerial Rocket Range Target #1 MRS. Detailed information about the MRS characteristics, the site conceptual model, and the nature and extent of contamination and the bounds of military munitions present is presented in the *Final Remedial Investigation Report, Nantucket Beach, Former Nantucket Ordnance Site A.K.A. Tom Nevers Rocket Projectile Target; Tom Nevers Area, Formerly Used Defense Site, Nantucket, MA* (WESTON, 2013).

5.1 ENVIRONMENTAL SETTING

5.1.1 Current Topography

The MRS is located on the southern coast of Nantucket Island in Nantucket County, Massachusetts. The elevation of the MRS ranges from approximately 35 ft above mean sea level in the north and slopes toward sea level at the beach. A steep bluff (ranging from 5 ft to 20 ft tall) exists between the beach and the vegetated land boundary. There are several wetland areas present near the ocean within the MRS. The topography of the land can be described as gently rolling moorlands with low-lying vegetation (scrub oak) and sandplain grasslands, dunes, and beach.

5.1.2 Soil Conditions

Soil at the site is comprised of glacial outwash gravelly sands. A U.S. Department of Agriculture soil survey conducted in 1979 mapped soil within the borders of the MRS as either part of the Evesboro or River-head Katama Association. Both soil units are described as being nearly level, well, to excessively-drained outwash deposits (U.S. Department of Agriculture, 1979). Previous site reports indicate that the surface soil is brown and yellowish brown sand extending to 26 inches bgs. The subsoil layer extends to a depth of 60 inches bgs and is light yellowish brown sand (USACE, 1997).

Observations of soil characteristics made during intrusive investigations conducted to support the RI in both MRSs were consistent with these descriptions. A thin layer of dark brown topsoil (silty sand with organics) was observed overlying brown or orangish brown, well-graded sands and gravel of fine to coarse grain size to approximately 4 ft bgs. Clearly defined, well-graded, stratified drift material (yellowish brown medium to coarse gravelly sands with fine black sand)

was encountered in bedded layers at depths averaging 4 ft bgs in all excavations. Pockets/bedded layers of highly oxidized medium-grain sized orangish brown sand were observed throughout the study area. No silty sands or clays were observed at depths below the topsoil layer. (WESTON, 2013)

5.1.3 Geology

Nantucket Island, along with other nearby islands and the coastal region of Massachusetts subsumed as Cape Cod, were formed between 23,000 to 18,000 years ago as the last continental ice sheet to cover New England, known as the Laurentide, made its advance and retreat over the region and the rise in sea level that followed. Nantucket Island was formed at the edge of one of the ice sheet's lobes at a point of maximum advancement over the region, as indicated by gravel deposits on the continental shelf and by the outwash plains and moraines observed on the islands of Cape Cod (U.S. Geological Survey, 2001).

5.1.4 Hydrology

5.1.4.1 Surface Water

There are several wetland areas within the Aerial Rocket Range Target #1 MRS that drain into the Atlantic Ocean. The excessively drained soils that comprise the majority of Nantucket Island in general and the MRS in particular result in very few wetlands. According to National Wetlands Inventory maps, wetlands in the vicinity of the MRS are limited to the area near the shoreline, comprising a few relatively small palustrine or estuarine areas, and a narrow band of generally unvegetated marine wetlands along the shoreline. The extent of wetlands within the Aerial Rocket Range Target #1 MRS comprises 8% of the total area of MRS (U.S. Fish and Wildlife Service, 2010). A Massachusetts designated river and stream crosses through the MRS but was not observed with flowing water except within demarcated wetland regions.

5.1.4.2 Groundwater

There is public water service on the island provided by Wannacomet Water Company, however, the residences closest to the former targets within the MRS use private groundwater wells. The current Numerical Ranking System map for the Aerial Rocket Range Target #1 MRSs depicts the entire former property within a designated U.S. Environmental Protection Agency (EPA) sole source aquifer as shown on **Figure 5-1** (MassGIS, 2012a). According to the MassGIS website,

the MRS is not located within the Wannacomet Massachusetts Zone II Wellhead Protection Area (WPA), which is delineated to the northwest of the MRS, or the Siasconset Massachusetts Zone II WPA located northeast of the MRS. There are no interim WPAs within 2 miles of the MRS boundaries. The closest public supply wells are located 4 miles to the northwest and 2.65 miles to the northeast of the Aerial Rocket Range Target #1 MRS boundaries (MassGIS, 2012b).

5.1.5 Sensitive Environments

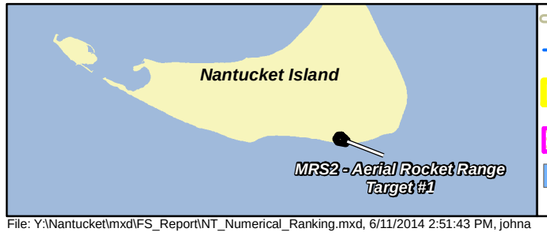
5.1.5.1 Ecological Resources

There are several sensitive environments present within the Aerial Rocket Range Target #1 MRS. It is located within the Massachusetts Coastal Zone and includes two types of wetlands, including estuarine and marine wetlands and freshwater forested/shrub wetlands. There is Priority Habitat and Estimated Habitat identified in and adjacent to the MRS. Federally-listed threatened and endangered species, state-listed endangered species, state-listed threatened species, and state-listed special species of concern may be present (HFA, 2011). Specific species of concern that required monitoring, protection, and impact mitigation during the RI include nesting shorebirds (Piping Plovers-Federal Threatened, Roseate Terns-Federal Endangered, and Least Terns-State Special Concern), nesting Northern Harriers-State Threatened, and the American Burying Beetle-Federal Endangered. A list of all sensitive species of concern applicable to this MRS is available for review in the *Final Feasibility Study, Nantucket Beach, Former Nantucket Ordnance Site A.K.A. Tom Nevers Rocket Projectile Target; Tom Nevers Area, Formerly Used Defense Site, Nantucket, Massachusetts* (WESTON, 2014a).

5.2 CULTURAL RESOURCES

Nantucket Island is listed on the National Register of Historic Places and is also designated a National Historic Landmark. The Massachusetts Historical Commission indicates that the entire Island of Nantucket is listed as a historic district in the National Register of Historic Places and is designated as a National Historic Landmark. The Island of Nantucket is archaeologically sensitive and likely contains areas of cultural significance to the Wampanoag Tribe.

Milestone Rd
Milestone Rd
Milestone Rd
Milestone Rd
Milestone Rd
Milestone Rd
Milestone Rd
Milestone Rd
Milestone Rd
Siasconset
Nantucket Memorial Airport



Road
Surface Water Bodies
Aerial Rocket Range Target #1 MRS Boundary
Approved Wellhead Protection Area (Zone II)
Freshwater Pond
NHESP Estimated Habitat of Rare Wildlife
Potentially Productive High Yield Aquifer
FUDS Boundary

Coordinate System: UTM, Z19N, NAD83, US Foot

US Army Corps of Engineers

Nantucket Beach Formerly Used Defense Site

WESTON SOLUTIONS

FIGURE 5-1
Numerical Ranking System Map

N

0 1,200 2,400 3,600 Feet

0 460 920 1,380 Meters

NOTES:
Aerial Data Source: ESRI, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP and swisstopo.
Base Data: USACE (2004); U.S Fish and Wild Services, NWI

6/11/2014	NT_Numerical_Ranking
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No cultural or archaeologically significant findings have been reported to date from inspections and the RI conducted within the MRS boundary.

5.3 NATURE AND EXTENT OF MILITARY MUNITIONS (UXO OR DMM) PRESENT

During the RI, a Wide Area Assessment (WAA) survey using an airborne vertical magnetic gradient system was performed over an area of 2,480 acres. This acreage encompassed land and near shore portions of the Aerial Rocket Range, including the potential burial pit area. The WAA survey located areas exhibiting elevated anomaly densities that are indicative of potential MEC impact areas. Ten areas were identified as anomaly clusters based on the WAA survey analysis. One anomaly cluster (AC-01) where munitions have previously been discovered was identified. This area is in close proximity to former Target #1.

A total of 24.59 acres were surveyed using ground-based geophysical surveys and underwater magnetometers. During these surveys, 1,304 anomalies were intrusively investigated. There were no UXO recovered as a result of these intrusive investigations; however, 938 MD items (18,140 pounds in volume) were recovered from the ground surface and subsurface to a depth of 8 ft bgs. After evaluation, this MD was determined not to pose an explosive hazard. There was no evidence of military munitions or hazardous and toxic waste observed within the potential burial pit area.

Information and data collected during the RI indicated that of the three potential targets only Target #1 was actively used. Based on the WAA survey results, digital geophysical mapping (DGM) surveys, intrusive investigations, the distribution of MD, and previous studies performed at the MRS, Target #1's footprint area was delineated to encompass 97 acres. Within this 97-acre footprint, military munitions were estimated to be present at densities equal to or greater than 0.1 item per acre. There were no UXO, DMM, nor MD encountered beyond the delineated footprint's boundary (WESTON, 2013).

The MD recovered was evaluated and classified as MDAS. This material was removed from the site for recycling. The 938 individual MD items recovered included:

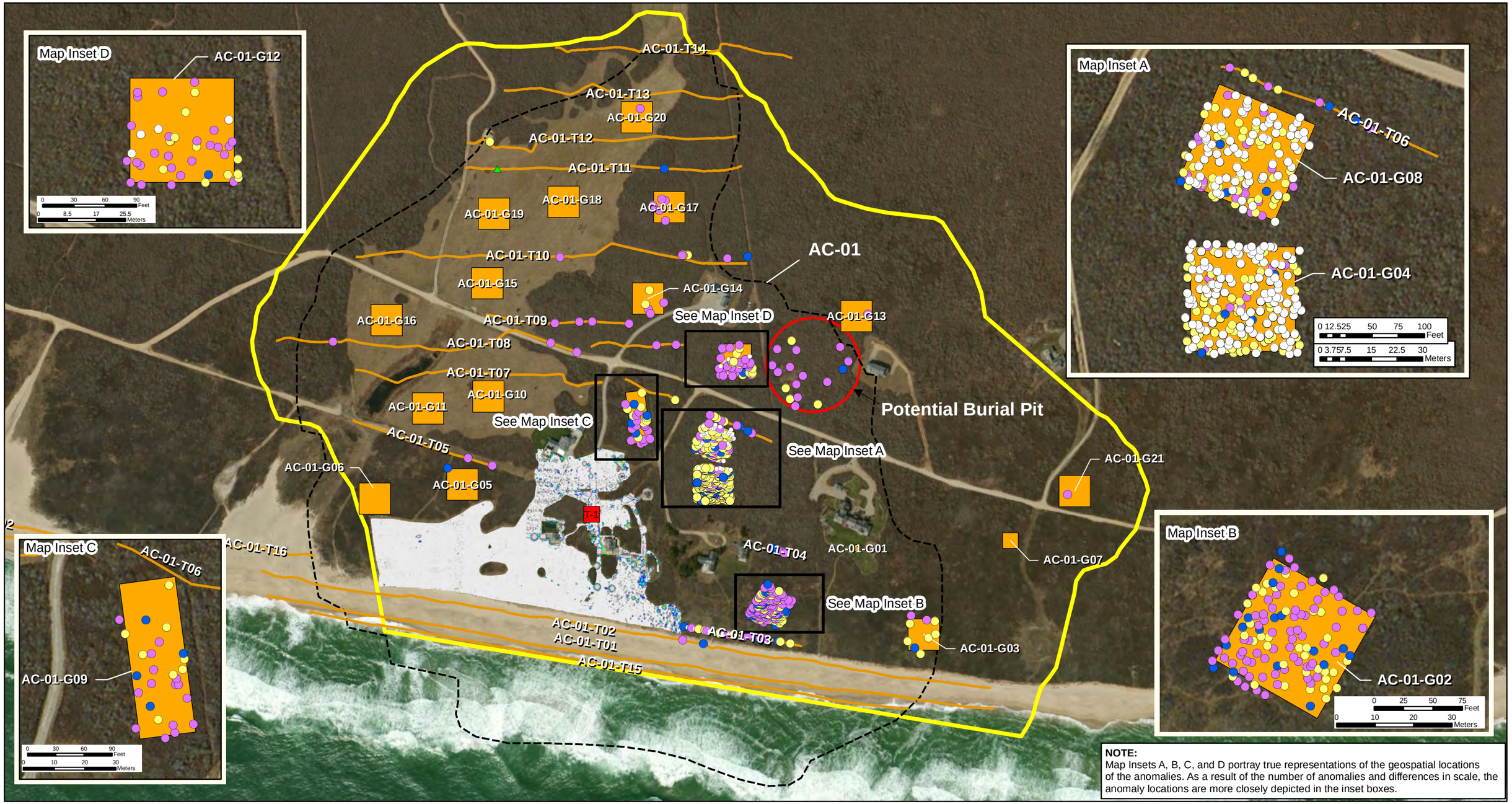
- 67 – 5-inch high velocity aircraft rockets (HVARs)
- 302 – 3.5-inch forward firing aircraft rockets (FFARs)
- 326 – 2.25-inch sub-caliber aircraft rockets (SCARs)

- 242 – miscellaneous rocket components
- 1 – fragment (determined to be present from prior demilitarization operations)

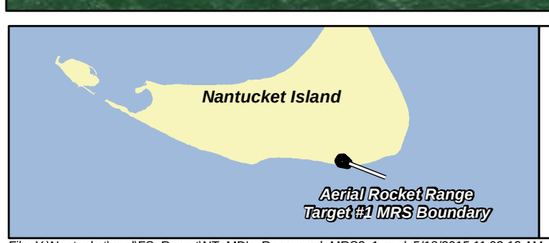
Figures depicting the type and location of MD recovered during the RI are included as **Figure 5-2** and **Figure 5-3**. The density of MD characterized within AC-01 was modeled using Visual Sample Plan (Pacific Northwest National Laboratory, 2011) as depicted on **Figure 5-4**. This figure depicts the revised MRS boundary line encompassing an area of 97 acres around the former Target #1 footprint. All of the MD recovered during the RI for this MRS was recovered from within Target #1's delineated footprint. There was no evidence found to indicate that military munitions were present beyond this footprint. A summary of the MD recovered during the RI and an estimate of the quantity of military munitions potentially remaining within the 97-acre boundary line is presented on **Table 5-1.**

Highlighted on **Figure 5-4** is a 6-acre portion of AC-01 that was previously subject to a clearance/removal under private contract by the residential parcel owner (VRHabilis, 2011). Review of the report generated for the private client indicates that after evaluation to determine its explosives safety status, the MD recovered was determined to be inert. Additional clearance/removal activities have been undertaken by this property owner since the time the RI was completed in 2012; however, the area addressed and results of these activities have not yet been made available to USACE.

The average depth of recovered items was 2.5 ft, with a median depth of 3 ft based on the 938 practice rockets and miscellaneous components encountered and removed from the MRS. Three percent (3%) of the total quantity of MD was recovered from the ground surface. The remaining MD was recovered within the investigated portion of the MRS. This MD was primarily located within 4 ft of ground surface. At one intrusive investigation location, MD was recovered from 8 ft bgs before the location was cleared for further investigation (WESTON, 2014b). A total of 110 anomalies were not investigated within the AC-01 investigation area. The determination not to investigate these anomalies was based on several circumstances (e.g., contacts left in place were located (a) in sensitive bluff locations; (b) in landscaped areas left in place based on property owner request; or (c) the location and nature of contacts were similar to inert MD recovered during the RI).



NOTE:
Map Insets A, B, C, and D portray true representations of the geospatial locations of the anomalies. As a result of the number of anomalies and differences in scale, the anomaly locations are more closely depicted in the inset boxes.



- T-1 Former Target
- 2.25-in rocket
- 3.5-in rocket
- 5-in rocket
- Frag
- Other MD
- DGM Transect
- DGM Grid
- Anomaly Cluster (From VSP)
- Aerial Rocket Range Target #1 MRS Boundary
- Potential Burial Pit
- Area previously cleared under private contract

US Army Corps of Engineers

Nantucket Beach Formerly Used Defense Site

WESTON SOLUTIONS

FIGURE 5-2
Nature and Lateral Extent of MD

N

0 190 380 570 Feet
0 70 140 210 Meters

NOTES:
Aerial Data Source: ESRI, DigitalGlobe, GeoEye, i-cubed, USDA, USGS
Base Data: USACE (2004)
Coordinate System:
UTM, Z19N, NAD83, US Foot

5/18/2015

NT_MD's_Recovered_MRS2_1

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Map Inset D

AC-01-G12

0 30 60 90 Feet
0 8 16 24 Meters

AC-01-T14

0.1

AC-01-T13

AC-01-G20

AC-01-T12

AC-01-T11

AC-01-G19

AC-01-G18

AC-01-G17

AC-01-T10

AC-01-G15

AC-01-G14

AC-01-G16

AC-01-G13

AC-01-T09

See Map Inset D

AC-01-T08

AC-01-T07

AC-01-G10

Potential Burial Pit

AC-01-G11

See Map Inset C

AC-01-T05

See Map Inset A

AC-01-G21

AC-01-G05

AC-01-G06

T-1

AC-01-T16

AC-01-T04

AC-01-G01

AC-01-G07

40

See Map Inset B

AC-01-T01

AC-01-T02

AC-01-T15

AC-01-T03

AC-01-G03

10

0.1

1

Map Inset A

AC-01-T06

AC-01-G08

AC-01-G04

0 30 60 90 Feet
0 10 20 30 Meters

Map Inset B

AC-01-G02

0 30 60 90 Feet
0 10 20 30 Meters

Map Inset C

AC-01-T06

AC-01-G09

0 100 200 300 Feet
0 25 50 75 Meters

NOTE:
Map Insets A, B, C, and D portray true representations of the geospatial locations of the anomalies. As a result of the number of anomalies and differences in scale, the anomaly locations are more closely depicted in the inset boxes.

Nantucket Island

MRS 2 - Aerial Rocket Range Target #1

MD Depth Contour
Depth in Inches

- -108 to -96
- -96 to -84
- -84 to -72
- -72 to -60
- -60 to -48
- -48 to -36
- -36 to -24
- -24 to -12
- -12 to 0

Former Target
DGM Grid
DGM Transect
Anomaly Density Contour
Potential Burial Pit
Aerial Rocket Range Target #1 MRS Boundary

US Army Corps of Engineers

Nantucket Beach Formerly Used Defense Site

WESTON SOLUTIONS

FIGURE 5-3
Depth Extent of MD Recovered

N

0 190 380 570 Feet
0 70 140 210 Meters

NOTES:
Aerial Data Source: ESRI, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP and swisstopo.
Base Data: USACE (2004)

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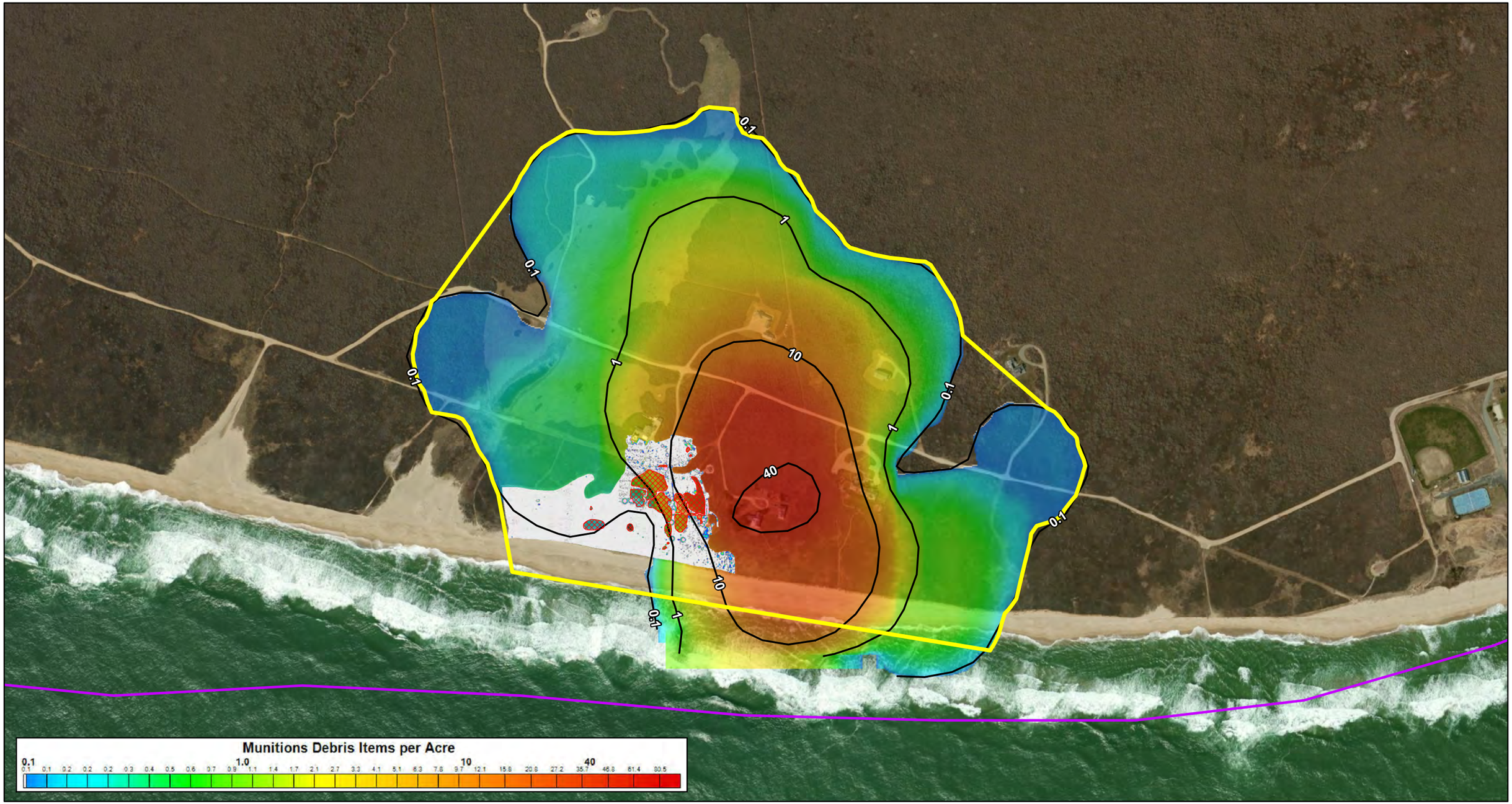

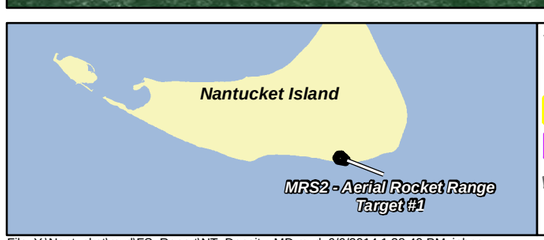

Anomaly Density Contour
Areas Not Investigated
Aerial Rocket Range Target #1 MRS Boundary
FUDS Boundary
Area previously cleared under private contract

Coordinate System: UTM, Z19N, NAD83, US Foot

US Army Corps of Engineers

Nantucket Beach Formerly Used Defense Site

N

0 250 500 750 Feet

0 90 180 270 Meters

NOTES:
Aerial Data Source: ESRI, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP and swisstopo.
Base Data: USACE (2004)

FIGURE 5-4
Munitions Debris Density

6/6/2014	NT_Density_MD
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Table 5-1
Estimated Quantity of Munitions Debris

MD Density Interval (MD per acre) (see Figure 5-4)	Total Area (acres) in Density Interval	Total Area (acres) Investigated	Quantity of MD Recovered during RI	Depth Range of Recovered MD	Estimated Quantity of MD (items) Remaining [1]
< 1	55.9	2.9	2.5-inch: 6 items 3.5-inch: 5 items 5-inch: 1 item Frag: 1 item[2] Other MD: 0 items	2.5-inch: 12 in to 36 in bgs 3.5-inch: 0 in to 4 in bgs 5-inch: 6 in bgs Frag: 6 in bgs Other MD: NA **Range: 0 in to 36 in bgs**	238
1-10	23.0	1.2	2.5-inch: 25 items 3.5-inch: 8 items 5-inch: 4 items Frag: 0 items Other MD: 0 items	2.5-inch: 0 in to 60 in bgs 3.5-inch: 3 in to 48 in bgs 5-inch: 0 in to 24 in bgs Frag: NA Other MD: NA **Range: 0 in to 60 in bgs**	672
10-40	16.3	1.4	2.5-inch: 286 items 3.5-inch: 284 items 5-inch: 60 items Frag: 0 items Other MD[3]: 239 items	2.5-inch: 0 in to 96 in bgs 3.5-inch: 0 in to 72 in bgs 5-inch: 0 in to 72 in bgs Frag: NA Other MD[3]: 0 in to 51 in bgs **Range: 0 in to 96 in bgs**	9,253
40+	1.8	0.006	2.5-inch: 9 items 3.5-inch: 5 items 5-inch: 2 items Frag: 0 items Other MD[3]: 3 items	2.5-inch: 6 in to 60 in bgs 3.5-inch: 6 in to 30 in bgs 5-inch: 48 in to 60 in bgs Frag: NA Other MD[3]: 6 in to 60 in bgs **Range: 0 in to 96 in bgs[4]**	5,569
Totals	**97.0**	**5.5**	**938**		**15,731**

Notes:
bgs = below ground surface
in = inches
MD = munitions debris
MRS = Munitions Response Site
RI = Remedial Investigation

[1] Estimated quantity of MD (partial or intact practice rockets) generated using RI intrusive investigation results [See Final RI Report (WESTON, 2013) Appendix G - Target Dig List for AC-01] to calculate density as MD items per acres investigated, which was uniformly applied to area within contours modeled for the 97-acre impact area using VSP (see Figure 5-4) to simulate MD spatial distribution. Individual MD items removed from the MRS during the RI were also removed from the estimated quantities shown for each contour interval of similar MD densities.

[2] Recovered item classified as a rocket fragment was determined in the field by the Senior Unexploded Ordnance Supervisor to be associated with a historical demilitarization operation performed by EOD or other responsible organization.

[3] Other MD indicates miscellaneous, inert rocket components.

[4] Contacts were left in-place during the RI at depths greater than 48 inches bgs in the 40+ MD/acre density interval; assumed maximum range in depth is equal to 96 in bgs based on RI findings in Grid AC-01-G02.

5.4 NATURE AND EXTENT OF MUNITIONS CONSTITUENTS

Due to the high concentration of MD located at AC-01/former Target #1, MC sampling was performed to support a baseline risk assessment during the RI. The surface soils in five geophysical investigation grids in which the highest concentrations of MD was recovered were sampled using the Incremental Sampling Methodology (ISM). A systematic random approach was used to collect the samples for analysis of metals and explosives (sample volume for metals analysis was not subject to puck mill grinding). Replicate sampling was performed in accordance with industry and USACE guidance for ISM.

In addition, soil sampling was performed in biased locations within each of these grids where the highest density of subsurface MD was located using discrete grab samples to profile subsurface soil to 10 ft bgs. Groundwater was also sampled for MC. Groundwater was sampled directly from residential wells located within the MRS that are known drinking water supplies for both full-time and seasonal residents. No perchlorate (sampled in groundwater only) or explosive chemicals were identified above project screening levels in soil or groundwater. Positive detections of metals in soil and groundwater were observed consistent with expected background concentrations. No COPCs or chemicals of potential environmental concern were identified during the risk evaluation, and MC was determined not to pose a significant risk to human health or the environment as indicated by the human health and ecological risk assessments (WESTON, 2013).

6. CURRENT AND POTENTIAL FUTURE LAND USE

The 97-acre Aerial Rocket Range Target #1 MRS boundary where MD has been confirmed to be present includes portions of parcels owned by private residents or the NCF (see **Figure 1-4**) that is undeveloped, or used for residential or recreational purposes. Residential activities including construction or property maintenance may include ground disturbing and intrusive activities.

On non-residential portions of the MRS, recreational use of the beach and along established paths in the uplands portion of the MRS is allowed. Recreational activities typically involve foot and vehicle traffic, with limited ground disturbing or intrusive activities (e.g., children digging in the sand). The MRS provides habitat for a variety of plants and animals.

There is no anticipated change in land use. The land within the MRS boundary consists of maintained landscaping, upland scrub vegetation, beach-grass dunes or bluffs. It includes the beach below the bluffs where MD has been observed due to extensive and on-going coastal erosion that periodically causes subsurface MD to surface and fall onto the beach. Based on the property line for the Nantucket Beach FUDS recorded on a survey map from 1943 (USACE, 1997), the beach has eroded approximately 800 ft between the time of active use and present day.

7. SUMMARY OF SITE RISKS

The results of data and information collected at the MRS during the RI were used to evaluate potential hazards associated with UXO, DMM, or MC. The RI did not identify complete exposure pathways for UXO or DMM because no UXO or DMM were encountered. MC did not pose an unacceptable risk to human or ecological receptors, as there were no significant detections of MC in environmental media.

Although neither UXO nor DMM were recovered at this MRS during the RI, a significant amount of MD was recovered in the vicinity of former Target #1. The baseline risk assessment for MC (explosives and metals) did not identify a risk to potential human and ecological receptors from (a) soil that was in contact with the highest densities of MD recovered or observed during the RI; or (b) groundwater assessed from residential drinking water wells located within the MRS.

An explosive hazard is the probability for military munition (UXO or DMM) to detonate and potentially cause harm because of human activities. An explosive hazard exists if a person can come into contact with a military munition and touch, move, or disturb it causing a detonation. The potential for an explosive hazard depends on the presence of three critical elements: a source (the presence of a military munition), a receptor (a person), and interaction between the source and receptor (such as moving, picking up or disturbing it). If any one element is missing, the explosive risk is de-minimis.

The ***exposure pathway*** for a military munition to a receptor is primarily through direct access to a military munitions and contact with it because of some human activity (e.g., touching, moving, disturbing) is required for an incident to occur. Agricultural or construction activities involving ground disturbing or intrusive activities are examples of human activities that may increase the likelihood for direct contact with military munitions that may be present in the subsurface. Military munitions (UXO, DMM) in the subsurface tend to remain in place unless disturbed by human activities or natural phenomena (e.g., erosion, frost heave). Movement of military munitions by natural forces may increase the probability for human contact, but does not necessarily result in a direct contact.

Explosive hazards are typically evaluated in accordance with the 2008 *Interim Munitions and Explosives of Concern Hazard Assessment Methodology* (MEC HFA) (EPA, 2008), which was designed for use as a CERCLA hazard assessment methodology for MEC. The MEC HA is typically used to evaluate a baseline hazard associated for a MRS based on the nature and extent of MEC and exposure risks related to the current use identified during the RI. Although the potential exists for an explosive hazard, because no MEC was identified during the SI or RI, a MEC HA was not performed.

Statistically, there is a low potential for MEC to be present at the MRS. This is because only a percentage of the acreage within the Aerial Rocket Range Target #1 MRS was investigated during the RI. Therefore, the Selected Remedy in this DD is necessary to address this risk and protect human health from the low probability for UXO or DMM to remain present either on the surface or in the subsurface. The amount of MD recovered within the MRS and the high volume of receptors indicates that military munitions will be encountered at this site in the future. However, given that only inert military munitions were recovered during the RI, munitions that may be encountered will most likely, upon evaluation by qualified personnel, be determined to be inert.

During the RI, there were no UXO, DMM, or MD encountered within the Aerial Rocket Range Fan MRS. Additionally, MC was not determined to pose risk to human health and ecological receptors in the MRS (WESTON, 2013).

8. REMEDIAL ACTION OBJECTIVE

The Aerial Rocket Range Target #1 MRS current and future land use is primarily residential and recreational. Given the quantity of military munitions (e.g., aerial rockets and associated components) estimated to remain within the Aerial Rocket Range Target #1 MRS in the subsurface and, to a limited extent, on the surface, residents, NCF personnel, contractors and maintenance workers, or visitors, and recreational users of the property may encounter military munitions while engaging in either surface, or ground disturbing or intrusive activities. The aerial rockets and associated components encountered during the RI were evaluated by qualified personnel and determined to be inert. Although military munitions encountered in the future will also most likely be determined to be inert, this determination should only be made by qualified personnel.

The selected alternative's ultimate goal is to ensure the protection of human health and the environment. To achieve this goal, the RAO established is:

- To reduce the probability of residents, NCF personnel, contractor or maintenance workers, visitors, and recreational users from approaching, moving, disturbing, or handling munitions encountered during residential, construction or maintenance, and recreational activities performed on the ground surface or that include ground disturbing or intrusive activities.

9. DESCRIPTION OF ALTERNATIVES

CERCLA, Section 121, requires that each selected remedial alternative be: (1) protective of human health and the environment; (2) cost-effective; (3) comply with all applicable or relevant and appropriate federal and state requirements; and (4) use permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment (i.e., removal and disposal) as a principal element for the reduction of toxicity, mobility, or volume (TMV) of the hazardous substances. The six remedial alternatives evaluated for the Aerial Rocket Range Target #1 MRS as part of the Final FS (October 2014) are as follows:

- Alternative 1 – No Action
- Alternative 2 – LUCs and LTM
- Alternative 3 – Surface Clearance/Removal (25.7 acres) with LUCs and LTM
- Alternative 4 – Surface Clearance/Removal (25.7 acres) and Subsurface Clearance/Removal to 4 ft (3 acres) with LUCs and LTM
- Alternative 5 – Surface Clearance/Removal (25.7 acres) and Subsurface Clearance/Removal to 10 ft bgs (3 acres) with LUCs and LTM
- Alternative 6 – Surface Clearance/Removal and Subsurface Clearance/Removal to 10 ft bgs (88.8 acres).

CERCLA, Section 121(c) and Section 300.430(f)(4)(ii) of the NCP require the review of remedial actions no less than every 5 years if the selected remedy does not allow for unlimited use and unrestricted exposure (UU/UE). Five-Year Reviews for MRSs determine whether a remedial action continues to minimize explosives safety hazards and continues to be protective of human health, safety, and the environment. Consistent with this CERCLA requirement, Five-Year Reviews are conducted at FUDS under DERP by USACE as required (USACE, 2011).

Except for Alternative 6, none of the alternatives evaluated for the Aerial Rocket Range Target #1 MRS allows for UU/UE; therefore, Five-Year Reviews would be conducted by the government at least every 5 years. Detailed documentation describing the development of each

of the six alternatives with the results of the detailed and comparative analyses conducted as part of the FS are available for review in the Administrative Record (see technical document *Final Feasibility Study, Nantucket Beach, Former Nantucket Ordnance Site A.K.A. Tom Nevers Rocket Projectile Target; Tom Nevers Area, Formerly Used Defense Site, Nantucket, Massachusetts* (WESTON, 2014a). In the FS, the alternatives were evaluated and compared in relation to the nine NCP criteria prescribed for remedy selection in accordance with CERCLA. These alternatives, as they were described in the FS, are summarized as follows:

- **Alternative 1 – No Action** — The no action alternative, required to be evaluated in accordance with Section 300.403(e)(6) under the NCP, is provided as a baseline for comparison to the other proposed alternatives. This alternative means no action will be taken to locate, remove, and dispose of munitions. In addition, no public awareness or education training would be initiated with regard to the risk of munitions. This alternative assumes land use in the future will remain consistent with current conditions. Cost - $0.

- **Alternative 2 – LUCs and LTM (Preferred Alternative)** — Alternative 2 would consist of the following LUC to reduce the probability of humans approaching, moving, disturbing, or handling munitions that may remain at this MRS.

  The LUC to be implemented include educational LUCs. Educational LUCs will include the placement of warning signs at public-access locations and the distribution of 3Rs (Recognize, Retreat, Report) explosives safety educational materials (e.g., guides, brochures, fact sheets) that advise residents, property owners, and users of the actions to take should they encounter or suspect they have encountered a military munition. Also included are public communications including site-specific 3RS explosives safety awareness training for the local community; a site website; and advisories with regard to the conduct of ground disturbing or other ground intrusive activities.

  The federal government cannot impose legal mechanisms to control privately-owned property. The implementation of a LUC alternative for this MRS based on 3Rs explosives safety education program provides USACE a means to coordinate an educational effort designed to reduce the probability that residents, NCF personnel, contractors or maintenance workers, recreational users, or visitors will approach, touch, move, or disturb munitions they may encounter, but instead notify local law enforcement of its location. Approximately 6 months is needed to establish LUCs and achieve the RAO.

  Long-term management of munitions left in-place would include periodically updating and redistributing 3Rs explosives safety materials for 3 years, and

maintaining signs annually. During the LTM period under Alternative 2, USACE would provide on-call UXO-qualified personnel to respond to munitions or suspect munitions that may be encountered at the MRS for 4 years. These personnel would evaluate the munition to determine whether it posed an explosive hazard and remove munitions determined to be safe. Should an explosive hazard be encountered, these personnel would notify local law enforcement to request EOD support. Alternative 2 would comply with the identified Applicable or Relevant and Appropriate Requirements (ARARs).

As a separate requirement under CERCLA, Five-Year Reviews would be conducted because munitions that may remain at the MRS do not allow for UU/UE. Unlimited use and unrestricted exposure will be considered reached if no UXO or DMM that are determined to pose an explosive hazard are encountered at the MRS prior to the first Five-Year Review following response complete. A determination that there is no unacceptable risk will be made at that point. A Five-Year Review and close-out report will be issued and provided to the Commonwealth of Massachusetts. For cost estimating purposes, it is assumed that LTM would be conducted over 4 years followed by a Five-Year Review. Cost - $206,000.

***(Note**: See Section 14 and Part 3 of the DD for a summary of concerns raised by MassDEP and the community during the public comment period and revisions made to the LTM component of Alternative 2. Although, the general response action of risk management through LUCs was not changed, the proposed LTM period was revised without an assumed end-point after 5 years and without the on-call USACE UXO support component. This change eliminates one of the ARARs identified in the FS and PP for Alternative 2 (i.e., 40 CFR 264.601/602/603) because no munitions clearance/removal activities are included.)*

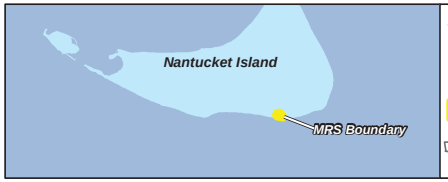
- **Alternative 3 – Surface Clearance/Removal (25.7 acres) with LUCs and LTM** — Alternative 3 includes surface clearance/removal (25.7 acres) to address the beach, wetlands, NCF trails, and portions of residential properties where ground surface is accessible [excludes portions of the MRS with scrub oak and coastal shrubland vegetation and portions of the MRS previously cleared (see **Figure 9-1**)]. This alternative would also include LUC components with LTM and Five-Year Reviews similar to Alternative 2. Approximately 6 months was estimated to be needed to perform clearance/removal activities and establish LUCs to achieve the RAO. Alternative 3 would comply with the identified ARARs. Cost - $1,096,000.

- **Alternative 4 – Surface Clearance/Removal (25.7 acres) and Subsurface Clearance/Removal of Munitions to 4 ft (3 acres) with LUCs and LTM** — Alternative 4 includes surface clearance/removal per Alternative 3 with additional subsurface clearance/removal to 4 ft bgs over 3 acres of residential properties in accessible areas to support future construction/maintenance activities (see **Figure 9-2**). This alternative would also include LUC components with LTM and Five-Year Reviews similar to Alternative 2. Approximately 12 months was estimated

to be needed to perform clearance/removal activities and establish LUCs to achieve the RAO. Alternative 4 would comply with the identified ARARs. Cost - $2,517,000.

- **Alternative 5 – Surface Clearance/Removal (25.7 acres) and Subsurface Clearance/Removal of Munitions to 10 ft (3 acres) with LUCs and LTM** — Alternative 5 includes surface and subsurface clearance/removal per Alternative 4 with additional subsurface clearance/removal beyond 4 ft to approximately 10 ft bgs on residential properties in accessible areas to support future construction/maintenance activities (see **Figure 9-2**). This alternative would also include LUC components with LTM and Five-Year Reviews similar to Alternative 2. Approximately 18 months was estimated to be needed to perform clearance/removal activities and establish LUCs to achieve the RAO. Alternative 5 would comply with the identified ARARs. Cost - $2,731,000.

- **Alternative 6 – Surface and Subsurface Clearance/Removal of Munitions (88.8 acres)** — Alternative 6 includes surface and subsurface clearance/removal to approximately 10 ft bgs over 88.8 acres within the boundaries of the MRS [excludes existing structures and roadways previously developed, and a section of the MRS that was previously cleared for munitions under a private contract (**Figure 9-3**)] to remove all munitions estimated to remain at the MRS and reduce the probability of human contact to the greatest extent possible. Approximately 4 years was estimated to be needed to perform clearance/removal activities. Alternative 6 is not expected to be able to comply with all of the identified ARARs, specifically 16 U.S.C. §1538(a)(1), due to the significant environmental impacts that would be expected during implementation and would require a waiver for this appropriate requirement. This alternative would not require LUCs and LTM, or Five-Year Reviews following removal of all munitions. Cost - $22,394,000.



Recreational Trail Clearance Areas
Mowed Grassland/ Beach Clearance Areas (25.7 Acres)
Parcels
MRS Boundary
Area previously cleared under private contract

Coordinate System: UTM, Z19N, NAD83, US Foot

US Army Corps of Engineers

Nantucket Beach Formerly Used Defense Site

WESTON SOLUTIONS

Figure 9-1
Alternative 3
Surface Clearance/Removal Area

N

0 190 380 570 Feet

0 70 140 210 Meters

NOTES:
Aerial Data Source: ESRI iCubed Imagery Prime World 2D (2004)
Base Data: USACE (2004); MassGIS (2011)

2/21/2014	NT_RI_Target_Alternative3
Drawn: johna	PROJ: 03886.551.004

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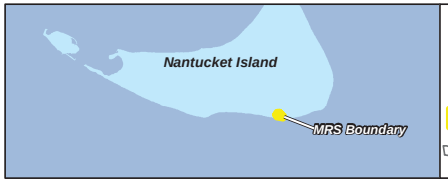

Surface and Subsurface Clearance Areas
Surface Clearance Only
Parcels
MRS Boundary
Area previously cleared under private contract

Coordinate System: UTM, Z19N, NAD83, US Foot

US Army Corps of Engineers

Nantucket Beach Formerly Used Defense Site

N

0 190 380 570 Feet

0 70 140 210 Meters

NOTES:
Aerial Data Source: ESRI iCubed Imagery Prime World 2D (2004)
Base Data: USACE (2004); MassGIS (2011)

Figure 9-2
Alternative 4 and Alternative 5 Surface and Subsurface Clearance/Removal Area

2/21/2014	NT_RI_Target_Alternative4_5
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File: Y:\Nantucket\mxd\FS_Report\NT_RI_Target_Alternative6.mxd, 8/5/2014 12:07:43 PM, johna

10. COMPARATIVE ANALYSIS OF ALTERNATIVES

Nine NCP criteria are used to evaluate the different remediation alternatives individually and against each other in order to select a remedy (40 CFR 300.430(e)(9)(iii)(A)-(I)). This section presents the relative performance of each alternative in relation to the nine criteria, noting how each compares with the other options under consideration. **Table 10-1** (Comparative Summary of Evaluated Remedial Alternatives) illustrates the nine evaluation criteria for each alternative. The nine evaluation criteria are described as follows:

Threshold Criteria

1. **Overall Protection of Human Health and the Environment** – Evaluates whether a cleanup alternative achieves adequate protection by eliminating, reducing, or controlling hazards through treatment, engineering controls, or local government controls.

2. **Compliance with ARARs** – Evaluates whether a cleanup option meets cleanup standards, standards of control, or other appropriate requirements from other federal and state environmental laws, regulations, and other requirements or whether a waiver is justified.

Balancing Criteria

3. **Long-Term Effectiveness and Permanence** – Considers whether a cleanup alternative will maintain reliable protection of human health and the environment over time after cleanup goals are met. The evaluation of the criteria also takes into account the amount of hazard remaining after the cleanup is complete.

4. **Reduction of TMV through Treatment** – Evaluates whether a cleanup alternative's use of treatment reduces the harmful effects of the contaminants, their ability to move in the environment, and the amount of contamination present.

5. **Short-Term Effectiveness** – Considers the time needed to complete a cleanup alternative and the risks a cleanup alternative may pose to workers, the community, and the environment until the cleanup goals are met.

6. **Implementability** – Considers whether implementation of a cleanup alternative is technically and administratively feasible, including factors such as the relative availability of goods and resources.

7. **Cost** – Includes the estimated capital and annual operations and maintenance costs as well as the present worth cost of a cleanup alternative. (Present worth cost is the total cost of an alternative over time in terms of today's dollar value.)

Table 10-1
Comparative Summary of Evaluated Remedial Alternatives

			***PREFERRED**				
	EVALUATION CRITERIA	**ALTERNATIVE 1**	**ALTERNATIVE 2**	**ALTERNATIVE 3**	**ALTERNATIVE 4**	**ALTERNATIVE 5**	**ALTERNATIVE 6**
THRESHOLD	1. **OVERALL PROTECTION OF HUMAN HEALTH AND ENVIRONMENT**	■	●	●	●	●	■
	2. **COMPLIANCE WITH ARARS**	●	●	●	●	●	■
BALANCING	3. **LONG-TERM EFFECTIVENESS AND PERMANENCE**	■	●	●	●	●	●
	4. **REDUCTION OF TMV THROUGH TREATMENT**	■	□	□	□	□	●
	5. **SHORT-TERM EFFECTIVENESS**	●	●	□	□	□	■
	6. **IMPLEMENTABILITY**	●	●	●	□	□	■
	7. **COST**	**$0**	**$206,000**	**$1,096,000**	**$2,517,000**	**$2,731,000**	**$22,394,000**
MODIFYING	**8. STATE ACCEPTANCE**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**
	9. COMMUNITY ACCEPTANCE	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**

Notes: ● Favorable (pass for threshold criteria)

□ Moderately Favorable

■ Note Favorable (Fail for threshold criteria)

ARAR Applicable or relevant and appropriate requirement

TBD To Be Determined following MassDEP and community reviews

TMV Toxicity, mobility, or volume

Modifying Criteria

8. **State Acceptance** – Considers whether the state (MassDEP) agree with USACE's analyses and recommendations for a cleanup alternative as described in the PP.

9. **Community Acceptance** – Considers whether the local community agrees with USACE's analyses and proposed remedial plan. The comments USACE receives on its preferred alternative are important indicators of community acceptance.

10.1 OVERALL PROTECTIVENESS OF HUMAN HEALTH AND THE ENVIRONMENT

There is a low statistical potential for MEC to remain in the MRS; however, based on the significant amount of intrusive work and quantity of recovered MD, it is possible MEC is present at ground surface and in the subsurface down to 8 ft. Based on the historical reports of munitions-related discoveries within the MRS and quantity of munitions estimated to remain, property owners and MRS users will likely continue to encounter munitions in the future, which should be handled by qualified/trained personnel and managed appropriately.

Alternative 1 would not eliminate, reduce, or control the threat of human exposure to surface and subsurface munitions and potential for munitions to be handled by unqualified/untrained personnel and disposed of improperly. Alternative 2 would be protective since it controls exposure through LUCs. Alternative 3 provides protectiveness as munitions would be removed from areas of accessible ground surface and since it controls exposure through LUCs; however, RI characterization only observed 3% of MD findings at ground surface. Alternative 4 and Alternative 5 are protective because subsurface munitions would be removed where exposure is most likely to the property owners in addition to surface munitions throughout portions of the MRS and since it controls exposure through LUCs. Alternatives 3 through 5 also include LTMs. Alternative 6 is protective of human health because munitions at ground surface and in subsurface would be removed throughout the entire MRS. However, Alternative 6 would not be protective of the environment.

Alternative 6 would require extensive planning, management, monitoring of endangered and/or threatened species, restoration, and potential follow-on work to ensure recovery is attained. Similarly, the environmental risks associated with Alternative 5 would be greater than

Alternative 4 based on the increased intrusive activity, and very limited for Alternative 3 because only surface-located munitions would be addressed. Alternative 3, Alternative 4, and Alternative 5 would all require LUC components similar to Alternative 2 for any residual munitions following removal actions to control remaining risk of exposure.

10.2 COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Section 121(d) of CERCLA and NCP §300.430(f)(1)(ii)(B) require that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate federal and state requirements, standards, criteria, and limitations which are collectively referred to as "ARARs," unless such ARARs are waived under CERCLA section 121(d)(4). Pursuant to Section 300.5 of the NCP, ARARs are defined as follows:

- *Applicable* requirements are those cleanup standards; standards of control; and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable.

- *Relevant and Appropriate* requirements are those cleanup standards; standards of control; and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not ''applicable'' to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate.

Non-promulgated (and not enforceable) ***to be considered*** (TBC) advisories, guidance, and policies that may facilitate development of protective remedies were also considered during remedy selection under the ARAR criterion in accordance with Section 300.400(g)(3) of the NCP.

As required in accordance with Section 300.400(g) of the NCP, USACE, with support from MassDEP, identified requirements applicable to the site. The requirements were further defined

with regard to the remedial alternatives considered during the FS, based on an objective determination of whether the requirements specifically address the hazard, remedial action, location, or other circumstance found at the Aerial Rocket Range Target #1 MRS. Two ARARs were identified during the FS for response actions at the MRS: Subpart X of the Resource Conservation and Recovery Act (RCRA) at 40 CFR 264.601/602/603, which establishes requirements for "miscellaneous units" used for MEC disposal (action-specific ARAR for munitions clearance/removal activities only); and, under the federal Endangered Species Regulations at 16 U.S.C. §1538(a)(1), it is unlawful for any person to take a listed species (location-specific ARAR). No chemical-specific ARARs were identified based on the results of the RI.

There are no ARARs associated with Alternative 1, and Alternative 2 through 5 would be implemented and performed to comply with all ARARs. Clearance/removal of munitions performed under Alternative 3 through 6 could all be implemented to comply with 40 CFR 264.601/602/603. Regarding compliance with 16 U.S.C. §1538(a)(1), Alternative 2 would require the least amount of coordination and planning to avoid environmental impacts. Alternative 3 would require less coordination and planning to avoid potential environmental impacts than Alternative 4 since there is no subsurface clearance/removal included in Alternative 3. Alternative 5 would require slightly more coordination than Alternative 4 since more intrusive work would be performed and the areas addressed may extend into existing vegetation around currently accessible areas. Alternative 6 would be the most intrusive in nature and would not meet the Endangered Species Act regulation 16 U.S.C. §1538(a)(1) identified as an ARAR.

10.3 LONG-TERM EFFECTIVENESS AND PERMANENCE

Alternative 1 is not effective or permanent. Alternative 2 is more effective and permanent than Alternative 1, assuming the cooperation and active participation of the existing land users and authorities of the DoD. Land use controls would provide additional long-term effectiveness and permanence by assisting in managing risk before, during, and after site activities. Surface clearance/removal under Alternative 3 would be slightly more effective and permanent because some of the remaining munitions are likely located at ground surface; however, only 3% of MD

recovered during the RI was found at ground surface. Although the subsurface clearance/removal area contemplated as Alternative 4 is the same that would be addressed under Alternative 5 (3 acres), Alternative 5 would be the more effective and permanent alternative as the depth of clearance/removal and total volume of munitions removed would be greater. Under Alternative 6, all munitions would be removed permanently from within the MRS to the greatest extent possible. This includes the lateral extent of MD identified during the RI, excluding previously cleared portions and areas under existing structures, roadways and driveways.

Alternative 6 would be the most effective and permanent remedial alternative over the long-term. Inclusion of LUC components with the partial clearance/removals contemplated as Alternatives 3 through 5 achieves protectiveness in the same manner and within the same time duration needed to achieve the RAO as Alternative 2. However, the LUCs and LTM requirements that would be needed following the clearance/removal alternatives would be reduced based on the amount of munitions removed. Thus, Alternative 3 would result in less LTM effort than Alternative 2. Both Alternative 4 and Alternative 5 would require slightly less LTM effort than Alternative 3. Although Alternative 5 would be more effective than Alternative 4 over the long-term at reducing future LTM, Alternative 4 would only be slightly less effective based on the anticipated bulk of munitions being located within 4 ft of ground surface. Effort to establish and maintain LUCs would be similar for Alternative 2 and Alternative 3, and slightly less for Alternative 4 and Alternative 5 based on the amount of munitions contemplated for removal. Alternative 6 is not anticipated to require LUCs or LTM following the clearance/removal because all munitions would be removed to the greatest extent possible.

10.4 REDUCTION OF TOXICITY, MOBILITY, OR VOLUME OF CONTAMINANTS THROUGH TREATMENT

Alternative 1 would not reduce the TMV of munitions at the Aerial Rocket Range Target #1 MRS. Alternative 2 does not involve treatment. Alternative 3 would be more effective than Alternative 2 relative to a reduction of TMV, but only to the extent that surface munitions are found, detected, recovered, and recycled. Subsurface munitions remaining after implementation of Alternative 3 would maintain ability to move because of natural processes and/or human interaction. Alternative 4 and Alternative 5 would be slightly more effective in reducing the

TMV of munitions because all detectable surface and subsurface munitions in the clearance/removal areas would be removed to at least 4 ft bgs, or greater as contemplated under Alternative 5. Alternative 5 is only anticipated to be slightly more effective at reduction of TMV than Alternative 4 based on the results of the RI, which indicated that the bulk of residual munitions are located within 4 ft of ground surface. Alternative 6 provides a significantly greater reduction in TMV than any of the other clearance/removal alternatives as it would result in a permanent removal of the greatest volume of munitions from within the MRS. Alternatives 3, 4, 5, and 6 all satisfy the statutory preference for treatment as a principal element of the remedy because munitions would be removed, certified as MDAS, and disposed off-site via recycling.

10.5 SHORT-TERM EFFECTIVENESS

Because no construction activities are associated with either alternative, Alternatives 1 and 2 would not present significant additional risk to the public or workers at the Aerial Rocket Range Target #1 MRS. Alternatives 3, 4, 5, and 6 would increase risk to the public and workers during clearance/removal of munitions to variable degrees based on the implementation of exclusion zones for intrusive activities (Alternatives 4, 5, and 6 only) and in cases where material potentially presenting an explosive hazard or suspect MEC is encountered requiring treatment on-site to render the item MDAS. Alternatives 1 and 2 would not cause damage to the environment because no clearing, grubbing, or excavation would be required. Alternative 3 is not likely to cause damage to the environment during surface clearance/removal of munitions in accessible portions of the MRS.

However, the addition of subsurface clearance/removal activities contemplated under Alternative 4, 5, and 6 would cause damage to the environment to variable degrees. Alternative 5 would cause slightly more damage than Alternative 4, but both alternatives would be far less destructive than Alternative 6. Alternative 6 would require extensive interim measures for protection and significantly more restoration than Alternatives 4 or 5 as a result of the larger scale of excavation included and requirements for vegetation clearing and intrusive activity in the bluffs. The time durations required to complete Alternative 2 and Alternative 3 are estimated to be the same at 6 months. Alternative 4 and 5 would require additional time to perform subsurface clearance/removal, and were estimated to require 12 months and 18 months,

respectively, to complete. Alternative 6 would require approximately 4 years to complete, which is significantly longer than the durations considered under the remaining alternatives.

10.6 IMPLEMENTABILITY

Alternative 1 would be easily implemented because it requires no action. The LUCs recommended as Alternative 2 could also be readily implemented because these activities pose no technical difficulties and the materials and services needed are readily available. Clearance/removal of munitions to various depths, similar to the actions proposed in Alternatives 3, 4, 5, and 6, were implemented effectively at the Aerial Rocket Range Target #1 MRS during the RI; however, these alternatives are more difficult to implement than Alternative 2. Alternative 4 would take longer to implement than Alternative 3 as it would require intrusive work to 4 ft bgs in portions of the MRS. Alternative 4 would also be slightly more difficult to implement because of the additional administrative work required. Alternative 5 would be more difficult than Alternative 4 to implement based on administrative logistics, the increased depth for intrusive operations, and due to the increased time required to complete the clearance/removal. Alternative 6 would be the most technically difficult to implement requiring a very long time to complete the clearance/removal, and added administrative logistics. Specific activities, including awareness training for workers and use of protection procedures/mitigation techniques would be performed to preserve environmental resources during any of the clearance/removal alternatives.

10.7 COST

The total value of each alternative considered during the FS and presented to the public in the PP was as follows (rounded to the nearest thousand dollars):

- Alternative 1 - $0
- Alternative 2 - $206,000
- Alternative 3 - $1,096,000
- Alternative 4 - $2,517,000
- Alternative 5 - $2,731,000
- Alternative 6 - $22,394,000

10.8 STATE ACCEPTANCE

State agency concurrence on the recommendation made in the PP to select Alternative 2, as modified by the Responsiveness Summary (see Part 3 of the DD), for the Aerial Rocket Range Target will be documented and provided in Appendix B (when received from MassDEP). See Section 14 of the DD for documentation of changes made to the proposed Alternative 2 for the Selected Remedy based on the Responsiveness Summary. A letter from MassDEP demonstrating concurrence with the remedy as selected and established in the Aerial Rocket Range Target #1 DD will also be added to the Administrative Record file when received.

10.9 COMMUNITY ACCEPTANCE

A Responsiveness Summary has been developed and is appended to this DD (Part 3) to document comments received from the public and considered by USACE with detailed responses for the record. See Section 14 of the DD for documentation of changes made to the proposed Alternative 2 to determine the Selected Remedy based on the Responsiveness Summary.

10.10 COMPARATIVE ANALYSIS RECOMMENDATION

During the comparative analysis, Alternative 2 was determined to be more favorable than Alternatives 1, 3, 4, 5, or 6 with respect to the evaluation criteria. Alternative 1 is not favorable because it does not meet the threshold criterion of overall protectiveness. The second threshold criterion is compliance with ARARs. The two ARARs identified would not be associated with Alternative 1 because no action would be taken at the MRS. Alternatives 2, 3, 4, and 5 would be implemented to comply with the identified ARARs. However, Alternative 6 would not comply with 16 U.S.C. §1538(a)(1) Endangered Species Act. Thus, neither Alternative 1 nor Alternative 6 meet both of the threshold criteria, which are the minimum criteria that must generally be met for remedy selection.

Implementing Alternative 2 would both meet the ARAR associated with achieving effectiveness over the long term. Alternative 2 includes managing exposure risks through the establishment of LUCs and performance of LTM.

Alternatives 3, 4, and 5 are ARAR-compliant, but are less desirable. These alternatives are more difficult to implement and would incur a much greater cost for only a slightly higher level of

effectiveness over the long term compared to Alternative 2 based on the fact that no MEC was encountered during the RI.

11. PRINCIPAL THREAT WASTES

Principal threat wastes are "source materials" considered highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. A source material is a material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration of contaminants to groundwater, surface water, or air, or act as a source for direct exposure. A principal threat waste does not exist at the Aerial Rocket Range Target #1 MRS.

12. SELECTED REMEDY

12.1 SUMMARY OF THE RATIONALE FOR THE SELECTED REMEDY

Based on the requirements of CERCLA and the NCP and on a detailed analysis of the remedial alternatives using the nine criteria (which include public and state comments), USACE has selected Alternative 2 – LUCs and LTM as the remedy for the Aerial Rocket Range Target #1 MRS. Consideration of the modifying criteria (state and community acceptance) resulted in changes to the LTM component of the proposed Alternative 2; however, the general response action of risk management through LUCs was not changed.

Managing risks by implementing Alternative 2 will include developing and distributing 3Rs (Recognize, Retreat, Report) explosives safety educational information materials (e.g., brochures, fact sheets) and other information packages (to include a recommended soil management plan) to the public, public officials and emergency management agencies; installation of signs; and implementation of a 3Rs Explosives Safety Educational Program. The 3RS educational material advises people of actions to take should they encounter or suspect they have encountered a munition.

Alternative 2 meets the RAO to reduce the probability of residents, NCF personnel, contractor or maintenance workers, visitors, and recreational users from approaching, moving, disturbing, or handling munitions encountered during residential, construction or maintenance, or recreational activities performed on the ground surface or that include ground disturbing or intrusive activities at the Aerial Rocket Range Target #1 MRS.

The Selected Remedy is believed to provide the best balance of trade-offs among the alternatives with respect to the CERCLA and NCP criteria. USACE believes that the Selected Remedy can be easily implemented based on similar experiences at other FUDS and is the most cost-effective alternative relative to the removal alternatives (Alternatives 3 through 6), while still being protective of human health in the long term, based on the very low exposure risk associated with munitions that may remain present within the MRS boundary. USACE will implement Alternative 2 to comply with the one ARAR (16 USC 1538(a)(1) Endangered Species Act) associated with on-site activities to install and maintain signs.

12.2 DETAILED DESCRIPTION OF THE SELECTED REMEDY

Risks related to potential munitions (UXO, DMM) present will be managed through the selected alternative that includes LUC consisting of various public awareness components regarding handling munitions encountered during residential, construction, maintenance, or recreational activities performed on the ground surface or that include ground disturbing or intrusive activities at the Aerial Rocket Range Target #1 MRS. The implementation of a LUC alternative for this MRS based on 3Rs explosives safety education program provides USACE a means to coordinate an educational effort designed to reduce the probability that residents, NCF personnel, contractors or maintenance workers, or recreational users or visitors will approach, touch, move, or disturb munitions they may encounter, but instead notify local law enforcement of its location. Implementation of this LUC remedy requires the cooperation and active participation of property owners, land users, and state and DoD authorities.

12.2.1 Land Use Controls

Three forms of public informational materials for education are included as LUC components for the Selected Remedy.

- Development and annual distribution of 3Rs (Recognize, Retreat, Report) explosives safety educational materials (e.g., brochures, fact sheets,) and other information packages to provide awareness to property owners of the potential presence of military munitions and the actions to take should they encounter or suspect they have encountered a military munition. Information is to be distributed annually for the first 5-years prior to the Five-Year Review period. After the first 5 years, USACE will make a determination on the frequency of future LUCs. The proposed determination will be provided to MassDEP for review and comment.
- Installation and maintenance of signage at strategic access points in the MRS to alert users of the site's history and potential to encounter military munitions. Signage is provided for the general public accessing the MRS for recreational or other purposes. This signage is in addition to 3Rs explosives safety educational materials.
- Implementation of a targeted 3Rs Explosives Safety Education Program that is focused on the property owners (e.g., residents, the NCF), local responders, and Town officials. This would provide 3Rs explosives safety education material (e.g., videos, brochures, fact sheets), training and other information to provide awareness and to advise people of actions to take should a munition be encountered.
- Further details on LUCS and Soil Management Guidance will be provided in the Land Use Control Implementation Plan.

12.2.2 Long-Term Management

Response actions, such as the Selected Remedy for the Aerial Rocket Range Target #1 MRS, where munitions may be left in-place must be managed in the long-term to address residual hazards or risks. Land use control enforcement, review of site conditions, or maintenance activities for a remedial alternative may be considered means of performing LTM following achievement of response complete. One or more of these components may be used to ensure continued protection. Management over the long-term can be performed on a periodic or as-needed basis. The LTM should be conducted until no further response actions are appropriate or anticipated. Further details on LTM will be provided in the Land Use Control Implementation Plan.

12.2.2.1 Land Use Control Enforcement and Maintenance

For the Selected Remedy, enforcement activities entail performing reviews, reproducing and distributing 3Rs explosives safety education and training materials, and maintenance of signs. The 3Rs training and informational materials will be reviewed, updated, and redistributed periodically following establishment of LUCs. Sign maintenance will occur as needed during LTM.

12.2.3 Five-Year Review

For remedial alternatives, it should be noted that in cases where UU/UE [40 CFR 300.430(f)(4)(ii)] has not been achieved, CERCLA requires the review of remedial actions no less than every 5 years following implementation to ensure that the selected remedy remains protective of human health and the environment. Consistent with this CERCLA requirement, Five-Year Reviews are conducted at FUDS under DERP by USACE (USACE, 2011).

Five-Year Reviews for MRSs determine whether the remedial action continues to minimize explosives safety hazards and continues to be protective of human health, safety, and the environment. Five-Year Reviews will be conducted to address the munitions left in-place. Five-Year Reviews will be completed by the Army and typically include the following general steps:

- Prepare Five-Year Reviews Plan.
- Establish project delivery team and begin community involvement activities.

- Review existing documentation.
- Identify and review new information and current site conditions.
- Prepare preliminary Site Analysis and Work Plan.
- Conduct site visit.
- Prepare Five-Year Reviews Report.

Five-Year Reviews will continue to be conducted every 5 years until conditions are identified that indicate UU/UE is achieved. This assessment will be included as part of each Five-Year Review conducted. A close-out report will be issued and provided to the State of Massachusetts with the final Five-Year Review report after the reviews have been terminated.

12.3 SUMMARY OF ESTIMATED COSTS

The total present-worth cost estimated to perform LUCs and LTM as part of the selected remedy as well as Five-Year Reviews at the Aerial Rocket Range Target #1 MRS is $329,926 over a 30-year period. The estimated costs, which include initial capital costs to develop the informational/educational materials; 30-year periodic costs for LTM; and an annual discount rate, are as follows:

- Estimated Capital Cost: $40,349
- Estimated LTM Costs: $601,163 (excludes 5-Year Reviews)
- Five-Year Review Costs: $136,850
- Estimated Total Present-Worth Cost: $359,579 (assumes 7% annual discount)

Detailed cost estimate information for LUCs and LTM as well as the Five-Year Reviews is provided in Appendix C, and summarized on Table 12-1. For LTM activities, the costs estimated assume annual sign maintenance will be needed, and review/reproduction of informational and educational materials will be conducted annually prior to the first Five-Year Review, and twice between each subsequent Five-Year Review. The costs shown are higher than the proposed Alternative 2 in the PP for the Aerial Rocket Range Target #1 MRS based on the modifying criteria (state and community acceptance) considered by USACE. See Section 14 of the DD for documentation of significant changes made to the Selected Remedy based on the Responsiveness Summary (Part 3).

The information in this cost estimate is based on the best available information regarding the anticipated scope of the remedy. Changes in the cost elements may occur as a result of new

information and data collected during the engineering design of the remedy. Major changes, if they occur, may be documented in the form of a memorandum in the Administrative Record file, an Explanation of Significant Differences, or a DD amendment.

Table 12-1

Aerial Rocket Range Target #1 Munitions Response Site Alternative 2 Cost Estimate

CAPITAL COST:

Bid Item No.	Description	QTY	Unit	Team Production (Units/Day)	# Teams	Duration (Weeks)	Unit Cost	Total
0100	Work Plans	0.00	LS	N/A	N/A	N/A	82,689	$0
0110	Explosives Safety Submission	0.00	LS	N/A	N/A	N/A	21,097	$0
0200	Mobilization	0.00	LS	N/A	N/A	N/A	40,136	$0
0300	Site Management	0.00	WK	0.0	0.0	0.0	28,184	$0
0310	Survey/Positioning	0.00	AC	0.0	0.0	0.0	17,361	$0
0320	Brush Clearing	0.00	AC	0.0	0.0	0.0	44,147	$0
0340	Environmental Monitoring and Protection	0.00	AC	0.0	0.0	0.0	15,491	$0
0400	MD Surface Removal	0.00	AC	0.0	0.0	0.0	52,824	$0
0410	MD Removal to Detection Depth (M&D)	0.00	AC	0.0	0.0	0.0	53,342	$0
0420	Digital Geophysical Mapping	0.00	AC	0.0	0.0	0.0	26,893	$0
0430	Geophysical Data Analysis	0.00	AC	0.0	0.0	0.0	22,637	$0
0440	Anomaly Reacquisition	0.00	AC	0.0	0.0	0.0	5,164	$0
0450	MD Subsurface Removal (DGM)	0.00	AC	0.0	0.0	0.0	53,342	$0
0500	MPPEH BIP	0.00	DY	0.0	0.0	0.0	10,680	$0
0510	Scrap Certification and Disposal	0.00	TN	0.0	0.0	0.0	5,179	$0
0600	Site Restoration	0.00	AC	0.0	0.0	0.0	22,885	$0
0610	Demobilization	0.00	LS	N/A	N/A	N/A	18,688	$0
0700	Final Report	0.00	LS	N/A	N/A	N/A	71,944	$0
0800	Land Use Controls	1.00	LS	N/A	N/A	N/A	31,050	$31,050
	Sub-Total							$31,050
	Contingency	15%						$4,658
	Sub-Total							$35,708
	Infrastructure Improvements	2%						$714
	Project Management	5%						$1,785
	Remedial Design (not applicable)	0%						$0
	Construction Management	6%						$2,142
	Total Capital Cost							**$40,349**

Table 12-1

Aerial Rocket Range Target #1 Munitions Response Site Alternative 2 Cost Estimate (Continued)

PERIODIC COSTS:

	Description	Year	Modifier	Unit	Unit Cost	Total
0900	Long Term Management - Informational/Educational Material Distribution	1-5	1	LS	12,938	$12,938
0910	Long Term Management - Sign maintenance, RAB meetings, etc.,	1 - 30	1	LS	13,570	$13,570
1000	Five Year Review - Year 5	5	1	EA	36,225	$36,225
1010	Five Year Review - Years 10 - 30	10, 15, 20, 25, 30	1	EA	20,125	$20,125

PRESENT VALUE ANALYSIS:

	Year	Capital Costs	LTM Periodic Costs	5-Yr Reviews Periodic Costs	Total Cost Per Year	Discount Factor (%)[1]	Present Value
0100-0800	0	$40,349	$0	$0	$40,349	1	$40,349
0900 & 0910	1	$0	$26,508	$0	$26,508	0.935	$24,785
0900 & 0910	2	$0	$26,508	$0	$26,508	0.873	$23,141
0910	3	$0	$26,508	$0	$26,508	0.816	$21,630
0910	4	$0	$26,508	$0	$26,508	0.763	$20,225
0910 & 1000	5	$0	$26,508	$36,225	$62,733	0.713	$44,728
0910	6	$0	$13,570	$0	$13,570	0.666	$9,038
0900 & 0910	7	$0	$26,508	$0	$26,508	0.623	$16,514
0910	8	$0	$13,570	$0	$13,570	0.582	$7,898
0900 & 0910	9	$0	$26,508	$0	$26,508	0.544	$14,420
0910 & 1010	10	$0	$13,570	$20,125	$33,695	0.508	$17,117

Table 12-1

Aerial Rocket Range Target #1 Munitions Response Site Alternative 2 Cost Estimate (Concluded)

PRESENT VALUE ANALYSIS (Concluded):								
0910	11		$0	$13,570	$0	$13,570	0.475	$6,446
0900 & 0910	12		$0	$26,508	$0	$26,508	0.444	$11,769
0910	13		$0	$13,570	$0	$13,570	0.415	$5,632
0900 & 0910	14		$0	$26,508	$0	$26,508	0.388	$10,285
0910 & 1010	15		$0	$13,570	$20,125	$33,695	0.362	$12,198
0910	16		$0	$13,570	$0	$13,570	0.339	$4,600
0900 & 0910	17		$0	$26,508	$0	$26,508	0.317	$8,403
0910	18		$0	$13,570	$0	$13,570	0.296	$4,017
0900 & 0910	19		$0	$26,508	$0	$26,508	0.277	$7,343
0910 & 1010	20		$0	$13,570	$20,125	$33,695	0.258	$8,693
0910	21		$0	$13,570	$0	$13,570	0.242	$3,284
0900 & 0910	22		$0	$26,508	$0	$26,508	0.226	$5,991
0910	23		$0	$13,570	$0	$13,570	0.211	$2,863
0900 & 0910	24		$0	$26,508	$0	$26,508	0.197	$5,222
0910 & 1010	25		$0	$13,570	$20,125	$33,695	0.184	$6,200
0910	26		$0	$13,570	$0	$13,570	0.172	$2,334
0900 & 0910	27		$0	$26,508	$0	$26,508	0.161	$4,268
0910	28		$0	$13,570	$0	$13,570	0.15	$2,036
0900 & 0910	29		$0	$26,508	$0	$26,508	0.141	$3,738
0910 & 1010	30		$0	$13,570	$20,125	$33,695	0.131	$4,414.05
		sum =	$40,349	$601,163	$136,850	$778,362		$359,579
Total Present Value of Alternative								**$359,579**

Notes: AC = acre, EA = each, LS = lump sum, N/A = not applicable, WK = week

[1]Discount Factor of 7% (EPA 540-R-00-002 OSWER 9355.0-75 A Guide to Developing and Documenting Cost Estimates During FS).

Table adapted from capital and present worth cost estimate developed for Alternative 2 and presented in Appendix C of the *Final Feasibility Study for the Aerial Rocket Range Target #1 Munitions Response Site, Nantucket Beach, Former Nantucket Ordnance Site A.K.A. Tom Nevers Rocket Projectile Target; Tom Nevers Area, Formerly Used Defense Site, Nantucket, Massachusetts* (WESTON, 2014a).

12.4 EXPECTED OUTCOME OF SELECTED REMEDY

Based on the information available, Alternative 2 – LUCs and LTM is the remedial alternative selected by USACE for the Aerial Rocket Range Target #1 MRS. This alternative provides the best balance of tradeoffs with respect to the evaluation criteria considered for remedy selection. Alternative 2 can be readily implemented to achieve the remedial action objective in a cost-effective manner while providing a high level of overall protectiveness relative to current and future use of the Aerial Rocket Range Target #1 MRS. USACE expects the preferred alternative to meet regulatory requirements and to satisfy the statutory requirements under CERCLA §121(b).

Risk management measures will be maintained until the potential hazards associated with the military munitions that may remain present at the Aerial Rocket Range Target #1 MRS is determined to be at a level that allows for UU/UE. USACE is responsible for implementing, maintaining, reporting on, and enforcing risk-management measures. Although USACE may later transfer these procedural responsibilities to another party by contract, agreement, or through other means, USACE will retain ultimate responsibility for remedy integrity.

13. STATUTORY DETERMINATIONS

Under CERCLA Section 121, USACE must select remedies that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost-effective, and uses permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the TMV of hazardous substances as their principal element. The following sections present a discussion of the remedy in light of these statutory requirements.

13.1 PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

The Selected Remedy, LUCs and LTM, will protect public health through mitigation of hazards to public health from exposure to military munitions that may remain present by educating residents and the public about the actions to take should they encounter or suspect they have encountered a military munition. Protection is accomplished by focusing on the most likely Aerial Rocket Range Target #1 MRS users who may be exposed to residual munitions by providing the following elements of the remedy:

- 3Rs explosives safety educational information materials to property owners, public officials, and emergency agencies.
- Signs posted at strategic public access points to alert users of the MRS's history and potential to encounter munitions and the provision of 3Rs explosives safety educational public safety information for the general public accessing the MRS for recreational or others purposes.
- Routine 3Rs education and outreach to current users of the Aerial Rocket Range Target #1 MRS area regarding the potential existence of military munitions and actions to take should they encounter or suspect they have encountered a munition.

A threat to the environment is not anticipated from military munitions that may remain in place.

13.2 COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

The Selected Remedy will be implemented to comply with the one ARAR (16 USC 1538(a)(1) Endangered Species Act) associated with installation and maintenance of signs. Because no

munitions clearance/removal activities would be performed, the action-specific ARAR considered during the FS for RCRA Subpart X is no longer applicable. A detailed description of the identified ARAR for the Selected Remedy is provided in Appendix D.

13.3 COST-EFFECTIVENESS

In USACE's judgment, the Selected Remedy is cost-effective because it represents a reasonable value for the money to be spent. In making this determination, the following definition was used: "A remedy shall be cost-effective if its costs are proportional to its overall effectiveness" (NCP §300.430(f)(l)(ii)(D)). The determination was accomplished by evaluating the "overall effectiveness" of those alternatives that satisfied the threshold criteria (i.e., were both protective of human health and the environment and ARAR-compliant). Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence, reduction in TMV through treatment, and short-term effectiveness). Overall effectiveness was subsequently compared to estimated costs to determine cost-effectiveness. The overall effectiveness of the Selected Remedy was determined to be proportional to its costs; hence, the Selected Remedy represents a reasonable value for the money to be spent.

As indicated by the comparative analysis conducted for all remedial alternatives considered during the FS, the Selected Remedy, LUCs and LTM, is the most cost-effective alternative evaluated that is ARAR-compliant and that provides acceptable levels of achievement of the other evaluation criteria.

13.4 UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT POSSIBLE

USACE has determined that the Selected Remedy, LUCs and LTM, represents the maximum extent to which a permanent solution can be implemented in a practicable manner for the Aerial Rocket Range Target #1 MRS. Alternative treatment technologies or resource recovery technologies were found not to be appropriate for MRS conditions. Of those alternatives that are protective of human health and the environment and comply with ARARs, USACE has

determined that the Selected Remedy provides the best balance of trade-offs in terms of the five balancing criteria.

13.5 PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

Treatment of MEC consists of destruction of explosive hazards. Under the Selected Remedy, LUCs and LTMs, there is no planned clearance/removal (i.e., reduction in volume) of military munitions that may remain present at the MRS.

13.6 FIVE-YEAR REVIEW REQUIREMENTS

Because this remedy results in military munitions potentially remaining at the Aerial Rocket Range Target #1 MRS, it does not allow for UU/UE, a Five-Year Review is required per NCP 40 CFR §300.430(f)(4)(ii). A Five-Year Review will be conducted within 5 years after initiation of the selected remedy. Five-Year Reviews will continue on a periodic basis every 5 years to ensure that the remedy remains protective of human health and the environment. The need for continued recurring reviews will be assessed at each Five-Year Review.

14. DOCUMENTATION OF SIGNIFICANT CHANGES FROM THE PREFERRED ALTERNATIVE IN THE PROPOSED PLAN

The PP for the Aerial Rocket Range Target #1 MRS was released for public comment between 3 October 2014 to 4 December 2014. The PP, which described the remedial alternatives considered and the preferred alternative for the Aerial Rocket Range Target #1 MRS, proposed no further action for the Aerial Rocket Range Fan MRS. The preferred remedial alternative was presented as Alternative 2 – LUCs and LTM for the Aerial Rocket Range Target #1 MRS. A public meeting on the PP was also held on 9 October 2014. The original public comment period was extended from 4 November 2014 to 4 December 2014, per public request noted during the public meeting in order to provide Nantucket residents, specifically seasonal residents currently off-island, more time to evaluate the PP.

Several comments that were received during the public comment period or public meeting were addressed in the Responsiveness Summary (Part 3 of the DD) that resulted in changes to the LTM component of the proposed final remedy, however, the general response action of risk management through LUCs was not changed. Based on concerns raised by MassDEP and several community members, the proposed LTM period was revised without an assumed end-point after five years. For the final remedy, the LTM period for the response will begin following establishment of LUCs and will continue with Five-Year Reviews. The need for continued LTM and recurring reviews will be re-assessed at each Five-Year Review. The cost estimate provided as part of this DD for the Selected Remedy includes projected costs for a duration of 30 years per standard guidance under the FUDS Program and CERCLA.

Additionally, based on public comments received, the on-call UXO support described in the PP that was to be performed by USACE following establishment of LUCs is no longer included. Instead, the local EOD or State bomb squad is responsible to provide support for any future responses to munitions items that may be encountered by the property owners or the public and reported in accordance with the 3Rs. It is their mission to respond and safely dispose of these items, and they will investigate items in a timely manner. There is no time limit on this response.

This DD does not document significant changes to the proposed remedy identified in the PP for the Aerial Rocket Range Target #1 MRS because the general response action remains risk management and capital costs are unchanged. However, the costs estimated to perform LTM following response complete are increased based on the additional years of LTM activities included in response to concerns raised by MassDEP and the community.

PART 3: RESPONSIVENESS SUMMARY

OVERVIEW

This Responsiveness Summary responds to all questions and comments raised by the Commonwealth of Massachusetts and the community during the public comment period held from 3 October 2014 to 4 December 2014, following public release of the PP for the Nantucket Beach FUDS on 3 October 2014. Comments were addressed either in the Responsiveness Summary or during the public meeting. Public meeting comments and open discussion items are included in the transcript and written comments are included in the Responsiveness Summary. A total of seven questions from the public meeting that required additional clarification from that noted in the public meeting transcript are provided in the Responsiveness Summary along with applicable responses.

The PP described the remedial alternatives considered and preferred alternative for the Aerial Rocket Range Target #1 MRS, and proposed no further action for the Aerial Rocket Range Fan MRS. The preferred remedial alternative was presented as Alternative 2 – LUCs and LTM for the Aerial Rocket Range Target #1 MRS. Relevant comments raised by the community verbally during a public meeting on the PP that was held on 9 October 2014 are also included. The original public comment period was extended from 4 November 2014 to 4 December 2014, per public request noted during the public meeting in order to provide Nantucket residents, specifically seasonal residents currently off-island, more time to evaluate the PP.

USACE is the lead agency conducting the RI/FS and remedy selection process for implementation of a final selected remedy. USACE includes both the New England and Baltimore District offices. The support agency and lead regulatory is MassDEP. USACE has determined that this response action is necessary to protect human health based on the current and intended future use of the MRS for residential and recreational activities. MassDEP concurs that LUCs and LTM are necessary to protect human health, but does not concur with the preferred remedial alternative as designed and presented in the PP. Specifically, MassDEP does not agree with the assumption that should no UXO or DMM be encountered that are determined after evaluation to pose an explosive hazard, the MRS will have reached a condition allowing for

UU/UE after 4 years and that LTM and the Five-Year Review process would be terminated following the first Five-Year Review.

SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND LEAD AGENCY RESPONSES

The following are the comments received from MassDEP, the property owners or local community with USACE responses.

State Comments Received

The following comment was received from MassDEP on 18 September 2014 relative to the PP.

Comment 1: MassDEP does not agree with the assumption that no additional five-year reviews will be conducted and that LTM activities will be terminated subsequent to the initial five-year review reporting period. This proposal is based on the assumption that no MEC will be identified during the first five-year reporting period and that stakeholders will agree that the conditions at the MRS are determined to be stable. MassDEP does not concur that stable conditions will exist after the five-year review period since the preferred remedial action alternative is to leave munition items in place and implement LUCs and LTM. As stated on Page 5 of the Proposed Plan, "because the RI investigated only a percentage of the acreage within the MRS, it is still possible for MEC to be present at the MRS". The plan states that this is low statistical potential; however, the possibility remains. Since the MRS will still contain an unknown quantity of munitions items and the possibility exists for those items to pose an explosive hazard, however small the probability, the LUCs, LTM activities, and subsequent five-year reviews should remain in place. Nationally, the assessment and determination as to how to manage the residual risk at munitions sites is currently on going. Until these discussions are complete and a solution has been developed that is acceptable by the state, we will require 5 year reviews and some type of LUCs and LTM activities to manage the residual risk at this site.

Response 1: The USACE has considered this concern raised by MassDEP and has amended the alternative accordingly. The LTM period for the response will begin following establishment of LUCs and will include Five-Year Reviews. The need for continued

LTM and recurring reviews will be re-assessed at each Five-Year Review. The cost estimate provided as part of the decision document for the final remedy will include projected costs for a duration of 30 years per standard guidance under the FUDS Program and CERCLA.

Verbal Comments Received at the Public Meeting

The following significant comments were verbalized by community members at the Public Meeting for the PP held on 9 October 2014 at the Public Safety Building, located at 4 Fairgrounds Road, Nantucket, Massachusetts. The proceedings of the public meeting were recorded and transcribed by a professional stenographer. The transcript for the meeting is provided for public information in the Administrative Record file for the FUDS, a copy of which is located at the Nantucket Atheneum, 1 India Street, Nantucket, Massachusetts, 02554.

Comment 1: So if there is something in your proposed solution, if something was to change and there was to be another area that was discovered based on whatever, some new information or new ordnance popping up somewhere after this five-year period, what happens then? Do you know if it is the Town of Nantucket that pays for that to be removed and cleaned up? What happens after this five-year period?

Response 1: If a munition is found within the project boundaries, it should not be approached, touched, moved, or disturbed. Local law enforcement should be notified so that it can be evaluated and dispose of properly. This is the basis for the Department of Defense's 3Rs (Recognize, Retreat, Report) explosives safety message. The 3Rs will be incorporated in the LUC components established for the MRS. The State bomb squad or local EOD team would respond to military munitions that may been encountered. The Town of Nantucket is not responsible for removal or cleanup now or in the future. The government is responsible for funding and conducting current and future environmental responses (cleanup) associated with this project. This remedial alternative plan is based on our knowledge of current site conditions. Should site conditions change, USACE would re-evaluate the MRS or other portions of the FUDS area to determine if the remedy is still protective. Currently this is scheduled to be done every 5 years as part of the Five-Year

Review process and can be done more frequently if warranted based on changes observed in the conditions at the site.

Comment 2: When you talked about land use controls, what does that mean?

Response 2: The proposed LUCs for this MRS consist of developing and distributing 3Rs (Recognize, Retreat, Report) explosives safety educational information materials (e.g., brochures, fact sheets) to the public and 3Rs explosives safety educational material and other information packages to public officials and emergency management agencies, installation of signs, and implementation of an 3Rs Explosives Safety Educational program.

Comment 3: So you're not actually controlling how the land is used, you're just notifying people in that area of its history?

Response 3: Correct, it is called land use controls and long-term management, but we're not controlling ownership or use of the land, just providing 3Rs explosives safety educational material to advise people what to do should they encountered or suspect they have encountered a munition. Per stakeholder request, USACE is developing a soil management plan which will be provided to assist the property owners and local community with precautions to take and guidance on how to manage soil when doing intrusive work on their property.

Comment 4: My question is more about the bulk of the residents in Tom Nevers. Out of the 550 houses there are 200 and something that are not seasonal, that are year rounds. So I'm wondering about all of those other people. How are they supposed to have any input or awareness of this situation? What about the residents from the Tom Nevers Civic Association?

(Note: "Situation" in the above question is in reference to the public meeting date or time.)

Response 4: Property owners at the Wigwam road Housing area (off Russell Way) have been informed throughout the project through communication with Mr. Dan Saevitz. He has been on USACE e-mail distribution list, has been invited to all of the TPP meetings, and has been the conduit that basically relays the information to all of those residents located on Wigwam Road. Similarly, The Tom Nevers Civic Association has been kept informed through contact with Mr. Dual Mcintyre and/or the residing president. The Tom Nevers Civic Association includes Tom Nevers East, Tom Nevers West, Tom Nevers, Central, Tom Nevers South, and Madequecham West. Property owners within the immediate vicinity of the Aerial Rocket Range boundary have been kept in direct contact through USACE. USACE has also notified the town. The town has been invited to all of our meetings.

Comment 5: So I'm wondering if any of your plans projected the impact if there is erosion on that site and whether it might make sense to treat the potentially eroding areas differently than you do when it's a little further inland. Like, would it make more sense to dig stuff up if you think it's going to erode?

Response 5: The bluffs are a very sensitive area. The bluffs are already unstable due to the dynamic coastal environment (e.g., strong waves, winds, and incoming storms). Any land owners along this area are very concerned about doing anything with the bluff due to its instability. Remediation and digging out ordnance from the bluff, would cause greater instability and make a current problem worse by removing vegetation and disturbing the fragile soil. USACE believes the most effective and practical way to handle the munitions remaining in the bluff is to allow natural erosion to continue such that items may be removed as they are naturally exposed.

Comment 6: How do you expect to prepare the brush clearing?

Response 6: With Alternative 2 there won't be any brush clearing. Alternative 2 is limited to LUCs and LTM. An active clearance/removal option (as presented in the other

alternatives) would use a brush hog or equivalent type of machinery to perform vegetation clearing.

Comment 7: I have a suggestion on the brush clearing for using goats because they do excellent clearing. They don't require fuel or man hours. I guess it's a greener way of doing it than the actual machinery. That's just a suggestion.

Response 7: Conceptually, this method of vegetation removal sounds like it could be beneficial based on the "greener" nature of the practice. It would likely need to be used in combination with mechanical means to achieve vegetation clearance/removal within the desired timeframe that typically drives a clearance/removal operation. Although vegetation removal is not necessary to establish LUCs or perform LTM as part of the preferred alternative for the MRS at this time, if a future munitions clearance/removal action is undertaken it could be considered.

WRITTEN COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD

The following comments were submitted in writing by community members and the property owners during the public comment period held between 3 October 2014 and 4 December 2014.

Comment 8: You've asked for public comment on the U.S. Army Corps of Engineers' proposals re: the Tom Nevers Area in Nantucket. Mine are attached. They take the form of a Letter to the Editor just sent to "The Nantucket Inquirer and Mirror". I own two properties totaling 6-acres in Tom Nevers…4 Longwood Drive and 2B Longwood Drive. See "Letter to Editor" below:

Army Corps Proposals for Tom Nevers Totally Unacceptable.

To the Editor:

In 2012, the U.S. Army Corps of Engineers opened a Pandora's Box when they decided to survey an area in Tom Nevers that the Navy had used as a training site for pilots during WW II. After nearly 70 years without a problem, they decided to bring in helicopters and a land team to locate and then remove any old unexploded rockets or other ordinance that

might still exist on the site. That none was found is good news and not unexpected. But what they're now proposing is an apparent attempt to wash their hands of any and all future responsibility by giving us a Hobson's Choice of alternatives…all no-win-options-for-us…which they're now asking us to select from.

Even though their official findings report no unexploded ordinance or discarded munitions, and no chemical contamination of the site, they're proposing in one of their recommended options a so-called "public-information campaign" with warning signs being posted across a 97-acre area…and with explosive-hazards-literature being widely distributed. Think that might affect property values? Think that might cast a pall over the entire area?

Another alternative is to provide on-call support for four years in response to any munitions discovered at the site, along with a five-year review. I guess that leaves them with no further liability after five years? Nice try!

Just as a corporation's responsibility for polluting a river or the land cannot be abrogated by simply posting warning signs…or by simply saying "call us if you have a problem anytime within the next 5 years"…the Feds should not be allowed to get off so easily. Is all this for their benefit or ours?

Either there's a danger or there isn't. If there isn't…then the Feds should clearly say so (after all, that's what their findings suggest). But they should then also be required to acknowledge that there is no time limit to the U.S. Government's liability.

If on the other hand, the Feds decree that there is a danger, I see only two acceptable alternatives—both of which involve payments to us by the Federal Government.

1. The Feds take the 97-acres by eminent domain…paying the conservation foundations and private-property-owners fair market value for their land. (Just as the IRS calculates estate taxes based on the land's value if fully developed, we're probably

talking about a mere $32-million here.) Then the Feds can put up all the signs and fences that they want! OR…

2. The Feds acknowledge that their new "danger warnings" will clearly diminish the economic value of the properties to their owners…not only in the immediate 97-acres but also in the broader surrounding area. Under the "Takings Clause of the 5th Amendment" this would require them to compensate the affected conservation foundations and private-property-owners for the diminished value of their land. Wonder what that would cost?

The U.S. Army Corps of Engineers opened this Pandora's Box…unleashing economic havoc where none existed. Now they…and not we…should pay the full price for their actions. That's my belief! And I encourage the Selectmen, the other key town officials, the Conservation Foundation heads, the Nantucket Civic League, and all the area community associations to join me in taking this position. What the U.S. Corps of Engineers is proposing is simply outrageous…and totally unacceptable!

Response 8: Based on the RI conducted by the US Army Corps of Engineers, no MEC items were found anywhere on site. The RI determined there was a low statistical potential for MEC to be present; therefore, a MEC source is possible within the 97-acre Aerial Rocket Range Target #1 MRS. The amount of MD identified within the MRS and the high volume of receptors does indicate that munitions will continue to be encountered within this MRS in the future. The likelihood of encountering munitions items drops significantly outside the 97-acre MRS to low. Although these items are most likely practice rockets/components, and inert (do not contain explosives) in nature similar to the items characterized during the RI, the inert munitions can look identical to live MEC items by untrained individuals and we cannot rule out the possibility that a munition containing explosives may be found in the future. Thus, USACE recommended Alternative 2 to ensure that information on what to do should members of the public come in contact with munitions remaining at the MRS is known; and, that munitions items discovered in the future can be dealt with by reporting finds to the appropriate channels for safety purposes. MassDEP has been a project stakeholder throughout the

investigation and remedial decision-making process for the FUDS. MassDEP concurs that LUCs and LTM are appropriate for the MRS in the interest of public safety based on the residual potential for MEC to be present in portions of the MRS not intrusively investigated during the RI.

In response to current and/or future liability for ordnance on this site, the government is not getting off easy or washing its hands of the responsibility and liability for ordnance on this site. The government remains responsible for this site. The government will be performing LTM with Five-Year Reviews on this site forever or until it is determined that management and Five-Year Reviews are no longer required, to ensure the remedial alternative selected continues to be protective of the public.

Regarding whether there is a danger or not and your request that the government give a definitive answer, in the case of ordnance items; this is not a black and white issue. Yes or No, there is, or is not a danger. To date, USACE has not found any live ordnance and/or spotting charges with explosive components, so in essence there is a very small likelihood of encountering munitions with an explosive hazard. However, USACE cannot rule out the possibility that a munition may be found in the future that contains explosives. Given the dynamic environment that exists on Nantucket, residual munitions items will continue to be encountered as they are exposed through erosion of the bluff, or through activities engaged in by the property owners. Thus, the government will conduct Five-Year Reviews for an undetermined timeframe to continually assess the protectiveness of the selected remedy.

In response to Item No. 1, USACE does not take property by eminent domain as part of the FUDS Program. There are no plans to take the 97-acres as there is no increased risk or hazard to the public. It is USACE belief that taking of any property is unnecessary and would not be in the best interest of the public or property owners. There are no deed or use restrictions on any portion of the properties.

In response to Item No. 2, since no live ordnance was found, and there are no land use restrictions, it is not anticipated that installation of signs by the government will diminish property values. The signs are designed to be like park service signs, displaying a historical message as to what the site was used for as well as displaying a safety message describing what actions to take should someone encounter a potential munition item. The signs are not intended to be unnecessarily alarming to the public. There is no plan to compensate property owners for any suspected property value decrease.

Comment 9: Hi, My family has owned a small cottage at 14 Waquoit Road for several generations. It is on the bluff between the airport and the Navy base. Can you tell me how this is going to affect us? Is there any talk of taking properties? If you would like to call, I am available most of the time on my cell.

Response 9: Waquoit Road is located approximately 1 mile away from the revised MRS area where munitions debris was found (and determined to be inert in nature) during the RI. Alternative 2 will not have any direct impacts to any properties outside the MRS area. There is no planned taking of properties on behalf of the government.

Comment 10: Gentleman, I am a year round resident of Tom Nevers West. I understand various plans are being considered concerning the WWII munitions in the Tom Nevers area. My concern continues to be the fact that we have never been able to perform a prescribed burn in the Tom Nevers area. Apparently, the munitions in the ground make it unsafe to provide this vital service. These 88 acres in Tom Nevers have been overgrown with scrub oak for the past 100 years. A prescribed burn would help to reduce the fallen timbers and other fuels while serving to protect our community from an extreme fire.

It is my opinion, at the very least, we need to install fire breaks between these fields and the Tom Nevers West community. I am concerned these munitions are preventing the creation of the simplest such fire break along the currently overgrown Lancaster Ave. With minimal effort, Lancaster Ave could be widened to provide a buffer between our

community and the Conservation fields. Additionally, this would allow better access for emergency vehicles, if such a situation did occur.

I hope you will consider my concerns as you move forward with your discussions.

Response 10: No live munitions items were found during the RI and only munitions debris (documented as safe) have been found to date. As a result of the RI findings, there are no limitations or restrictions on the use of property inside or outside of the MRS. Firebreaks can be created. The NCF is in the process of installing fire breaks independent of the USACE RI and has sufficient information and guidance to do so.

Additional information provided by the NCF via email correspondence dated 13 November 2014, from Mr. Jim Lentowski (NCF-Executive Director) to the commenter (USACE was included in the email distribution) regarding this comment is provided below:

Thank you for sharing your communication with me [Mr. Jim Lentowski].

You should know that the Foundation has been concerned with the threat of wildfire for several years. As a result, it initiated an ambitious, long-range program to address this issue. Working with fire professionals, including the island's fire chief, a complicated planning and permitting process began about 2½ years ago to establish a permanent Wildfire Risk Reduction Program.

In prioritizing areas that would be treated when the needed permits were in-hand, the Foundation had several of its large-acreage holdings in mind. They include the Head of the Plains (west of Clark's Cove), the expansive Middle Moors (north of the Milestone Road and south of the Polpis Road), and South Pasture (between Tom Nevers west and Madequecham Valley). As a nonprofit organization we had to first raise a significant amount of money before moving ahead – more than $250,000 – to fund the planning/permitting phase, acquire appropriately scaled brush cutting equipment, and

have resources available to pay for the first year of staff time, equipment maintenance, fuel, etc.

The planning and permitting of the first two areas was completed with the help of an off-island wildfire specialist. Two years ago field work was started adjacent to the town's waste recycling facility bordering the Head of the Plains and south of the North Pasture Lane residential neighborhood at the edge of the Middle Moors. Additional work continued in both areas last winter with more being done in the coming months. Note that initial cutting and follow-up maintenance mowing is only done in the off-season months when foliage is off of plants, there is no ground-nesting activity, and operator time is available.

The costly planning and implementation related to Foundation properties in South Pasture was not started in 2012 because of a Corps of Engineers' investigation of a WWII era rocket range. You may know that a range was established on land taken by the federal government in the mid-1940s and used by it as a training site for naval aviators. After several years of study by the Corps, the area of greatest concern has been significantly narrowed from the more than 5,000 acres contained in the Tom Nevers' Formerly Used Defense Site (FUDS), which encompassed all of the Foundation's South Pasture properties.

The Corps' attention is now focused on a far smaller, 97-acre area that mostly involves privately-owned properties along New South Road. While hundreds of acres of Foundation-owned open space north of these parcels has been excluded from further study, the Corps cautions that the closer we get to the remaining study site, the greater the likelihood is that fragments of munitions (2.5", 3" and 5" rockets) and possibly intact 5" shells could be discovered on the Foundation's land, either on the surface, partially buried, or below ground. The Corps is unwilling to declare that Foundation property beyond its 97-acre continuing study site is free of munitions debris.

The Corps has also concluded that because all of the 938 shells and shell fragments which were located and removed during its investigations have been inert, the risk of harm is virtually nonexistent. The Commonwealth's Department of Environmental Protection, an agency that regularly works on similarly spoiled sites, has questioned this conclusion, also noting that the State Police's five-person bomb squad has very limited capacity to respond to munitions debris discoveries given its statewide responsibilities. As has been explained, following the completion of the Corps' proposed last phase of its survey in 2019, the State Police would become the primary response agency for landowners to contact when munitions debris is discovered. If unavailable, the Corps has said that a Navy bomb disposal unit would be the next available responder. We are told that both groups have well-defined conditions of engagement that relate to how munitions debris is found on the surface, partially exposed, or discovered in an excavation.

Obviously, the Foundation does not want its staff conducting initial cuts, maintenance brush cutting, or prescribed burns in an area where they would be exposed to potential harm. Hitting a large rocket body fragment, or worse yet, an intact rocket with the FECON industrial mulcher we employ in creating a firebreak could result in physical injuries from airborne debris. Likewise, conducting prescribed burns involving stands of dense scrub oak where shell fragments possibly containing unspent propellants may be hidden, can be potentially harmful.

Working in South Pasture will require great care. This will come following the preparation of a plan, issuance of necessary permits, and when the funds needed for operations within that area are raised. In the meantime, we feel that we cannot proceed in South Pasture until the Corps designates those areas on the Foundation's share of the FUDS -- outside of the 97-acre continuing study site – where it will be safe to work or where there may still be risk of encountering munitions debris. Additionally, we need a commitment from the Corps that, going forward, not just for the next 4 or 5 years, it or other federal agencies will respond promptly to the Foundation's requests for the evaluation and disposal of any rocket range related munitions debris which may be discovered on Foundation properties within the FUDS. We want our evolving land

management efforts in this area, including the Wildfire Risk Reduction Program, to proceed safely.

Response 10A: In regards to the follow-on concerns raised in the NCF response above to the public commenter, USACE offers the following:

In response to the NCF statement that "risk from harm is virtually nonexistent", please note that yes, to date, USACE has not found any live munitions or practice munitions with spotting charges containing explosive components, so in essence there is a very small likelihood of encountering munitions with an explosive hazard. However, USACE cannot rule out the possibility that a munition may be found in the future that contains explosives. Additionally, although likely inert (similar to the practice rockets identified during the RI), remaining munitions should not be picked up or relocated offsite where they could be "rediscovered" by someone unfamiliar with the project and the nature of these items, which may cause unnecessary public panic and response actions to be initiated by the government. Also, please note that MassDEP concurred with this conclusion in the final report for the RI.

In response to the request for USACE to designate "safe" work areas, there are no use restrictions being placed on the FUDS area either within or outside of the 97-acre impact area discovered around former Target #1 located along New South Road. Additionally, no munitions-related items were discovered outside of the 97-acre boundary delineated around the target as a result of the RI. No action is proposed to be taken by USACE for the remaining 5,060 acres outside of the 97-acre impact area meaning that no actions have been determined necessary to protect human health or the environment in this area because as no hazards or unacceptable risks have been identified based on the information collected to date. This "no action" portion of the former aerial rocket range has been designated a separate MRS in the Department of Defense (DoD) database for the FUDS Program and is in-progress of being assigned a status of No DoD Action Indicated

In response to the request for a commitment from USACE for future response activities in a timely manner, USACE cannot "commit" EOD or the State bomb squad to a definitive timeframe for response to munition items discovered in the future as these government-provided services operate under a different structure of authority. However, as long as items continue to show up, EOD or the State bomb squad will respond as a matter of public safety and service. Turn-around-time for investigating munitions items by the State bomb squad or a local EOD unit under the 3Rs have historically ranged between 1 and 3 days, not weeks (usually within 24 hrs). There is no time limit on this response protocol to ensure public safety.

Comment 11: The undersigned represents the NCF, a non-governmental, Massachusetts not-for-profit corporation whose principal mission is land protection and the management of its properties on Nantucket.

NCF, whose properties are open to the public, is a major property owner and stakeholder in the Aerial Rocket Range Fan of the Nantucket Beach FUDS project area. Representatives of NCF have been engaged in the discussions leading up to the preparation of the Final Feasibility Study for the project, and have reviewed the Corps' proposed alternatives. The Corps' recommended Alternative 2, employing land use controls and long term management efforts, addresses some but not all of the concerns raised by NCF during the evaluation process. NCF respectfully requests that additional safeguards be added to the alternative specifically;

1. The determination that following 4 years no unacceptable risk would remain if no MEC's are found on the site during that time, is too short a period given Nantucket's rapidly eroding south shore and sandy soil composition. Nantucket's experience with MEC shows that munitions debris are exposed by ongoing erosion activity. Rocket and shell fragments are uncovered by naturally occurring coastal erosion and have been discovered by individuals walking on the beach adjacent to the eroding bluff. Given the Tom Nevers area's erosion rates, 5 years is not sufficiently long a period to

deal with the likelihood of ongoing munitions debris exposures give how far inland (several hundred feet) known concentrations of such debris are known to exist.

2. Additionally, the unexploded ordnance (UXO) on-call support would be available for too short a time frame. Given that Nantucket has no local munitions handling expertise, and that the limited State Police bomb squad unit is not able to handle all cases of exposed MEC, the availability of qualified DoD resources to timely deal with a munitions debris exposure is too limited under alternative2. The burden on the property owner need to safeguard a site, possibly for days or weeks until a qualified disposal team with authorization to work on the site is determined and dispatched to the island is unreasonable, and at whose expense?

3. Even with the training of it land management staff during the timeframe proposed in Alternative 2, the NCF, as a corporate entity, will likely be the only affected private land owner still owning the property at the site 50 years hence. NCF will be the owning and responsible landowner after all federal agency involvement has ended. Therefore, some sort of ongoing and rapidly responsive federal munitions disposal resource needs to be available to NCF well beyond the time period now recommended in Alternative 2.

For these reasons, NCF feels that a much longer term of federal agency involvement and obligations to affected landowners needs to be included in the Alternative 2 proposal. Further, that ongoing procedures be established by the Corps for the security and safe disposal of any uncovered MEC in a timely fashion that do not expose NCF to ongoing liability, munitions disposal related costs, or that would require NCF to close portions of its properties to its staff or the public for an unreasonable amount of time.

Response 11: In regards to Item No. 1, USACE plans to revise the remedial alternative such that LTM with Five-Year Reviews remains ongoing (costs estimated for at least 30 years into the future) until it is determined that management is no longer required as part of a Five-Year Review.

In regards to Item No. 2, the on-call UXO support described in the Proposed Plan that was to be performed by USACE following establishment of LUCs is no longer included (see additional justification provided below in the Response to Comment 12). Instead, the local EOD and/or State bomb squad is responsible to provide support for any future responses to munitions items that may be encountered by the property owners or the public as munitions response is EOD's mission and not the USACE's mission. There is no time limit on this response. As long as items continue to show up, EOD or the State bomb squad will respond. Turn-around-time for investigating munitions items by State bomb squad or a local EOD unit under the 3Rs has historically ranged between 1 and 3 days, not weeks (usually within 24 hrs).

In regards to Item No. 3, any items that are reported under the 3Rs in the future would be responded to by either State bomb squad or EOD. It is their mission to respond and safely dispose of these items, and they will investigate items in a timely manner.

Comment 12: First of all I want to Thank You and your Associates for all your efforts on behalf of the residents and visitors to our part of the Island. Especially the additional step you and your Associates took in actually examining the abandoned rockets to help determine the extent of the risk of residual explosive.

Everyone of course is grateful that of the hundreds and hundreds of rockets tested not a single one contained residual explosive. Reflecting this, our level of anxiety has been greatly reduced.

In my opinion a major excavation of the eighty or so acres would be counterproductive. But I do think the situation needs to continual to be monitored. My suggestion over the next 3 or 4 or 5 yrs.is that when, not if, additional rockets surface instead of just being hauled away by the State Police that the rockets be collected and stored in a secure place to facilitate additional testing for residual explosive at a future date. This would hopefully add to the statistical data in support of the prevailing opinion that theirs is virtually zero potential risk of a seriously injury associated with these abandoned rockets.

If deemed appropriate, these rockets could be stored on my property.

Once again, Thanks for everything that has been accomplished.

Response 12: It is agreed that future discoveries of munitions should be handled in a consistent manner that maintains public safety through disposal as well as facilitates making an accurate determination as to whether or not an item is live (i.e., contains high explosives), Protocols for storing items temporarily on the island in a secure location for future testing for residual explosives violates UXO safety regulations. Items must be identified and determined to be live or inert and then detonated, to be rendered safe to move immediately, not stored for later evaluation. The current protocol is for the public to follow the 3-R's and to report suspect munitions items by calling 911. EOD and the State Bomb Squad procedures for demolition protocols are not the same as USACE given that each organization's mission differs. The first priority of EOD/State bomb squad is to render an explosive item safe, not to definitively determine its nature or if it contains live material. USACE does not have the authority to change demolition procedures used by DoD EOD units or the State Bomb Squad. USACE has notified appropriate Army offices of our concerns regarding demolition procedures, and will continue to attempt to address the issue.

As a result of these discussions and in light of this public comment received, *who* will provide on-call UXO support has been revised. The on-call UXO support described in the Proposed Plan that was to be performed by USACE following establishment of LUCs is no longer included. Instead, the local EOD and/or State bomb squad will provide support for any future responses to munitions items that may be encountered by the property owners or the public. USACE will continue to request copies of any munitions-related records for responses performed by EOD and/or State bomb squad for evaluation as part of the LUCs. This change is due to the fact that USACE is not authorized to provide on-call UXO support in accordance with the following Army Rules:

Comment 13: At the annual meeting of the Tom Never Civic Association (TNCA) last July there was an announcement about upcoming changes to the board so I'm not sure who

the correct contact would be at this time, however, you can likely contact the board members through the TNCA website at www.tomnevers.org.

Also I was able to find two separate references that mentioned a floating bombing target in the middle of Tom Nevers Pond, which is to the east of the target area covered by your project and was not included in your map of the areas checked for ordnance. It is mentioned in the Winter 2012 TNCA newsletter on page 5. You can access this from the website. Also I read that Tom Nevers Pond had a floating target in the book "Tom Nevers Ghost" by Jack Warner on page 184.

Response 13: The TNCA website information is not current; however, the contact info listed below is correct for 2014/2015 which was maintained for the project by USACE along with a listing of directors. The TNCA point of contact was invited to all technical project planning meetings held for this project by USACE and their contractor with MassDEP, the property owners/representatives and the Town to keep the community informed and involved in the CERCLA process.

Tom Nevers Civic Association
PO Box 2926
Nantucket, MA 02584
info@tomnevers.org
508-257-4447
POC: Dual Macintyre

TNCA Officers – 2014/2015
President – Dual Macintyre
Vice President – Kathy Baird
Treasurer – Robert Lucas Fischer
Secretary – Nancy Kubilus

During historical records reviewed for this FUDS project, no documentation of a floating target on Tom Nevers Pond was found by USACE and the Pond is outside (to the east) of the known property leased by the US Government. There were no reports of intact or live munitions items being found in the Tom Nevers Pond area by State bomb squad or EOD staff prior to conducting the RI. Thus, the Pond itself was not included in the areas investigated as part of the rocket range during this RI. Based on a 1/6/15 conversation

with State Police on Nantucket, there was a single reporting of an item located on the south side of the pond bank which was confirmed to be a rocket fin which is considered munitions debris. No other data on this item was available. Although the RI conducted by USACE in 2012 did not include the Tom Nevers Pond as a target location, the airborne survey that was conducted during the RI to detect anomalies along the beach and shoreline extended eastward outside the MRS boundary to an end point located just south of the Tom Nevers Pond. No munitions debris items were found at any of the beach areas or the Tom Nevers field closest to the Tom Nevers Pond investigated during the RI.

USACE appreciates this comment and has pursued a resolution to the question. The beginning of the historical records review phase of any munitions response site includes all forms of information available, including local media searches, historical aerial photography and anecdotal information from interview candidates in addition to DoD records, reports, and forms. This information was rechecked by USACE and based on information collected during the Archive Search Report which included 1st Naval District target documentation, there is no confirmed data of the Tom Nevers Pond being used for former range activities other than the reported finding of a single rocket fin which is considered munitions debris or scrap (no hazard). USACE would require confirmation of the target area and/or a discovery of munitions items to determine if opening another FUDS project to address this portion of Nantucket is warranted.

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DECEMBER 2015

GLOSSARY FOR SPECIALIZED TERMS

Administrative Record file	The documents that form the basis for the selection of a response action compiled and maintained by the lead agency [40 CFR 800]. This file is to be available for public review and a copy maintained near the site (i.e., information repository). The official Administrative Record file for the Aerial Rocket Range Target #1 MRS is located at USACE, New England District, and is maintained by USACE.
Anomaly(ies)	Any item that is seen as a subsurface irregularity after geophysical investigation. This irregularity will deviate from the expected subsurface ferrous and non-ferrous material at a site (e.g., pipes, power lines). [EM 200-1-15]
Applicable or Relevant and Appropriate Requirements (ARARs)	*Applicable requirements* means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable. [40 CFR 300] *Relevant and appropriate requirements* means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate. [40 CFR 300]
Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)	The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was enacted by Congress on December 11, 1980, and modified in 1986 by the ***Superfund Amendments and Reauthorization Act*** (SARA), to investigate and clean up hazardous substances.
Decision Document (DD)	The Department of Defense has adopted the term Decision Document (DD) to refer to a legal public document, similar to a Record of Decision completed for National Priorities List sites, that: certifies that the cleanup plan selection process was carried out in accordance with CERCLA, and to the extent practical, the NCP; provides a substantive summary of the technical rationale and background information in the Administrative Record file; provides information necessary in determining the conceptual engineering components to achieve the remedial action objective (RAO) established for a site; and serves as a key communication tool for the public that explains the identified hazards that the selected cleanup will address and the rationale for cleanup plan selection. The DD will be maintained in the Administrative Record file.

GLOSSARY FOR SPECIALIZED TERMS (Continued)

Defense Environmental Restoration Program (DERP)	The DERP, established under subpart 2710 of Title 10 United States Code [10 U.S.C. § 2701], requires conducting all response actions in accordance with CERCLA with respect to releases of hazardous substances at facilities, sites, or vessels, as defined under 10 U.S.C. § 2701(c).
Digital Geophysical Mapping (DGM)	A survey technique that uses electromagnetic induction sensor technology to detect and measure surface and subsurface metallic objects to investigate the presence of munitions. Electromagnetic induction sensors induce electrical currents in surface and subsurface conductive objects. The electrical currents in both ferrous (e.g., steel) and nonferrous (e.g., brass, aluminum) objects generate a secondary magnetic field measured by the sensor to detect the object.
Discarded Military Munitions (DMM)	Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include UXO, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of, consistent with applicable environmental laws and regulations [10 USC 2710(e)(2)].
Explosive Hazard	A condition where danger exists because explosives are present that may react (e.g., detonate, deflagrate) in a mishap with potential unacceptable effects (e.g., death, injury, damage) to people, property, operational capability, or the environment. Department of the Army Office of the Assistant Secretary Installations and Environment, Memorandum for the Assistant Chief of Staff For Installation Management, Subject: Munitions Response Terminology, 21 April 2005.
Exposure Pathway	Describes the course a chemical or physical agent takes from the source to the exposed individual. Elements of the exposure pathway are: (1) the source of the released chemical or physical agent; (2) the contaminated medium (e.g., soil); (3) a point of contact with the contaminated medium; and (4) an exposure route (e.g., ingestion, inhalation) at a contact point.
Feasibility Study (FS)	A study undertaken by the lead agency to develop and evaluate options for remedial action. The RI data are used to define the objectives of the response action, to develop remedial action alternatives, and to undertake an initial screening and detailed analysis of the alternatives. The term also refers to a report that describes the results of the study. [40 CFR 300]
Formerly Used Defense Site (FUDS) Property	A FUDS is defined as a facility or site (property) that was under the jurisdiction of the Secretary of Defense and owned by, leased to, or otherwise possessed by the United States at the time of actions leading to contamination by hazardous substances. By the Department of Defense Environmental Restoration Program (DERP) policy, the FUDS Program is limited to those real properties that were transferred from DoD control prior to 17 October 1986. FUDS properties can be located within the 50 States, District of Columbia, Territories, Commonwealths, and possessions of the United States. [ER 200-3-1]
High Explosive (HE)	A material that detonates at a speed that is faster than the speed of sound.

GLOSSARY FOR SPECIALIZED TERMS (Continued)

Information Repository (IR)	A repository, generally located at libraries or other publicly accessible locations in or near the community affect by the FUDS project, which contains accurate and up to date documents reflecting the on-going environmental restoration activities. [EP 1110-1-18] The project information repository is located at the Nantucket Atheneum [1 India Street, Nantucket, Massachusetts, 02554].
Land Use Controls (LUC)	Physical, legal, or administrative mechanisms that restrict the use of, or limit access to, real property, to prevent or reduce risks to human health and the environment. Physical Mechanisms encompass a variety of engineered remedies to contain or reduce contamination and physical barriers to limit access to real property, such as fences or signs. The legal mechanisms used for LUCs are generally the same as those used for institutional controls as discussed in the NCP. [DODM 4715.20]
Munitions Debris (MD)	Remnants of munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization or disposal (Army, 2005).
Material Documented as Safe (MDAS)	Material potentially presenting an explosive hazard that has been assessed and documented as not presenting an explosive hazard and for which the chain of custody has been established and maintained. This material is no longer considered to be material potentially presenting an explosive hazard.
Military Munitions	All ammunition products and components produced or used by or for the U.S. DoD or the U.S. Armed Services for national defense and security, including military munitions under the control of the DoD, the U.S. Coast Guard, the U.S. DOE, and National Guard personnel. The term military munitions includes: confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries used by DoD components, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof. Military munitions do not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices, and nuclear components thereof. However, the term does include non-nuclear components of nuclear devices, managed under DOE's nuclear weapons program after all required sanitization operations under the Atomic Energy Act of 1954, as amended, have been completed. (40 CFR 260.10).
Military Munitions Response Program (MMRP)	This category was established to meet the DERP goals in sections 2710 and 2701(b)(2) of Reference (i) and includes munitions response areas and munitions response sites (MRS) that are known or suspected to contain UXO, discarded military munitions (DMM), or munitions constituents. The MMRP does not include UXO, DMM, or munitions constituents (MC) at operational ranges, operating storage or manufacturing facilities, or facilities that are used for or were permitted for the treatment or disposal of military munitions. The DoD Component may also include in the MMRP category sites where addressing the release of hazardous substances or pollutants or contaminants is incidental to the munitions response. The MMRP category is one of three DERP program category restrictions (as defined in the DoD Instruction 4715.7 for implementing the DERP; DoD, 2013).

GLOSSARY FOR SPECIALIZED TERMS (Continued)

Munitions and Explosives of Concern (MEC)	This term includes specific types of military munitions that may pose unique explosive safety risks, including unexploded ordnance (UXO) as defined in 10 USC 101(e)(5)(A) through (C) and 40 CFR 266.201, discarded military munitions (DMM) as defined in 10 USC 2710(e)(2), and MC (e.g., explosives like trinitrotoluene (TNT) present in high enough concentrations to pose an explosive hazard as defined in 10 USC 2710(e)(3)).
Munitions Constituents (MC)	Any materials originating from unexploded ordnance (UXO), discarded military munitions (DMM), or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions. [10 U.S.C. 2710(e)(3)].
Munitions Response Site (MRS)	A specific area on a defense site that is known or expected to contain munitions and that requires investigation to determine whether munitions or MC are present.
National Oil and Hazardous Substances Pollution Contingency Plan (NCP)	The Federal regulation that implements CERCLA. The NCP was revised in February 1990. The purpose of the NCP is to provide the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, or contaminants.
Proposed Plan (PP)	A document that presents a proposed remedial alternative, including rationale for selection, and requests public comments regarding the proposed alternative.
Receptor	Receptors include both humans and biota (plants or animals) that may come into contact with a hazardous substance, including munitions and munitions constituents, either directly (e.g., picking an item up) or indirectly (e.g., through ingestion).
Remedial Action	Those actions consistent with permanent remedy taken instead of or in addition to removal actions in the event of a release or threatened release of a hazardous substance into the environment, to prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health or welfare or the environment. The term includes, but is not limited to, such actions at the location of the release as storage, confinement, perimeter protection using dikes, trenches, or ditches, clay cover, neutralization, cleanup of released hazardous substances and associated contaminated materials, recycling or reuse, diversion, destruction, segregation of reactive wastes, dredging or excavations, repair or replacement of leaking containers, collection of leachate and runoff, onsite treatment or incineration, provision of alternative water supplies, and any monitoring reasonably required to assure that such actions protect the public health and welfare and the environment. [42 USC 9601].
Remedial Action Objective (RAO)	Objectives established for remedial actions to guide the development of cleanup alternatives and focus the comparison of acceptable alternatives, if warranted. RAOs also assist in clarifying the goal of minimizing risk and achieving an acceptable level of protection for human health and the environment.

GLOSSARY FOR SPECIALIZED TERMS (Concluded)

Remedial Investigation (RI)	A process undertaken by the lead agency to determine the nature and extent of the problem presented by the release. The RI emphasizes data collection and site characterization, and is generally performed concurrently and in an interactive fashion with the feasibility study. The RI includes sampling and monitoring, as necessary, and includes the gathering of sufficient information to determine the necessity for remedial action and to support the evaluation of remedial alternatives. [40 CFR 300].
Site Inspection (SI)	An on-site investigation to determine whether there is a release or potential release and the nature of the associated threats. The purpose is to augment the data collected in the preliminary assessment and to generate, if necessary, sampling and other field data to determine if further action or investigation is appropriate. [40 CFR 300].
Superfund Amendments and Reauthorization Act (SARA)	In addition to certain free-standing provisions of law, it includes amendments to CERCLA, the Solid Waste Disposal Act, and the Internal Revenue Code. Among the free-standing provisions of law is Title III of SARA, also known as the "Emergency Planning and Community Right-to-Know Act of 1986" and Title IV of SARA, also known as the "Radon Gas and Indoor Air Quality Research Act of 1986." Title V of SARA amending the Internal Revenue Code is also known as the "Superfund Revenue Act of 1986." [40 CFR 300].
Technical Project Planning (TPP)	The TPP is a team-based, comprehensive, and systematic planning process for identifying project objectives and designing data collection program at MEC and hazardous/ toxic/ radioactive waste sites. There are four phases to the TPP process. Phase I involves identifying and becoming familiar with the project. Phase II involves evaluating existing project data, determining the data needed to make appropriate and supportable decisions, and identifying new methods for collecting that data. Phase III involves developing and documenting the field methods to be used. Phase IV involves finalizing and documenting the data collection alternatives and decisions, including documentation of the data quality objectives. For the Aerial Rocket Range Target #1 MRS, the TPP has included USACE and their contractor, the Town of Nantucket, the Massachusetts Department of Environmental Protection, and the property owners/representatives.
to be considered (TBC)	Information used to evaluate cleanup alternatives when there are no ARARs, or when ARARs alone may not adequately protect human health and the environment.
Unexploded Ordnance (UXO)	Unexploded ordnance includes military munitions that have been primed, fuzed, armed, or otherwise prepared for action; have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installation, personnel, or material; and remain unexploded either by malfunction, design, or any other cause. (10 USC 101(e)(5)(A) through (C) and 40 CFR 266.201).
UXO Technician	Personnel who are qualified for, and are filling Department of Labor, Service Contract Act, Directory of Occupations contractor positions of UXO Technician I, UXO Technician II, and UXO Technician III (DDESB TP 18). [EM 200-1-15].

APPENDIX A

NEWS ANNOUNCEMENTS
(PROPOSED PLAN AND PUBLIC COMMENT PERIOD)

Island Scorecard

WHALERS of the Week

Megan Fales

The field hockey team only played one game this week but Megan Fales did all the scoring in a 4-1 win over Fairhaven on Saturday. Fales scored her most impressive-looking goal in the first half but did the majority of her damage in the second, scoring three times and leading her team to victory.

Fervon Phillips

The Whalers fullback put the team on his back in the game-winning drive in Nantucket's 24-20 win over Upper Cape Tech on Saturday, converting on three straight third-down runs to keep the drive alive. Phillips finished the day with 121 yards and a touchdown on 13 carries.

BRIDGE

Sept. 30– Saltmarsh Senior Center

North/South
First: Barbara Malcolm and Neil Singer
Second: John Copenhaver and Bruce Miller
Third : Barbara and Owen Doster

East/West
First: Anne Bradt and Elizabeth Murray
Second: Betty Jacobsen and Grace Hinkley
Third: Laurie Newhouse and Judy Carini

DISC GOLF

Sept. 28

Michael Dow and Mike Harter -14 (54)
Fletcher Bell and David Weidman -8 (60)
Jim Blasi and Mike Gollin -5 (63)
Thomas Ides and Dave Beaumont -2 (66)
Eben Hale and Jason Schoonmaker +2 7(0)

BOYS & GIRLS CLUB FOOTBALL

Div. 2

Miami 26, Boston College 14

HIGH SCHOOL SPORTS SCHEDULE

Thursday, Oct. 2		
V Field Hockey vs. Sturgis West	A	3:30 p.m.
V Golf vs. Cape Tech	A	3:30 p.m.
Girls V Soccer vs. Pope John Paul II	A	3:30 p.m.
JV Golf vs. Cape Tech	A	3:30 p.m.
CPS Field Hockey vs. Mattacheese	H	4 p.m.
Boys CPS Soccer vs. Mattacheese	A	4 p.m.
Girls CPS Soccer vs. Mattacheese	H	4 p.m.
Friday, Oct. 3		
Boys JV Soccer vs. Pope John Paul II	H	4 p.m.
Saturday, Oct. 4 Homecoming		
V Field Hockey vs. Martha's Vineyard	H	1 p.m.
Girls V Soccer vs. Martha's Vineyard	H	1 p.m.
Girls JV Soccer vs. Martha's Vineyard	H	1 p.m.
JV Field Hockey vs. Martha's Vineyard	H	1 p.m.
Boys V Soccer vs. Martha's Vineyard	H	3 p.m.
Boys JV Soccer vs. Martha's Vineyard	H	3 p.m.
V Football vs. South Shore Voke	H	5 p.m.
Monday, Oct. 6		
CPS Field Hockey vs. Nauset	A	3:30 p.m.
Boys CPS Soccer vs. Nauset	A	3:30 p.m.
Girls CPS Soccer vs. Nauset	A	3:30 p.m.
V Golf vs. Cape Cod Academy	H	3:45 p.m.
Girls V Soccer vs. Sturgis East	H	3:45 p.m.
Boys V Soccer vs. Sturgis East	A	3:45 p.m.
Boys JV Soccer vs. Sturgis East	A	3:45 p.m.
Girls JV Soccer vs. Sturgis East	H	3:45 p.m.
JV Football vs. Pope John Paul II	H	5 p.m.
Tuesday, Oct. 7		
V Field Hockey vs. Sturgis East	A	3:30 p.m.
Wednesday, Oct. 8		
V Golf vs. Sandwich	A	3:30 p.m.
JV Golf vs. Sandwich	A	3:30 p.m.
Boys V Soccer vs. Cape Cod Academy	H	3:45 p.m.
Thursday, Oct. 9		
V Field Hockey vs. Barnstable	H	3:45 p.m.
JV Field Hockey vs. Barnstable	H	5:15 p.m.

BRANT POINT RUNNERS

Sept. 30

Seth Hatch	18:52
Erik Lokensgard	**19:57
David Burke	20:47
Ken Gullicksen	22:22
Gillian Antonietti	23:46
Sydney Lester	24:12
Henry DuPont	**24:49
Benjamin Goldberg	24:58
Allison Gayo	26:39
Domenica Rohrborn	**27:54
Steve Chase	*27:56
Jerry Adams	28:47
Waverly Brannigan	28:51
Renny Wadell	28:54
Janine Mauldin	29:57

*Season Best ** Personal Course Record

Runners meet Tuesdays rain or shine at 5:15 p.m. at the corner of Beach and Easton streets for a 5:30 p.m. start 5K (3.1 miles) run over a mostly flat course with one hill and some moderate grades. Runners of all ability from beginners to veterans are welcome. There are no entry fees. For information call (508) 228-0206. Course records: Steve O'Brien, 15:42; Lindsay Wilkins, 17:59. Course measurement: Bob Kennedy, USATF # MA11039JK.

Football: Whalers survive nail-biter over Upper Cape

(Continued from page 1B)

the day with 128 yards on the ground.

With the extra point by Quinn Towne, the Whalers trailed 14-10 with 9:49 to go in the second quarter. Both defenses settled into a groove and after the fast-paced start neither team scored for nearly the next 20 minutes of play.

"If you eliminate the penalties, we had a stellar defensive day," Ryder said. "I think (Rams senior running back) Dylan Derby finished the day with something like 70 yards on 23 carries and one of those was for 30 yards. You can't do much more. That's a talented running back. We won't see a much better running back than him."

It was another big play from the Whalers that broke the scoring drought. With less than a minute remaining in the third quarter, the Rams punted from near midfield. It was a low line drive that Keith Lewis caught quickly on one hop. From the 30-yard line, Lewis broke to the left sideline and outran the coverage as he sprinted 75 yards for the touchdown, putting Nantucket ahead 17-14 after the extra point from Towne.

The Rams retook the lead in the fourth quarter on a drive that saw Nantucket commit four penalties on four separate plays, each time giving Upper Cape a fresh set of downs when it was on the ropes. The two most frustrating were a late hit out of bounds on what would have been a failed fourth down conversion and later a turnover that was nullified by an offsides call.

Photo by Jim Powers

J.T. Gamberoni is brought down by a swarm of Upper Cape defenders in the second half of Nantucket's 24-20 win Saturday.

"If you eliminate the penalties, we had a stellar defensive day."

– Brian Ryder
Head football coach

"These are mental errors. Right now there's a lack of discipline and it's not just one or two guys. You can go down the roster there's a lot of different people doing it. It's something we have to address if we want to keep winning games," Ryder said. "The positive is we are playing hard. But we have to be smarter and more mentally tough and not make those mistakes without jeopardizing how hard we are playing."

The drive ended with a three-yard touchdown run by Derby on third-and-goal that put the Rams up 20-17 with under five minutes to play.

Upper Cape, which earlier in the game had success twice on fake punts, continued its unpredictability on special teams, driving a squib kick right at linebacker Jake Pearl. But Pearl was up for the challenge, absorbing the kick and falling on the loose ball before any Upper Cape players could pry it away, giving Nantucket solid starting field position. With 4:49 left in the game and the Whalers trailing 20-17, the offense needed to travel 56 yards to win the game or get within field goal goal range to give Towne a chance to tie the game.

The drive began with an illegal motion penalty on Nantucket, backing the Whalers up and making it first-and-15 from the 39-yard line. But three straight powerful runs up the middle from Phillips and Nantucket was able to overcome the penalty and get a fresh set of downs. It was a drive of spectacular third-down runs for Phillips, who converted two more times on the drive. None were bigger than an 11-yard run on third-and-10 with a minute left in the game that brought Nantucket to the 8-yard line.

On first-and-goal, Phillips ran for two more yards before the decisive play of the game.

On second-and-goal from the 6-yard line, with 37 seconds left on the clock, the call was a bootleg for Ray, who had the option to run or throw depending on the defense. The junior quarterback sprinted around to his right and seeing that he had the angle took it in himself, leaping into the end zone.

Towne was perfect on the day as a place kicker, going three-for-three on extra points and converting on his only field-goal try, a 23-yarder in the first quarter.

su | do | ku answers

4	5	6	1	9	2	3	7	8
1	9	3	7	5	8	6	4	2
7	8	2	3	4	6	5	9	1
3	1	8	5	6	9	4	2	7
6	7	5	4	2	1	9	8	3
2	4	9	8	3	7	1	5	6
5	6	7	9	8	3	2	1	4
8	2	4	6	1	5	7	3	9
9	3	1	2	7	4	8	6	5

NOTICE OF ROAD CLOSURE

Prospect Street from New Mill Street to Milk Street will be closed
Thursday, October 9, 2014 from 8am to 4pm.
Please seek alternate routes.

Thank you for your understanding.
If there are any questions please contact:

Toscana Corporation
Kristina Jelleme
508-228-1418

PUBLIC NOTICE

The Nantucket Planning Board will hold a public hearing on Thursday, October 16, 2014 pursuant to Chapter 40A of the Massachusetts General Laws (also known as the Zoning Act) and Sections 139-7 and 139-12 of the Nantucket Zoning Bylaw regarding an amendment to the existing Mid Island Planned Overlay District Special Permit. The applicants, Edward J. Sanford and Matthew J. Sanford, as Trustees of Lower Pleasant Trust, and Vanilla Day LLC are requesting a change of use regarding Unit 4 from office or retail to a takeout food establishment having one take-out service station without need for further relief should the use return to retail or office. The applicant is requesting additional relief pursuant to Bylaw Section 139-16.E(3) to reduce the open space requirement from 20% to approximately 19.975% to allow for the installation of condensers for refrigeration equipment.. The site is located at 2D Sanford Road, is shown on Tax Assessors Map 55 as Parcel 809 and portion of Map 55 Parcel 267, as Lot 23 upon Land Court Plan No. 35560-G, and as the Sanford Boat Building Condominium upon Plan No. 2007-66 recorded at the Nantucket Registry of Deeds. Evidence of owners' title is registered as Certificates of Title No. C-57 and No. U42196 in the Nantucket Country District of the Land Court.

The meeting at which the hearing will be held is scheduled for 6:30 PM on Thursday, October 16, 2014 in the Public Safety Facility Community Room at 4 Fairgrounds Road, Nantucket, MA, 02554. The application materials may be reviewed at the office of Planning and Land Use Services (PLUS) at 2 Fairgrounds Road, Nantucket, MA 02554 between the hours of 7:30 AM and 4:30 PM, Monday through Friday. Written comments for the Thursday, October 16, 2014 meeting must be received by 4:00 PM on Monday, October 6, 2014 and may be addressed to the Planning Board at the above address, faxed to (508) 228-7298, or e-mailed to eantonietti@nantucket-ma.gov.

Barry G. Rector,
Chairman

K37

PUBLIC NOTICE

Please be advised that the Board of Selectmen/Board of Public Works will hold a public hearing on Wednesday, October 15, 2014 at 6:00 pm to consider amending the landfill fee schedule as follows:

ITEM	CURRENT FEE	NEW FEE
Commercial scrap metal	$142.00	$146.00
Commercial brush debris	$142.00	$146.00
Commercial clean wood	$142.00	$146.00
Commercial asphalt, brick, cement	$142.00	$146.00
Commercial construction, demolition, bulky waste	$372.00	$381.00
Commercial Landfill User Fees		
Class 1	$182.00	$187.00
Class 2A	$364.00	$373.00
Class 2B	$718.00	$736.00
Class 3	$1,437.00	$1,473.00
Class 4A	$78.00 + 19.00 per guest room	$80.00 + $20.00 per guest room
Class 4B	$78.00 + $19.00 per guest room + Class 3 fee	$80.00 + $20.00 per guest room + Class 3 fee

Note: this proposal is based on an estimated CPI for fiscal year 2015 of 2.5%. The hearing will be held in the Public Safety Facility Community Room, 4 Fairgrounds Road, Nantucket, MA 02554. For further information please call 508-228-7200 x 7046.

K32

Board of Selectmen/Board of Public Works

PUBLIC NOTICE

The U.S. Army Corps of Engineers to conduct Proposed Plan Meeting for the Nantucket Beach Formerly Used Defense Site (FUDS)

The U.S. Army Corps of Engineers, New England District with assistance from the U. S. Army Corps of Engineers Baltimore District Military Munitions Design Center, and their contractor Weston Solutions, Inc. will conduct a public meeting to present the selected remedy in the Proposed Plan for the Nantucket Beach Formerly Used Defense Site. The Proposed Plan will be issued as a public document available for review at the Athenium Library by 3 October 2014.

The Nantucket Beach FUDS site was leased by the U.S. Government between September 1943 and June 1946 and was used as a practice aerial rocket range. Over the past several years, the U.S. Army Corps of Engineers has completed an investigation of the potential explosives safety, health, and environmental issues resulting from past munitions use at the site. The Proposed Plan describes the remedial alternatives considered for this site and identifies the preferred alternative.

Public Comment Period: 3 October - 4 November 2014

Public Comment Meeting Location: Public Safety Facility, 4 Fairground Road, Nantucket, MA 92554

Public Meeting Date and Time: 9 October 2014; 6:30 pm – 9:00 pm

The public will have a 30 day review/comment period in which to review the Proposed Plan and provide any comments to the government via the government's contractor Weston Solutions. ***Comments may be submitted via email or mail to the following addresses:***

Weston Solutions Email Address:
C.Kane@WestonSolutions.com

Weston Solutions Mailing Address:
Mr. Christopher Kane
Project Manager
Weston Solutions
45 Constitution Ave., Suite 101
Concord, New Hampshire 03310

If you have any questions or concerns regarding this project, please contact the Corps Project Manager, Ms. Carol Ann Charette at 978-318-8605 (Office) or 978-505-2918 (Cell).

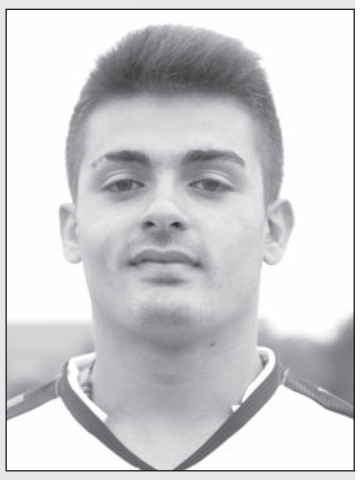
L07

Island Scorecard

WHALERS of the Week

Claire MacKay

The junior midfielder scored a team high four points (two goals, two assists) in the girls varsity soccer team's 7-5 victory over Sturgis West. On Friday MacKay put herself in the history books, scoring the first goal ever at the brand new DeConto Stadium in Sandwich.



Luiz Terragno

The leading scorer on the boys soccer team helped make sure the Whalers remained undefeated (12-0) in the Cape & Islands League, scoring the equalizing and go-ahead goals in comeback victories against Rising Tide last Wednesday and Sturgis West Monday.

NANTUCKET DART LEAGUE

Standings

Showtime	12-4
TFS	11-5
TDFB	10-6
Dart Vaders	9-7
Armmed & Hammered	9-7
Full of Bull	7-9
Murtagh's Misfits	7-9
The Knots	6-10
PHA-Q2	5-11
Respect Da Bulls	4-12

TON Points

TJ Lavin	200
Randy Affeldt	138
Tom Turgeon	134
Paul Daprix	123
Dino Chianese	115
Russ Harms	107
John Grangrade	100
Craig Harnishfeger	100
Rob Morganstern	100

Kyle Brown-Double Bull Out
Mike Mahoney- Two Rounds of Nine

BRIDGE

Saltmarsh Senior Center

Oct. 14

North/South
First Place: Jay Riggs and Cynthia Blackshaw
Second Place: Barbara Kirk and Caroline Weymar
Third Place: Neil Singer and Mona Wheatley

East/West
First Place: Elizabeth Murray and Anne Bradt
Second Place: Ken Blackshaw and Steve Godwin
Third Place: Bobbi Giles and Harry Mintz

DISC GOLF

Oct. 19

Mike Dow and Mike Harter	-12 (56)
Dave Beaumont and Eben Hale	-9 (59)
Jim Blasi and Tomas Ides	-5 (63)
Derek Buchmann and Pat McEchnie	-5 (63)
Dave Weidman and Rich Holdgate	-5 (63)

HIGH SCHOOL SPORTS SCHEDULE

Thursday, Oct. 23		
Girls V Soccer vs. Rising Tide	A	3:30 p.m.
Girls JV Soccer vs. Rising Tide	A	3:30 p.m.
Boys JV Soccer vs. PJPII	H	4 p.m.
Friday, Oct. 24		
CPS Field Hockey vs. Chatham	A	3:30 p.m.
Boys CPS Soccer vs. Chatham	H	3:30 p.m.
Girls CPS Soccer vs. Chatham	A	3:30 p.m.
Saturday, Oct. 25		
V Football vs. West Bridgewater	A	1:30 p.m.
Boys V Soccer vs. Falmouth Academy	A	3 p.m.
V Field Hockey vs. Mashpee	A	4 p.m.
Girls V Soccer vs. Falmouth Academy	H	4 p.m.
JV Field Hockey vs. Mashpee	A	5 p.m.
Sunday, Oct. 26		
V Field Hockey vs. Marblehead	A	Noon
Monday, Oct. 27		
JV Football vs. Southeastern	A	3:30 p.m.
CPS Field Hockey vs. Mattacheese	A	3:30 p.m.
Girls CPS Soccer vs. Mattacheese	A	3:30 p.m.
Boys CPS Soccer vs. Mattacheese	H	3:45 p.m.
Tuesday, Oct. 28		
Boys JV Soccer vs. Barnstable	H	3:45 p.m.
Girls V Soccer vs. Barnstable	A	4 p.m.
Girls JV Soccer vs. Barnstable	A	4 p.m.
Boys V Soccer vs. Barnstable	H	5:30 p.m.
Thursday, Oct. 30		
Boys JV Soccer vs. Pope John Paul II	A	3:30 p.m.
CPS Field Hockey vs. Lighthouse Charter	H	3:45 p.m.
Boys CPS Soccer vs. Lighthouse Charter	H	3:45 p.m.
Girls CPS Soccer vs. Lighthouse Charter	H	3:45 p.m.

BRANT POINT RUNNERS

Oct. 21

Miguel Hernandez	18:42
Andrew McKenna-Foster	18:47
Gary Allen	20:02
Erik Lokensgard	20:52
M Kuratek-Kremer	**22:11
Ed Roberts	22:46
Sydney Lester	23:38
Ben Rudd	23:46
Jared Smith	23:52
Maebh Browne	24:29
Beck Barsanti	24:54
Aidan McCormack	**25:08
Waverly Brannigan	25:13
Henry Worden	**26:37
Renny Wadell	26:45
Gillian Antonietti	26:51
Ruby DuPont	26:51
Lucy Belka	**27:48
Berta Scott	28:32
Sawyer Phillips	29:41

*Season Best ** Personal Course Record

Runners meet Tuesdays rain or shine at 5:15 p.m. at the corner of Beach and Easton streets for a 5:30 p.m. start 5K (3.1 miles) run over a mostly flat course with one hill and some moderate grades. Runners of all ability from beginners to veterans are welcome. There are no entry fees. For information call (508) 228-0206. Course records: Steve O'Brien, 15:42; Lindsay Wilkins, 17:59. Course measurement: Bob Kennedy, USATF # MA11039JK.

BOYS & GIRLS CLUB FOOTBALL

Girls Flag Football
Bucaneers 26, Saints 20

Div. 1
Nantucket 42, Martha's Vineyard 12

Div. 2
Boston College 20, Miami 0
Miami 42, Notre Dame 0

Div. 3
Michigan 14, Ohio State 6

Football: Whalers pummel Cougars to stay unbeaten

(Continued from page 1B)

ner and he did not want to run in the second half."

The Whalers scored on the next drive, taking over on their own 38-yard line and scoring in just three plays. Nantucket opened with a 15-yard run by Fervon Phillips, followed by a 35-yard scamper by Keith Lewis and capped with a 15-yard touchdown pass from Andrew Ray to Justin Halford. Following the extra point, Nantucket led 7-0 just six seconds into the second quarter.

The touchdown energized the Whalers as they stormed to a 21-0 lead at halftime. The next scoring drive was highlighted by a 35-yard run by Ray, followed by a 19-yard slant to Towne and capped by a four-yard touchdown run by Lewis.

On the ensuing kickoff, Old Colony fumbled and Christopher Muhr came darting in to dive on the loose ball and the offense set up shop once again with great field position, this time just 18 yards from the end zone.

"The offensive line was spectacular. They all played well . . . There were big holes the entire day."

– Brian Ryder
Head coach

On second-and-eight Lewis ran 14 yards down to the 2-yard line, and punched it in on the next play. Towne, who was perfect on extra points, booted in the kick and Nantucket took the 21-0 lead into the break.

The Cougars attempted an onside kick to open the second half, but it didn't work and Nantucket took over from midfield. The Whalers' offense, led by superb blocking, was able to score a touchdown on its fourth straight drive despite racking up three penalties. Sophomore Keenen Phillips capped the penalty-filled drive with a 12-yard touchdown run on second-and-eight.

"The offensive line was spectacular. They all played well. Mykal (Ludford) played very well. I reviewed the film several times and I think it was the best game he ever played in high school as an offensive lineman," Ryder said. "But it wasn't just Mykal it was all of them: Jake Pearl, Orlando Francis, Kevin Santangelo and Matt Correia. There were big holes the entire day."

Ludford and Keenen Phillips were playing for the first time this year after missing the first part of the season for disciplinary reasons. Senior running back and cornerback James Aloisi also returned, in a limited role, for the first time since suffering an injury in week two.

Nantucket's dominant line play continued on the other side of the ball, as Old Colony was forced into a three-and-out and had to punt the ball back to the red hot Whaler offense. Nantucket's special teams play continued to produce excellent field position as this time Travis Demby returned the punt to the Old Colony 30-yard line. The offense stalled on this drive and facing fourth-and-eight from the 27-yard line, Ryder elected to test the foot of Towne.

The sophomore drove a low kick into the wind that seemed to hang in the air forever before dropping just over the left corner of the uprights for an incredible 45-yard field goal into the wind. Towne already holds the Nantucket High School record with a 47-yard field goal he hit last year.

The Whalers took the 31-0 lead into the fourth quarter and added two more touchdowns, a four-yard run by Ray and a 46-yard score by Demby.

NOTICE OF PUBLIC HEARING

Notice is hereby given that a public hearing by petition of the Tree Warden concerning the removal of nine town trees in Nantucket will be given at the Nantucket Public Safety Building in the Community Room, 4 Fairgrounds Road, Nantucket, MA on October 29, 2014 at 6:30 PM pursuant to Massachusetts General Laws, Chapter 87, Section 3.
The trees to be removed are located at:
50 Union Street
32 Orange Street
22 Federal Street
25 Broad Street
Orange St and Union St rounding (2 linden, 2 red maple & sycamore)
Please call Tree Warden Dave Champoux at 508-228-1374 or DPW Office at 508-228-7244 with questions.
L24

NOTICE OF AVAILABILITY OF HILL BURTON UNCOMPENSATED SERVICES

Our Island Home of Nantucket, MA will provide from January 1, 2015 to December 31, 2015, uncompensated services to all eligible persons unable to pay who request those services. All services of the facility will be available as uncompensated services. Eligibility for uncompensated services will be limited to persons whose family income is not more than triple the current poverty income guideline established by the US Department of Health and Human Services. This notice is published in accordance with 42 CFR 124.504, 'Notice of Availability of Uncompensated Services.' We invite interested parties to comment on this allocation plan.

L22

PUBLIC NOTICE

At a public hearing held on Wednesday, October 15, 2014, the Board of Selectmen/Board of Public Works voted to amend the landfill fee schedule as follows:

ITEM	CURRENT FEE	NEW FEE
Commercial Landfill User Fees		
Class 1	$182.00	$187.00
Class 2A	$364.00	$373.00
Class 2B	$718.00	$736.00
Class 3	$1,437.00	$1,473.00
Class 4A	$78.00 + 19.00 per guest room	$80.00 + $20.00 per guest room
Class 4B	$78.00 + $19.00 per guest room + Class 3 fee	$80.00 + $20.00 per guest room + Class 3 fee

The fee increase will be effective with the FY 2015 landfill bills which go out October 31, 2014.

L31 BOARD OF SELECTMEN/BOARD OF PUBLIC WORKS

NOTICE OF PUBLIC HEARING

In accordance with MGL Chapter 131, Section 40, and pursuant to Regulation 310CMR10:05, et seq., and with Nantucket By-Law Chapter 136, Section 3D, the Nantucket Conservation Commission will hold a Public Meeting on Wednesday October 29th, 2014 at 4:00p.m, in the meeting room on the second floor of the Public Safety Facility located at 4 Fairgrounds Road to consider the Notice of Intent filed by Peter Glazer to construct a single family Residence with pool and associated landscaping within the buffer zone of vegetated wetlands at 95 West Chester St; Assessors Map: 41, Parcel: 93.1.

L19 NANTUCKET CONSERVATION COMMISSION

NOTICE OF PUBLIC HEARING

In accordance with MGL Chapter 131, Section 40, and pursuant to Regulation 310CMR10:05, et seq., and with Nantucket By-Law Chapter 136, Section 3D, the Nantucket Conservation Commission will hold a Public Meeting on Wednesday October 29th, 2014 at 4:00 p.m., in the meeting room on the second floor of the Public Safety Facility located at 4 Fairgrounds Road to consider the Request for Determination of Applicability filed by James & Kimberly Pallotta to identify provisions of the wetlands protection act or regulations which may exempt the applicant from filing a Notice of Intent at 4 Thresher Way; Assessors Map: 31, Parcel: 35.

L21 NANTUCKET CONSERVATION COMMISSION

NOTICE OF PUBLIC HEARING

In accordance with MGL Chapter 131, Section 40, and pursuant to Regulation 310CMR10:05, et seq., and with Nantucket By-Law Chapter 136, Section 3D, the Nantucket Conservation Commission will hold a Public Meeting on Wednesday October 29th, 2014 at 4:00p.m, in the meeting room on the second floor of the Public Safety Facility located at 4 Fairgrounds Road to consider the Notice of Intent filed by Britton & Elizabeth Murdoch to install sand drift fencing, sand nourishment and Coastal Bank planting within the Coastal Bank & Coastal Beach at 73 Pocomo Rd; Assessors Map: 15, Parcel: 8.

L20 NANTUCKET CONSERVATION COMMISSION

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			2		7			8
7		5	9					
				4		2		6
		6	4	3				7
4		2					5	
			8					9
	9		1					
	5					6	1	2

Fill in the numbers 1-9 in each column and corresponding row. There can only be one of each number in every column and every row. Each Sudoku puzzle has just one solution and can be solved by using logic alone. If you prefer guessing you can, but there is a logical way to solve every puzzle. Good luck!

su | do | ku answers on page 9B

PUBLIC NOTICE

The U.S. Army Corps of Engineers extends comment period on Proposed Plan for the Nantucket Beach

Formerly Used Defense Site (FUDS)

The U.S. Army Corps of Engineers, New England District with assistance from the U. S. Army Corps of Engineers Baltimore District Military Munitions Design Center, and their contractor Weston Solutions, Inc. has extended the comment period until 4 December 2014 on the Proposed Plan for the Nantucket Beach Formerly Used Defense Site. The Proposed Plan was issued as a public document available for review at the Athenium Library.

Here is a link to the Corps website with the Proposed Plan available for review:
http://www.nae.usace.army.mil/Missions/ProjectsTopics/NantucketBeach.aspx

The Nantucket Beach FUDS site was leased by the U.S. Government between September 1943 and June 1946 and was used as a practice aerial rocket range. Over the past several years, the U.S. Army Corps of Engineers has completed an investigation of the potential explosives safety, health, and environmental issues resulting from past munitions use at the site. The Proposed Plan describes the remedial alternatives considered for this site and identifies the preferred alternative.

Public Comment Period Extended: until 4 December 2014

The public will have until 4 December 2014 to review the Proposed Plan and provide any comments to the government via the government's contractor Weston Solutions. Comments may be submitted via email or mail to the following addresses:

Weston Solutions Email Address:
C.Kane@WestonSolutions.com

Weston Solutions Mailing Address:
Mr. Christopher Kane
Project Manager
Weston Solutions
45 Constitution Ave., Suite 101
Concord, New Hampshire 03310

If you have any questions or concerns regarding this project, please contact the Corps Project Manager, Ms. Carol Ann Charette at 978-318-8605 (Office) or 978-505-2918 (Cell).

L27

APPENDIX B

LETTER OF AGREEMENT

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

Ms. Carol Ann Charette, P.M.P
U.S. Army Corps of Engineers, New England Division
696 Virginia Road
Concord, MA 01742-2751

December 17, 2015

RE: Final Decision Document
Nantucket Beach, Former Ordnance Site, a.k.a. Tom Nevers Rocket Projectile Target, Nantucket, Massachusetts, Formerly Used Defense Site #D01MA0456

Dear Ms. Charette:

The Massachusetts Department of Environmental Protection (MassDEP) has reviewed the *Final* D*ecision Document, Nantucket Beach Former Ordnance Site, a.k.a. Tom Nevers Rocket Projectile Target, Formerly Used Defense Site # D01MA0456, Nantucket, Massachusetts* dated December 2015.

MassDEP concurs with the selected remedy for the Nantucket Beach Former Ordnance Site which is identified as **Alternative 2 – Land Use Controls and Long-Term Management**. In summary, Alternative 2 includes awareness training, development and dissemination of explosives safety educational materials and informational packages, installation of signs and sign maintenance, and a Soil Management Guidance.

MassDEP appreciates the opportunity to review the Decision Document. If you have any questions, please feel free to contact me at joanne.dearden@state.ma.us or 617.292.5788.

Sincerely,

Joanne Dearden
Project Manager
Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

APPENDIX C

DETAILED COST ESTIMATE

Alternative No. 2 Cost Summary
Aerial Rocket Range Target #1 MRS

Site:	**Nantucket FUDS Aerial Rocket Range Target #1 MRS**
Location:	**Nantucket Beach, Nantucket, MA**
Costs:	**-30% to +50%**

Item	Aerial Rocket Range Target #1 Total Alternative Costs (Capital and Periodic)	Alternative 2 Land Use Controls (LUCs) and Long-Term Management (LTM)
1	**Total Site Duration Base (Years)/LTM Period (Years)**	0/30
2	**Capital Cost**	$40,349
3	**Total Long Term Management Cost**	$601,163
4	**Five-Year Review Cost**	$136,850
	5-Year Present Value Cost (assumes 7% annual discount)	**$359,579**

APPENDIX D

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

APPENDIX D

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Three categories of applicable or relevant and appropriate requirements (ARARs) were evaluated for the Aerial Rocket Range Target #1 Munitions Response Site (MRS), along with to-be-considered (TBCs) information. The ARAR categories are chemical-specific, location-specific, and action-specific.

Chemical-specific ARARs are health-based or risk-based numerical values that establish the acceptable amount or concentration of a chemical that may remain in, or be discharged to, the ambient environment. Because the results of the risk evaluation performed as part of the site inspection indicated no adverse risks from munitions constituents were present, and no additional information was collected during the remedial investigation to modify this conclusion, chemical-specific ARARs are not identified for the Aerial Rocket Range Target #1 MRS.

Location-specific ARARs generally are restrictions placed on the concentration of hazardous substances or the conduct of activities to prevent damage to unique or sensitive areas, such as floodplains, wetlands, historic places, and sensitive ecosystems or habitats. Location-specific ARARs have been identified for the Aerial Rocket Range Target #1 MRS pertaining to implementation of risk management measures.

Action-specific ARARs are usually technology- or activity-based requirements or limitations placed on actions taken with respect to removal actions or requirements to conduct certain actions to address particular circumstances at a site. Because no removal actions are included under the Land Use Controls LUC and Long-Term Management with Five-Year Reviews Selected Remedy, no action-specific ARARs are identified for the Aerial Rocket Range Target #1.

The TBC information can be used when there are no ARARs, or when ARARs alone may not adequately protect human health and the environment. However, no TBC information has been identified as necessary to address this type of situation for the Aerial Rocket Range Target #1.