Final

Remedial Investigation Report

Michie Stadium Munitions Response Site
U.S. Army Garrison West Point
West Point, New York

March 2012

Prepared for:

U.S. Army Corps of Engineers
Baltimore District
10 South Howard Street
Baltimore, Maryland 21201-1715

Prepared by:

Weston Solutions, Inc. • 1400 Weston Way • West Chester, PA 19380

PRINTED ON RECYCLED PAPER

11P-1003

FINAL
REMEDIAL INVESTIGATION REPORT

MICHIE STADIUM MUNITIONS RESPONSE SITE
U.S. ARMY GARRISON WEST POINT
WEST POINT, NEW YORK

Contract No.: W912DR-09-D-0006
DELIVERY ORDER NO.: 0001

Prepared For:

U.S. ARMY CORPS OF ENGINEERS
BALTIMORE DISTRICT
10 South Howard Street
Baltimore, Maryland 21201-1715

Prepared By:

Weston Solutions, Inc.
1400 Weston Way
West Chester, PA 19380

WESTON SOLUTIONS, INC. PROJECT NO.: 03886.551.001

March 2012

TABLE OF CONTENTS

Section **Page**

TABLE OF CONTENTS (Continued)

Section **Page**

TABLE OF CONTENTS (Continued)

Section **Page**

LIST OF APPENDICES

LIST OF FIGURES

Figure

LIST OF TABLES

Table **Page**

LIST OF ACRONYMS

ºF	degrees Fahrenheit
amsl	above mean sea level
APP	Accident Prevention Plan
ARAR	applicable or relevant and appropriate requirement
ASTM	American Society for Testing and Materials
bgs	below ground surface
CENAB	USACE, Baltimore District
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CHE	Chemical Warfare Materiel Hazard Evaluation
CSEM	Conceptual Site Exposure Model
CSM	Conceptual Site Model
CTT	closed, transferred, and transferring
CWM	chemical warfare materiel
DERP	Defense Environmental Restoration Program
DES	Directorate of Emergency Services
DGM	digital geophysical mapping
DMM	discarded military munitions
DoD	Department of Defense
DoDD	Department of Defense Directive
DOT	U.S. Department of Transportation
DPW	West Point Directorate of Public Works
DQO	data quality objective
EHE	Explosives Hazard Evaluation
EMD	Environmental Management Division
EOD	Explosive Ordnance Disposal
EPA	U.S. Environmental Protection Agency
ESP	Explosives Site Plan
ESRI	Environmental Systems Research Institute
EZ	Exclusion Zone
FS	feasibility study
GIS	Geographic Information System
gpm	gallons per minute
GPS	Global Positioning System
GSV	Geophysical System Verification
HFD	hazardous fragment distance
HHE	Health Hazard Evaluation
HRR	Historical Records Review
Hz	Hertz
ISO	industry standard object
IVS	Instrument Verification Strip
LUC	Land Use Control
m	meter
MAMMS	Multiple Award Military Munitions Services
MC	munitions constituents
MD	munitions debris
MDAS	material documented as safe
MDEH	material documented as an explosive hazard
MEC HA	Munitions and Explosives of Concern Hazard Assessment
MEC	munitions and explosives of concern
MGFD	munition with the greatest fragmentation distance
mm	millimeter
MMRP	Military Munitions Response Program
mph	miles per hour

LIST OF ACRONYMS (CONTINUED)

MPPEH	material potentially presenting an explosive hazard
MRS	munitions response site
MRSPP	Munitions Response Site Prioritization Protocol
MSD	minimum separation distance
mV	milliVolt
NAAQS	National Ambient Air Quality Standards
NAD	North American Datum
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NFA	no further action
NYNHP	New York Natural Heritage Program
NYSDEC	New York State Department of Environmental Conservation
OESS	Ordnance and Explosive Safety Specialist
PA	Preliminary Assessment
PRG	preliminary remediation goal
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
RA	remedial action
RI	remedial investigation
RI/FS	remedial investigation/feasibility study
RTS	Robotic Total Station
SARA	Superfund Amendments and Reauthorization Act
SI	site inspection
SSHP	Site Safety and Health Plan
SUXOS	Senior UXO Specialist
TA	training area
TAL	Target Analyte List
TBC	to be considered criteria
TCL	Target Compound List
THQ	target hazard quotient
TLI	TLI Solutions, Inc.
TPP	Technical Project Planning
TRV	toxicity reference value
TSD	team separation distance
U.S.	United States
USACE	U.S. Army Corps of Engineers
USAEC	U.S. Army Environmental Command
UTM	Universal Transverse Mercator
UXO	unexploded ordnance
UXOQCS	UXO Quality Control Specialist
UXOSO	UXO Safety Officer
West Point	U.S. Army Garrison West Point
WESTON®	Weston Solutions, Inc.

EXECUTIVE SUMMARY

A remedial investigation (RI) was completed at the U.S. Army Garrison West Point (West Point) Michie Stadium Munitions Response Site (MRS) (WSTPT-022-R-01) in support of the Active Army Military Munitions Response Program (MMRP).

The purpose of the MMRP RI was to perform an investigation to determine the presence or absence of munitions and explosives of concern (MEC) and munitions constituents (MC) at the 11 MRSs identified in the SI, and if present, to determine the nature and extent of MEC and MC (as needed) on the ground surface and subsurface. Information collected during the RI was used to fill data gaps, update the conceptual site model (CSM), evaluate potential human health and ecological risks, conduct an explosive hazard assessment, and update the Munitions Response Site Prioritization Protocol (MRSPP). Results from the RI were used to support the evaluation of either a no further action (NFA) alternative, or the development and evaluation of remedial alternatives and recommendations for a feasibility study (FS) if required. An NFA recommendation will be made only if it is certain that a MEC or MC release did not occur. If it cannot be proven during the course of the RI that a MEC or MC release did not occur, the implementation of land use controls (LUCs) would be the minimum remedial action alternative recommended.

This report summarizes the RI conducted at the Michie Stadium MRS. Specifically, this RI report details the characterization strategy and results from digital geophysical mapping (DGM) surveys and intrusive investigation results performed at the Michie Stadium MRS. The results were used to further assess explosives hazards posed by MEC. The Michie Stadium MRS encompasses approximately 9.5 acres in and around Michie Stadium.

Since the establishment of West Point in 1802, the Michie Stadium (constructed in 1924) vicinity has always been part of the Main Post and used for recreational and athletic activities. In 1909, there was a restoration project at Fort Putnam, which is located north of the MRS. In addition, there was a major earth and rock excavation and reworking of material for the new stadium. Earthmoving activities for the new stadium began in August 1923 with massive amounts of bedrock being removed from the southern edge of the Fort Putnam ridge, because extensive filling was necessary to stabilize what had once been a low-lying, seasonally inundated area (Bedford, 2000; TLI, 2006). Additional removal of bedrock and reworking of fill material also

occurred at the north end of the MRS during a 2001-2002 extension of Stony Lonesome Road. Although future plans within the MRS include the construction of an additional athletic building, no change to the current land use (recreational and athletic activities) is anticipated.

Michie Stadium underwent a seismic upgrade in 2001 that involved the addition of pilings to the west stands for increased stability. During this project, five 3-inch MKI Stokes mortars were found. Beginning in September 2003, Randall Hall, located at the south end of Michie Stadium, was constructed between the west stands of Michie Stadium and the Kimsey Athletic Center. Nine 3-inch Stokes mortars were found during the construction of Randall Hall.

The site inspection (SI) field activities at the Michie Stadium MRS were conducted in spring 2006 and included approximately 2.2 linear miles of visual surveys and the collection of soil samples for MC. A digital geophysical survey was not conducted at that time. No MEC or munitions debris (MD) was observed during the visual surveys. Because no evidence of military munitions was observed at the MRS during the visual survey, one soil sample (the minimum required) was collected from a grassy area in the northeast corner of the MRS. The sample was analyzed for Target Compound List (TCL) explosives by Method 8330 and a subset of the Target Analyte List (TAL) metals by Methods SW846 6010B and 7471A. Metals were selected for analysis based on the metals that were known to be associated with the munitions that West Point historically used. The analysis of metals included antimony, copper, iron, lead, mercury, potassium, and zinc. Because background data were not available for the West Point area, the analytical results for seven TAL metals and TCL explosives were compared, for evaluation purposes only, against U.S. Environmental Protection Agency (EPA) Region 9 preliminary remediation goals (PRGs) for residential soils, where available. MC was not detected above EPA Region 9 PRGs for residential soils. The SI recommended further investigation for MEC and MC if a MEC release were identified.

Between April and June 2011, Weston Solutions, Inc. (WESTON®) performed RI field activities at the Michie Stadium MRS. Approximately 0.43 acre was geophysically mapped and intrusively investigated within the Michie Stadium MRS. The remainder of the MRS was not accessible for geophysical mapping and intrusive investigation due to development, which includes buildings and structures; impermeable ground surfaces such as concrete and asphalt roads, parking areas,

and walkways; and the playing field within Michie Stadium. A total of 242 anomalies were detected as a result of the DGM surveys. Each anomaly was reacquired and intrusively investigated. One unexploded ordnance (UXO) item (mortar, 3-inch Stokes, MKI, unfuzed) and seven MD items were recovered during intrusive investigations. The MD items included one tail boom and one end cap from 3-inch Stokes mortars and five fragments from unknown munitions. The remaining 234 anomalies were documented as cultural debris. The UXO item was transferred to the Fort Drum Explosive Ordnance Disposal (EOD) unit on 09 June 2011 for off-site disposal. The MD was transferred to the West Point Recycle Center.

The Michie Stadium MRS was evaluated for possible MEC and MC exposure to human and ecological receptors. The evaluation of potential MEC exposure concluded that the MEC exposure pathway is complete because MEC was in fact identified at the Michie Stadium MRS during previous construction projects and during the RI field activities. The primary exposure mechanism for human and ecological receptors to surface MEC is through handle/tread underfoot. Also, a subsurface pathway may occur during construction excavation activities.

Potential routes of migration include those physical processes that may result in movement or relocation of MEC after its original placement. If not removed, it will have the potential to pose an explosive hazard to human health and may be transported from its original placement by the following physical processes:

- Picking up or moving of a potential MEC item by a person(s).
- Disturbance of potential MEC during construction, excavation, or other soil moving activities.
- Natural processes such as erosion/deposition or frost heave.

The Munitions and Explosives of Concern Hazard Assessment (MEC HA) (EPA, 2008) was used to assess the severity, accessibility, and sensitivity of MEC and its interaction with potential receptors. A summary of the MEC HA scoring for Michie Stadium MRS is presented below.

Site ID: Michie Stadium MRS	Hazard Level	Category Score
Current Use Activities	4	525

Source: EPA MEC HA Worksheet V.1.2, 2007.

For current use activities, the Michie Stadium MRS has a Hazard Level Category of 4, which indicates the MRS has low potential explosive hazard conditions. The presence of MEC at an MRS means that an explosive hazard may exist. Therefore, MEC may continue to pose a hazard at a Hazard Level 4 MRS. Typical characteristics of an MRS in Hazard Level 4 include the following:

- A MEC cleanup has been performed or MEC is located only in the subsurface, below the depth of receptor intrusive activities.
- The energetic material type is propellant, spotting charge, or incendiary.
- Accessibility is limited or very limited, and contact hours are few or very few. This may be the result of LUCs.
- The current and future uses of the MRS are consistent.

Based on the results of this RI, potential MEC hazards on the surface and in the subsurface are present for the West Point personnel, residents, site visitors, recreational users (athletes), maintenance workers, and contractor personnel in the Michie Stadium MRS. There is a low probability of encountering additional MEC over the entire MRS (undeveloped and developed areas).

The UXO and MD recovered during the RI were most likely brought to the area within construction fill collected at different locations and brought to the MRS during various construction projects at Michie Stadium. It is unlikely that Stokes mortars were used within the vicinity of the MRS, given the time frame during which they were designed and used (1914-1939) and the activities that occurred in the vicinity of the MRS during that time: a restored Fort Putnam existed to the north, and Michie Stadium was constructed and used for athletic events and recreation.

A review of the historical topographic maps (**Figure 1-4**) was used to delineate the boundaries of the disturbance resulting from earthwork and the areas where UXO and MD were likely brought to the area in construction fill. This determination justifies an expanded MRS boundary to capture the extent of the historically disturbed area. **Figure 4-2** presents the revised boundary, which increases the size of the MRS from 9.5 acres to 14.1 acres. There is a low probability of

encountering additional MEC and MD over the entire revised MRS (undeveloped and developed).

An FS is recommended to assess possible response action alternatives such as LUCs (including signage) for addressing MEC that has the potential to remain within the Michie Stadium MRS boundary. For activities such as future construction, UXO construction support activities would be used to mitigate or avoid exposure to MEC.

1. INTRODUCTION

1.1 PROJECT AUTHORIZATION

Weston Solutions, Inc. (WESTON®) is authorized to perform the remedial investigation (RI) at the Michie Stadium munitions response site (MRS) (WSTPT-022-R-01) under the United States Army Corps of Engineers (USACE), Baltimore District (CENAB) Multiple Award Military Munitions Services (MAMMS) Contract W912DR-09-D-006, Delivery Order 0001. This RI Report is consistent with the U.S. Environmental Protection Agency (EPA) October 1998 document *Guidance for Conducting Remedial Investigations and Feasibility Studies Under Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) (EPA, 1998), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and the U.S. Army Military Munitions Response Program (MMRP) document, *Final Munitions Response Remedial Investigation/Feasibility Study Guidance* (U.S. Army, 2009).

1.2 PURPOSE AND SCOPE

The United States (U.S.) Congress established the MMRP under the Defense Environmental Restoration Program (DERP) to address munitions and explosives of concern (MEC), including unexploded ordnance (UXO), discarded military munitions (DMM), and munitions constituents (MC) located on current and former defense sites. MMRP-eligible sites include locations other than operational ranges where UXO, DMM, or MC are known or suspected and where the release occurred prior to 30 September 2002. Properties classified as operational military ranges, permitted munitions disposal facilities, or operating munitions storage facilities are not eligible for the MMRP. The DERP, including the MMRP, typically follows CERCLA and the NCP. The U.S. Army conducted an inventory of closed, transferred, and transferring (CTT) military ranges and defense sites (also known as the Phase 3 CTT), which meets the requirements of a CERCLA Preliminary Assessment (PA). In this Phase 3 CTT at the U.S. Army Garrison West Point, New York (West Point), 10 closed ranges and 2 transferred areas with the potential for MEC, which includes both UXO and DMM and/or MC, were identified as eligible for action under the MMRP. The Phase 3 CTT Range Inventory Report for West Point was completed in August 2004.

The next phase of the CERCLA process at West Point was the Site Inspection (SI). The SI was completed in a two-phase approach. The Historical Records Review (HRR) was the initial step in

the MMRP SI. During the HRR, records searches were performed to supplement the information gathered during the Phase 3 CTT and to help facilitate decision-making processes to determine the next step for the SI. The Final HRR Report was presented to the Army and stakeholders in March 2006 (TLI, 2006). Based on the HRR results, one MRS was determined to require no further action. All other MRSs in the Phase 3 CTT required a field inspection. These field inspections were performed in April, May, and September 2006. The results of the SI (TLI, 2007) indicated that multiple MRSs require further investigation through an RI. The SI report identified 11 MRSs at West Point to be evaluated in the RI phase of the CERCLA process. The April and May 2006 SI field activities are discussed in more detail in Section 1.5.2. As part of the SI, a preliminary conceptual site model (CSM) was developed for West Point in its entirety. Individual CSMs were also developed for each of the MRSs.

The purpose of this MMRP RI was to perform an investigation to determine the presence or absence of MEC and MC at the 11 MRSs identified in the SI, and if present, to determine the nature and extent of MEC and MC (as needed) on the ground surface and subsurface. Information collected during the RI was used to fill data gaps, update the CSM, evaluate potential human health and ecological risks, conduct an explosive hazard assessment, and update the Munitions Response Site Prioritization Protocol (MRSPP). Results from the RI were used to support the evaluation of either a no further action (NFA) alternative, or the development and evaluation of remedial alternatives and to provide recommendations for a feasibility study (FS) if required. A NFA recommendation will be made only if it is certain that a MEC or MC release did not occur. If it cannot be proven during the course of the RI that a MEC or MC release did not occur, the implementation of land use controls (LUCs) would be the minimum remedial action alternative recommended. This report summarizes the RI conducted specifically at the Michie Stadium MRS (WSTPT-022-R-01).

1.3 REMEDIAL INVESTIGATION REPORT ORGANIZATION

The RI Report is organized as follows:

- The remainder of Section 1 provides a description and history of the MRS and a summary of previous investigations.
- Section 2 discusses the preliminary CSM, preliminary remediation goals, data needs, and data quality objectives (DQOs) used to develop the RI.

- Section 3 provides details on the approach, methods, and procedures used to characterize MEC.
- Section 4 presents the results of the RI, the MEC and munitions debris (MD) characterization, and summarizes the on-site distribution of MEC and MD. Section 4 also includes a revised CSM based on the findings of the RI and presents the preliminary identification of applicable or relevant and appropriate requirements (ARARs).
- Section 5 discusses the MEC fate and transport process.
- Section 6 evaluates the potential current and future adverse hazards caused by MEC.
- Section 7 presents the RI summary and conclusions.
- Section 8 provides a list of references used in preparing this report.

1.4 PROPERTY DESCRIPTION AND PROBLEM IDENTIFICATION

1.4.1 Project Location and Site Description

West Point is located in Orange and Putnam Counties, New York, on the west bank of the Hudson River. West Point is approximately 50 miles north of New York City and approximately 13 miles south of Newburgh. In its entirety, West Point encompasses 15,974 acres that are designated as two areas, the Main Post or campus (2,530 acres) and the Military Reservation (13,444 acres). The Main Post includes the majority of the academic, residential, and support facilities. The Military Reservation is largely undeveloped and contains operational training facilities such as firing ranges and bivouac areas used during the summer to house and train cadets. **Figure 1-1** provides a regional view of West Point.

The Michie Stadium MRS (WSTPT-022-R-01) encompasses 9.5 acres in and around Michie Stadium, which is located near the center of the Main Post area and to the west of Lusk Reservoir (**Figure 1-2**). This MRS is bounded by Howze Field to the south of the stadium; Holleder Sports Center to the southwest; Lusk Reservoir to the east; parking Lot A, which is a capped landfill, outside of the MRS and to the west; and Stony Lonesome Road to the north. Several athletic complexes, including the Holleder Center, Howze Field, the Kimsey Athletic Center, and Randall Hall, are located within or immediately adjacent to the MRS.

1.4.2 Climate

The climate of the region including West Point is characterized as a humid, continental climate. Summers are warm and have periods of high humidity. The semi-permanent Bermuda High brings south to southwest warm and humid air to the area. July is the hottest month, with a mean temperature of 86 degrees Fahrenheit (ºF); and the coldest month of the year is January, which has a mean temperature of 27 ºF. Winters are cold with extended periods of snow cover and are influenced by the cold Hudson Bay air masses. Most winters are characterized by one or more warm periods when soils nearly or completely thaw (Tetra Tech, Inc., 2010).

A third weather pattern that influences the climate of West Point is an air mass that flows inland from the North Atlantic Ocean bringing cool, cloudy, and damp weather to the region. Prevailing winds are generally westerly (Tetra Tech, Inc., 2010).

Thunderstorms occur approximately 20 times per year. Tornadoes have a frequency of occurring 3 to 4 times a year in the region, although no significant tornadoes have occurred at West Point for more than 20 years. Total annual precipitation is greater than 49.5 inches, with the least amount (approximately 3.5 inches each month) occurring in January and February, and the most occurring in May (approximately 4.9 inches) (Tetra Tech, Inc., 2010).

1.4.3 Geology

West Point lies in the Hudson Highlands, a low, rugged mountain range, that forms a zone of folded and faulted metamorphic and igneous rocks subjected to extensive weathering and erosion. Precambrian-age granite, diorite, gneiss, and schist compose the majority of the crystalline bedrock underlying West Point. Granite, the most prevalent rock type in the bedrock, is typically medium-grained and composed of quartz, feldspar, and mica. Granite and pegmatite are igneous rocks and occur as dikes and sills within the gneiss. Igneous rocks on the installation consist of plagioclase feldspar, hornblende, pyroxene, and biotite mica and quartz (Tetra Tech, Inc., 2010).

The metamorphic rocks of West Point exist in sequences. These sequences are composed of a hard, layered, banded rock, gneiss, which is sometimes intruded by igneous rocks. Marble, quartzite, schist, and amphibolite are other metamorphic rocks present in the Highlands area. The

metamorphic rocks were deposited as marine sediments, volcanic ashes, and volcanic rocks. During the Precambrian period, these sediments and rocks were possibly subject to three phases of folding, extensive regional metamorphism, partial melting, and magmatic intrusion. The cantonment area, which is bounded by the Hudson River, is underlain by exposed bedrock and glacial alluvium (Tetra Tech, Inc., 2010).

There is a fault underlying West Point approximately along Routes 293 and 218 from the Hudson River to Long Pond. A second fault lies northwest to southeast from Popolopen Lake to east of Fort Montgomery. Neither of these faults exists under the Michie Stadium MRS. There are three fault zones through the Hudson Highlands. These faults were active during the Precambrian period and were reactivated during the period of Taconic mountain buildings. During the latter, some new faults became active. Shear zones are also common at West Point. According to the New York State Geological Survey, historically, there have not been any major seismic activities in this area (Tetra Tech, Inc., 2010).

Surficial geologic formations on the installation are outcroppings, talus, and glacial deposits. During glacier retreat, features were formed along the valley walls. The most prominent features are the kame terraces. In all but the flat, marshy areas, bedrock can be observed. A thin veneer layer of Pleistocene-age glacial deposits, both stratified and unstratified, overlies the igneous and metamorphic bedrock sequence. The stratified drift consists primarily of sand and gravel deposited in glacial lakes and streams. The unstratified drift consists of glacial till material, which is mainly large boulders and clay, sand, and gravel deposited directly from glacial ice as it progressed or regressed across the area (Tetra Tech, Inc., 2010).

Site-specific geologic investigations were not conducted for the Michie Stadium MRS. The boring data from nearby monitoring wells are not relevant because of a distance of several hundred feet and an elevation difference of approximately 80 ft. Regional geologic maps (Cadwell, 1989; Fisher et al., 1970) indicate that the bedrock geology of the Michie Stadium MRS is gneiss underlain by biotite granitic gneiss. Bedrock is very shallow with many outcroppings, as shown in **Figure 1-3.**

1.4.4 Topography

The topography of West Point is best described as having moderately steep hills and numerous escarpments. Slopes from 10 to 60% are common on the installation. Areas in between the hills are interspersed with small plains, basins, and narrow valleys with slopes less than 3%. The topography of the surrounding region is undulating and rugged. These characteristics, along with the alluvium and till deposits in the lowland areas and the relatively flat valley bottoms of the region, are the result of glaciation (Tetra Tech, Inc., 2010). Because the MRS is extensively developed with athletic facilities and impervious surfaces, the topography is relatively flat; however, a small area along the northern edge of the MRS includes wooded, hilly terrain. The MRS lies at an elevation of approximately 320 feet (97 meters) above mean sea level (amsl).

1.4.5 Soils

The soil types within the Michie Stadium MRS include smoothed udorthents, moderately steep Hollis complex rock outcrop, sloping Hollis complex rock outcrop, and sloping Swartswood-Mardin very stony soils (**Figure 1-3**). Smoothed udorthents, which comprise a majority of the MRS, are located in the developed area containing Michie Stadium. These are excessively to moderately well drained soils that are characteristic of man-made cut-and-fill areas.

The Swartswood-Mardin and Hollis Complex soils are located in the areas investigated during the SI and RI. These soil types range from well drained to excessively well drained. The Hollis Complex soils typically have a thin leaf mat over dark, gravelly and sandy loam and contain protruding rock outcrops and ledges of bedrock. Available water capacity in the Hollis Complex soils is low or very low. The Swartswood-Mardin surface soils contain primarily gravelly loam, gravelly silt loam, gravelly fine sandy loam, or channery sandy loam. Surface boulders greater than 10 inches in diameter are common. It is common for Swartswood-Mardin soils to contain a perched water table in the spring. Available water capacity is low to moderate, indicating that Swartswood-Mardin soils could be more susceptible to frost heave that the other soils within the MRS.

1.4.6 Hydrology

1.4.6.1 Surface Water

Although no surface water resources exist within the Michie Stadium MRS, the Lusk Reservoir is immediately adjacent to this MRS and several water bodies are located within a 2.9-mile radius: the Hudson River, Dassori Pond, Delafield Pond, Crow's Nest Brook, Sinclair Pond Brook, and Kinsley Farm Brook. Sheet flow within the MRS is directed to Kinsley Farm Brook.

1.4.6.2 Groundwater

Groundwater on West Point occurs in an unconsolidated aquifer consisting of alluvial deposits and a consolidated bedrock aquifer. Water within the unconsolidated aquifer occurs primarily in the sands and gravels of the stratified drift deposits. These deposits represent the most prolific sources of groundwater on the installation, but the deposits are thin and generally have fairly small well yields that average about 40 gallons per minute (gpm). Water in the unconsolidated aquifer usually occurs under water table conditions. Recharge to the aquifer is primarily from local precipitation, but hydrologic communication occurs between the alluvial and the bedrock aquifers, and some upward seepage from the bedrock aquifer occurs in low-lying areas (Tetra Tech, Inc., 2010; TLI, 2007). However, an unconsolidated aquifer does not exist within the Michie Stadium MRS based on the geology.

Site-specific groundwater investigations were not conducted for the Michie Stadium MRS. The data from nearby monitoring wells are not applicable because of a distance of several hundred feet and an elevation difference of approximately 80 ft.

1.4.7 Ecology

West Point lies in New York State, bordering the west bank of the Hudson River in the lower Hudson River Valley. Its environmental setting is unique in that five physiographic provinces—the Appalachian Plateaus, Folded Appalachians (Valley and Ridge), New England, Piedmont, and Coastal Plain—converge within a 35-mile radius of the installation. West Point is located in the New England Province in an area known as the Hudson Highlands (Tetra Tech, Inc., 2010).

1.4.7.1 Special Natural Areas

West Point has identified 12 sites that are to be specially managed because of ecological or geological significance, unique geological structure, and/or aesthetic and educational value to the installation; however, the Michie Stadium MRS is not located within or adjacent to any of the 12 identified sites (Tetra Tech, Inc., 2010).

1.4.7.2 Wetlands

Approximately 1,010 acres of wetlands are located throughout West Point in association with streams, ponds, depressions, and seeps (Tetra Tech, Inc., 2010); however, the Michie Stadium MRS does not contain wetlands (TLI, 2007; WESTON, 2011a).

1.4.7.3 Flora

Vegetation within the Michie Stadium MRS is limited to mowed lawn and trees that are characteristic of developed, landscaped areas with pockets of mature hardwood forest and or dense vegetation consisting of small saplings, mountain laurel, blueberry, briers, and vines (TLI, 2007).

1.4.7.4 Fauna

Forty-eight species of mammals, 249 species of birds, 22 species of reptiles, and 18 species of amphibians have been documented on West Point, in addition to many species of fish and invertebrate species (Tetra Tech, Inc., 2010). Because the Michie Stadium MRS is extensively developed, it is unlikely that most of these species would rely on the Michie Stadium MRS for habitat.

1.4.7.5 Ecological Receptors

Potential ecological receptors are presented in the overall CSM for West Point and are listed below. If warranted, a focused list of ecological receptors specific to this MRS will be developed in an ecological risk assessment following the RI. Because nearly all of the Michie Stadium MRS has been disturbed by the development of the athletic complex, it is expected that the MRS-specific list of ecological receptors would include significantly fewer receptors than listed below, because the habitable area within the Michie Stadium MRS is limited.

The following ecological receptors are included in the overall CSM for West Point:

- Mammals: Small-footed bat and Indiana bat.
- Birds: Cooper's hawk, Northern goshawk, sharp-shinned hawk, golden eagle, American bittern, red-shouldered hawk, whip-poor-will, common nighthawk, cerulean warbler, Peregrine falcon, common loon, bald eagle, yellow-breasted chat, least bittern, red-headed woodpecker, osprey, pied-billed grebe, vesper sparrow, and golden-winged warbler.
- Reptiles: Eastern wormsnake, spotted turtle, wood turtle, timber rattlesnake, Eastern hognose, and Eastern box turtle.
- Amphibians: Jefferson salamander, blue-spotted salamander, and marbled salamander.
- Fish: Shortnose sturgeon, Atlantic sturgeon, and Atlantic silverside.
- Insects, Dragonflies, and Damselflies: Lateral bluet, Needham's skimmer.
- S1 Plants: Virginia snakeroot, glomerate sedge, stripe-fruited sedge, and Carolina cranesbill.
- S2 Plants: Long's bittercress, midland sedge, slender crabgrass, violet wood sorrel, Carey's smartweed, and small-flowered crowfoot.
- S2S3 Plants: Cluster sedge, purple milkweed, Emmon's sedge, Bicknell's sedge, Bush's sedge, false hop sedge, weak stellate sedge, yellow harlequin, racemed pinweed, violet bush clover, slender knotweed, and gemmed bladderwort.

1.4.8 Sensitive Environmental Resources within the MRS

WESTON submitted a request for review by the New York Natural Heritage Program (NYNHP) to determine whether there are records of any known rare, threatened, and endangered species or species of special concern located within or near the West Point MRSs. In response, the NYNHP identified the following species for the potential to occur within the West Point MRSs: one mammal species (small-footed myotis – *Myotis leibii*), two species of birds (bald eagle {*Haliaeatus leucocephalus*] and the least bittern [*Ixobrychus exilis*]), one reptile species (timber rattlesnake – *Crotalus horridus*), three fish (shortnose sturgeon [*Acipenser brevirostrum*], Atlantic sturgeon [*Acipenser oxyrhynchus*], and Atlantic silverside [*Menidia menidia*]), and one insect (Needham's skimmer – *Libellula needhami*). With the exception of the three fish species, the remaining species have the potential to occur within the Michie Stadium MRS; however,

given its degree of development and level of activity, it is unlikely that any of these species would be permanent residents within the MRS. The NYNHP did not identify any federally threatened or endangered plant species within any of the West Point MRSs.

1.4.9 Cultural and Archaeological Resources

Because West Point is one of the older training grounds in the United States that is still intact, it contains numerous cultural, archaeological, and historical sites. Michie Stadium itself is a cultural resource (WESTON, 2011a).

1.4.10 Demographics

The Michie Stadium MRS is easily accessible to West Point personnel, residents, site visitors, recreational users (athletes), maintenance workers, and contractor personnel who have passed through initial post security at the entrance gate.

1.4.11 Current and Projected Land Use

Most of the lands on the Main Post are highly developed or are considered undevelopable because of steep slopes. West Point lands have been divided into four land use zones based on the functional categories that reflect the West Point missions (Tetra Tech, Inc., 2010):

- Cadet Use: Academic, intramural athletic, billeting, and parading.
- Cadet Support: Intercollegiate athletic fields and some cadet support facilities.
- Post Support: Housing, commercial, and service support to staff and faculty, non-West Point military personnel, and military retirees.
- Recreational, Industrial, Field Training: Building and storage area support for industrial operation, field training areas (TAs), recreation areas, and open space.

Michie Stadium MRS is located within a Cadet Support area and is used for recreational and athletic activities. Michie Stadium is used for football and lacrosse events. Although future plans within the MRS include the construction of an additional athletic building, no change to the current land use (recreational and athletic activities) is anticipated.

1.5 PREVIOUS INVESTIGATIONS

1.5.1 Historical Information

Since the establishment of West Point in 1802, the Michie Stadium vicinity has always been part of the Main Post and was used for recreational and athletic activities. The land on which Michie Stadium is located was acquired by West Point in the mid-1800s. The area was low-lying and undeveloped as of the late 1800s. When the site was selected for construction of the stadium, the site was described as a wet, marshy area (Bedford, 2000; TLI, 2006). The site for Michie Stadium was selected when, after evaluating potential sites on the grounds, the Academy's committee and superintendent agreed that open land adjacent to the Lusk Reservoir had sufficient room, adequate vehicular access, and proximity to the campus gymnasium (Bedford, 2000).

In 1909, there was a restoration project at Fort Putnam, which is located north of the MRS. In addition, there was a major earth and rock excavation and reworking of material for the construction of the new stadium. Earthmoving activities for the new stadium began in August 1923 with massive amounts of bedrock being removed from the southern edge of the Fort Putnam ridge, because extensive filling was necessary to stabilize what had once been a low-lying, seasonally inundated area (Bedford, 2000; TLI, 2006).

The topographic maps dated 1892 and 1941 (**Figure 1-4**) show the extent to which excavation was performed during construction of Michie Stadium in 1923. The red-shaded area outlines the reworked areas that overlap portions of Michie Stadium MRS. Isolines are at a 20-foot contour interval. Comparing the two topographic maps suggests that there was significant reworking of the landscape in the area between Michie Stadium and Fort Putnam and those areas reworked can be quantified.

Additional removal of bedrock and reworking of fill material occurred at the north end of the MRS during a 2001-2002 extension of Stony Lonesome Road (**Figure 1-5**). Prior to this construction, Stony Lonesome Road ended immediately to the northwest of Michie Stadium.

During two separate construction projects completed around the stadium in 2001 and 2003, 14 Stokes mortar rounds were identified and disposed by an Explosive Ordnance Disposal (EOD)

unit. The first event occurred during a seismic upgrade at the west stands of Michie Stadium. This project included adding pilings to the stands to make them more stable. During this project, five 3-inch Stokes mortars were found in the area. The second event occurred when Randall Hall was constructed between the west stands of Michie Stadium and the Kimsey Athletic Center. During the construction of Randall Hall, nine additional 3-inch Stokes mortars were found.

The munitions-related history for the Michie Stadium MRS is largely unknown. However, it appears unlikely that munitions use causing fragmentation would have occurred in this area of the Michie Stadium MRS. Stokes mortars were designed in 1915 and used primarily during World War I (1914–1918) and until World War II (1939). Evaluation of historical information, including reports and topographic maps, shows evidence of the restoration project at Fort Putnam (north of Michie Stadium) and significant disturbance of native soils for the construction of the stadium. The primary earth work occurred during the stadium construction (1923-1924). Stony Lonesome Road was constructed after the stadium was built, and soil disturbance can be observed up to Fort Putnam to the north. These combined disturbances suggest that no native soil remains on-site.

1.5.2 Site Inspection Report and Results

The SI field activities at the Michie Stadium MRS, which were conducted in spring 2006, included approximately 2.2 linear miles of visual surveys and the collection of one soil sample for MC. A digital geophysical survey was not conducted at that time. No MEC or MD was observed during the visual surveys. The visual survey coverage and soil sample location is presented in **Figure 1-6**.

Because no evidence of military munitions was observed at the MRS during the visual survey, one soil sample (the minimum required) was collected from a grassy area in the northeast corner of the MRS. The sample was analyzed for Target Compound List (TCL) explosives by Method 8330 and a subset of the Target Analyte List (TAL) metals by Methods SW846 6010B and 7471A. Metals were selected for analysis based on the metals that were known to be associated with the munitions that West Point historically used. The analysis of metals included antimony, copper, iron, lead, mercury, potassium, and zinc. Because background data were not available for the West Point area, the analytical results for seven TAL metals and TCL explosives were

compared, for evaluation purposes only, against EPA Region 9 preliminary remediation goals (PRGs) for residential soils, where available.

Copper, iron, lead, mercury, potassium, and zinc were detected in concentrations well below the screening criteria for each metal. Trace amounts of explosives were detected in the sample. The SI Report indicated that 0.36 mg/kg of 4-amino-2,6-dinitrotoluene was detected in the sample; however, all results were below the screening criteria (TLI, 2007).

The SI Report provided the following recommendations for the Michie Stadium MRS:

- No MEC or MD was found during the visual survey. However, during previous construction projects, 14 three-inch Stokes mortars were found during excavation at the MRS. It is recommended that this MRS be further investigated for MEC to determine the need to implement land use controls at the MRS, such as requiring construction support during all future excavation activities.
- Based on the analytical results, it appears that MC does not require further investigation at the Michie Stadium MRS at this time. However, if the further investigation of MEC at the MRS identifies areas of concern or if MEC is identified during construction activities, additional sampling may be warranted.

The SI report presents two different boundaries for the Michie Stadium MRS. The intent of the SI was to bound the Michie Stadium MRS along the contour of Stony Lonesome Road. Instead, Volume 1 of the SI shows a straight east-west line for the northern boundary because it was derived from an older low resolution 1990s aerial photo. **Figure 1-5**, which is taken from Volume 2 of the SI report, shows the MRS boundary as derived from updated aerial imagery and the knowledge of construction projects (Fort Putnam restoration, construction of Michie Stadium, and extension of Stony Lonesome Road) within the vicinity. The corrected MRS boundary follows the contour of Stony Lonesome Road. The figure has been edited to highlight the portion of Stony Lonesome Road that was extended in 2001-2002.

1.5.3 Munitions Response Site Prioritization Protocol Scoring

The Munitions Response Site Prioritization Protocol (MRSPP) reflects the statement in 10 § U.S.C. 2710(b)(2) that the priority assigned should be based on the overall conditions at each location, taking into consideration various factors relating to safety and environmental hazard potential. As required under the 10 § U.S.C. 2710(b)(1), the priority assigned to each MRS will

be included with the inventory information made publicly available. The requirement for an inventory of MRSs known or suspected of containing UXO, DMM, or MC is found at 10 § U.S.C. 2710(a). The assigned priority will be updated annually to reflect new information that becomes available.

The MRSPP evaluates the following potential explosive safety and environmental hazards:

- Explosive hazards posed by UXO and DMM.
- Hazards associated with the effects of chemical warfare materiel (CWM).
- The chronic health and environmental hazards posed by MC or other chemical constituents.

DoD recognized the different hazards inherent to each class of materials. To address these differences, the MRSPP has three hazard evaluation modules, each of which is specific to one type of hazard:

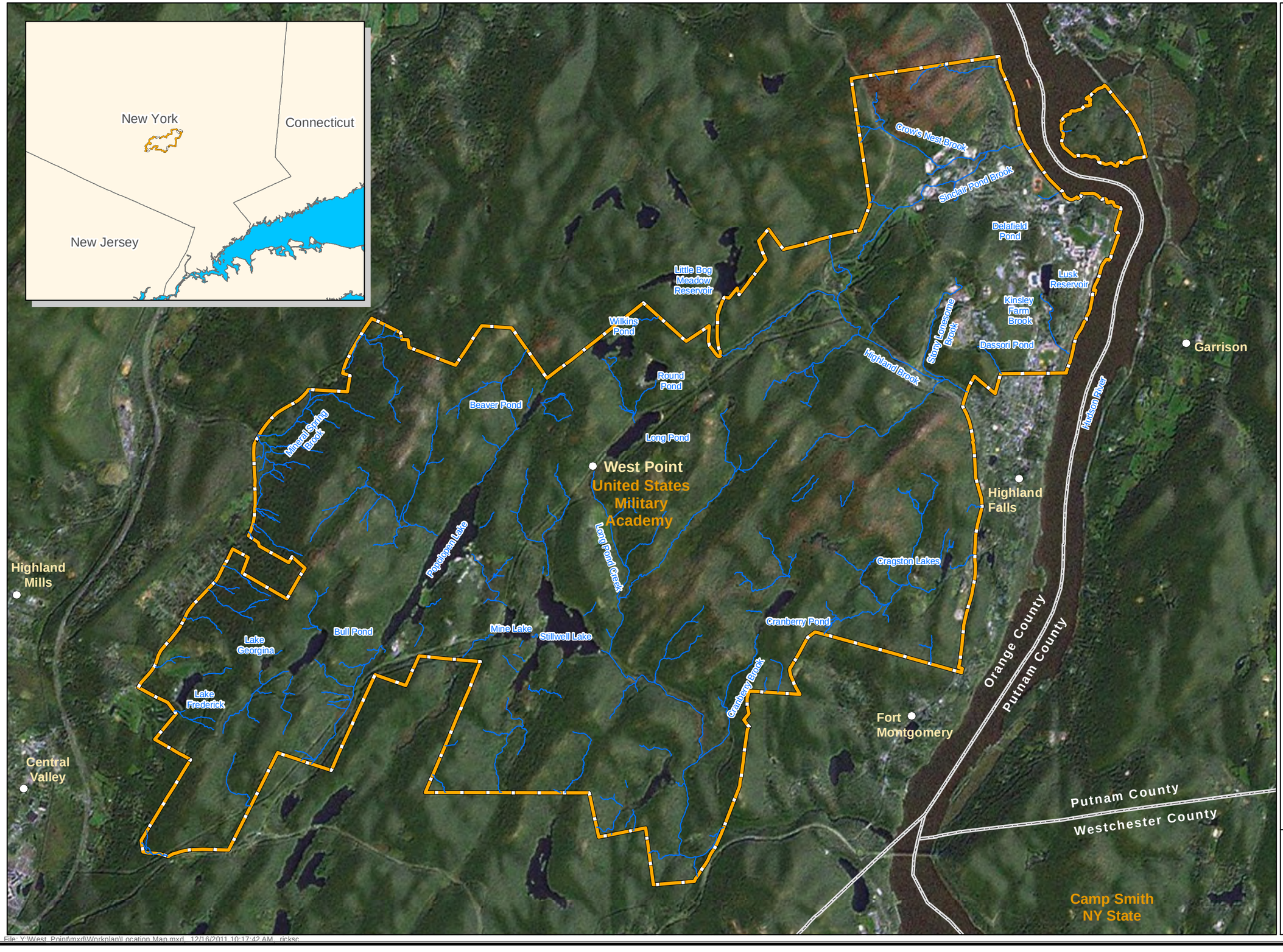
- Explosives hazards are evaluated using the Explosives Hazard Evaluation (EHE) module.
- CWM-related hazards are evaluated using the Chemical Warfare Materiel Hazard Evaluation (CHE) module.
- Health and environmental hazards posed by MC are evaluated using the Health Hazard Evaluation (HHE) module.

DoD recognized that sufficient data to apply all three of the hazard evaluation modules may not be immediately available for some MRSs. In such cases where data are available for only one or two of the modules, the priority will be assigned based on the modules for which sufficient data are available. This initial priority may change when additional data are collected and all three modules are evaluated. Modules for which there are insufficient data will be assigned a status of "evaluation pending."

Upon completion of the necessary munitions response at an MRS, the status of "prioritization no longer required" will be assigned. The sequencing of MRSs for environmental restoration activities will be based primarily on the priority assigned using this protocol, but may also reflect other relevant information, such as stakeholder concerns, economic issues, and program management considerations.

The MRSPP for the Michie Stadium MRS was completed after the SI. The Michie Stadium MRS was given a Priority 4 (out of 8) based on the potential explosive hazard identified during construction activities. Priority 1 indicates the highest potential hazard and Priority 8 the lowest potential hazard. Under the MRSPP, only MRSs with CWM can be assigned to Priority 1, and no MRS with CWM can be assigned to Priority 8. This MRS falls in the middle of this ranking system. The MRSPP was updated with the RI results and is presented in Section 6.2.

SECTION 1
FIGURES



Legend

- Installation Boundary
- Streams

Imagery Source: ESRI, World Imagery
USAD FSA, NAIP 2009

N
W E
S

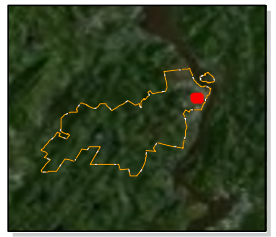
0 1 2
Miles

Figure 1-1
Regional Location Map
U.S. Army Garrison West Point

File: Y:\West_Point\mxd\Workplan\Location Map.mxd 12/16/2011 10:17:42 AM ricksc

Legend

Michie Stadium - 9.5 Acres



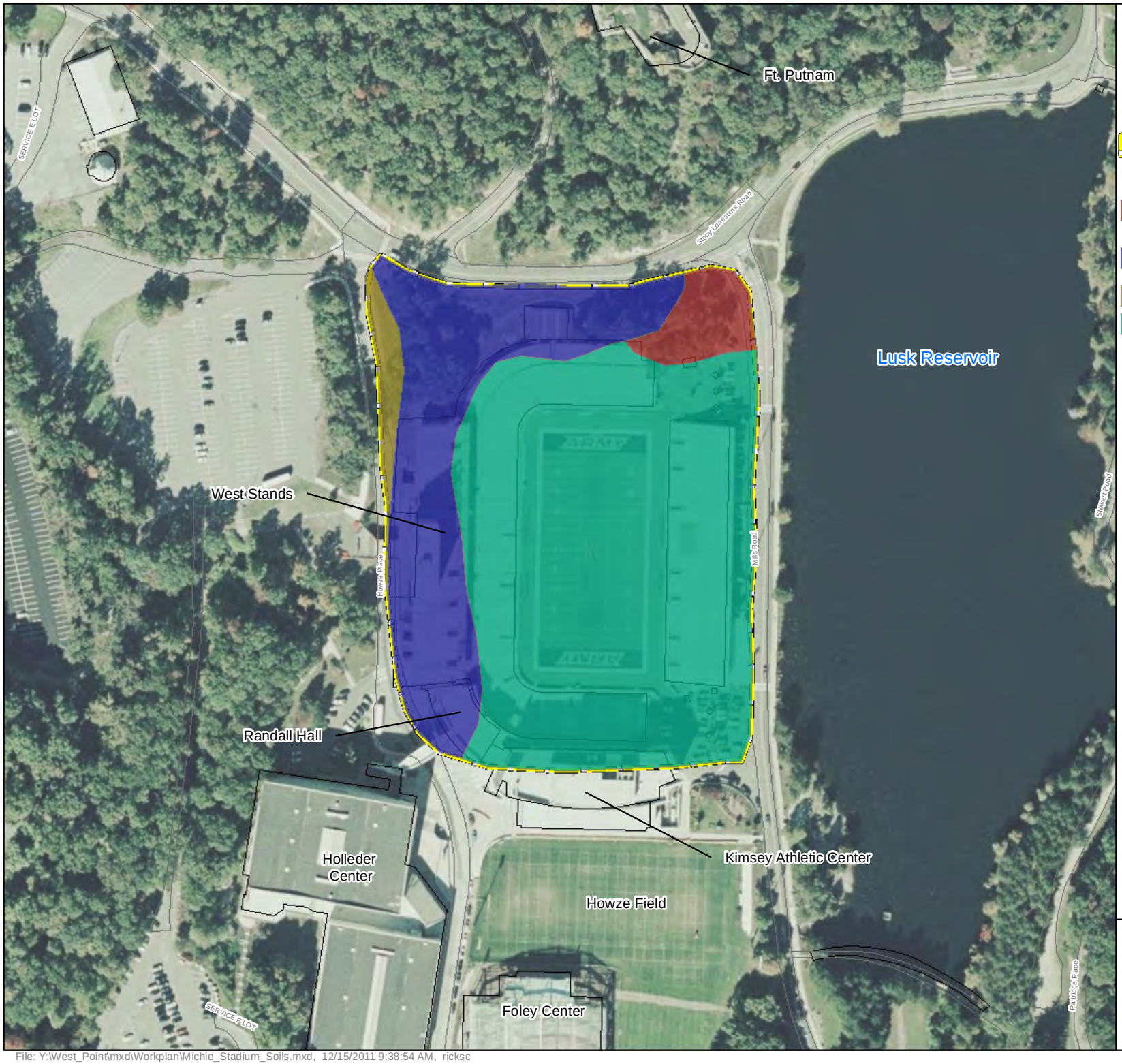
Imagery Source: ESRI, Bing Mapping Service. 2009

N
W
E
S

0 100 200 Feet

Figure 1-2
Michie Stadium MRS
(WSTPT-022-R-01)
U.S. Army Garrison West Point

File: Y:\West_Point\mxd\Workplan\Michie_Stadium.mxd, 12/15/2011 9:37:19 AM, ricksc

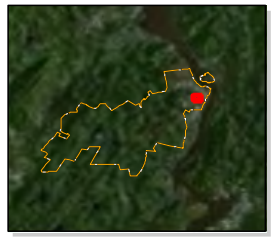


Legend

Michie Stadium - 9.5 Acres

Michie Stadium Soil Series

- Rock Outcrop – Hollis Complex, moderately steep
- Rock Outcrop – Hollis Complex, sloping
- Swartswood-Mardin
- Udorthents



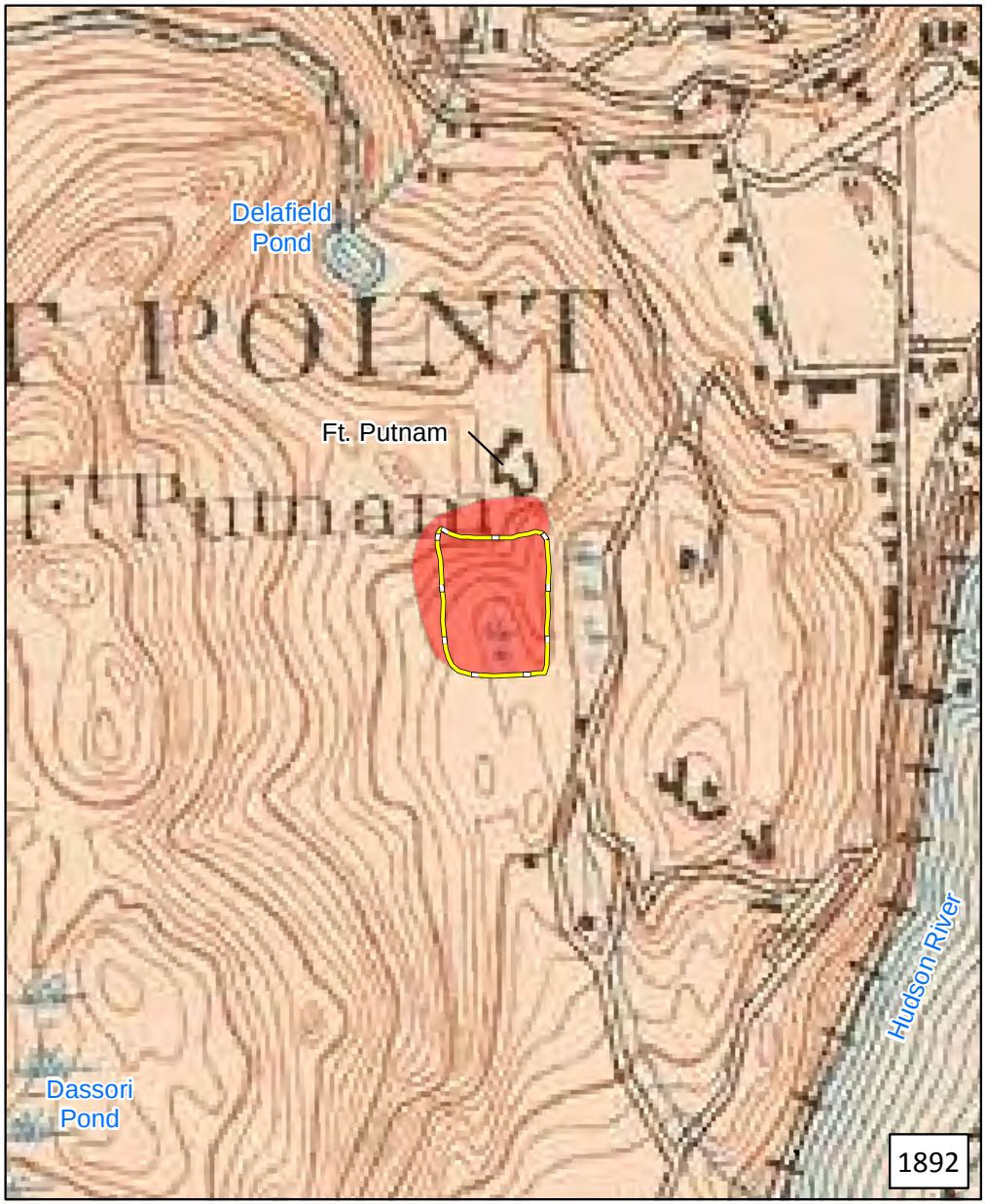
Imagery Source: ESRI, Bing Mapping Service. 2009

N
W E
S

0 100 200 Feet

Figure 1-3
Michie Stadium MRS
(WSTPT-022-R-01)
Soil Series
U.S. Army Garrison West Point

File: Y:\West_Point\mxd\Workplan\Michie_Stadium_Soils.mxd, 12/15/2011 9:38:54 AM, ricksc



Legend

Michie Stadium - 9.5 Acres

Area of Michie Stadium MRS disturbed during 1923 stadium construction

Sources:

-USC&GS (United States Coast and Geodetic Survey) et al. 1892. West Point, NY Quadrangle. Made available by the University of New Hampshire Library Digital Collections Initiative. http://docs.unh.edu/NY/west92sw.jpg

-USGS (United States Geological Survey). 1941. West Point, NY Quadrangle. Made available by the University of New Hampshire Library Digital Collections Initiative. http://docs.unh.edu/NY/west41sw.jpg

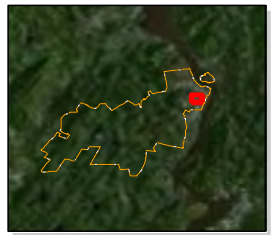
0 250 500 1,000 Feet

Figure 1-4
Michie Stadium MRS
(WSTPT-022-R-01)
1892 and 1941 Topographic Maps
U.S. Army Garrison West Point

File: Y:\West_Point\mxd\Workplan\Michie_Stadium_historic_topo.mxd, 12/15/2011 9:51:32 AM, ricksc

Legend

- Michie Stadium - 9.5 Acres
- New Section of Stony Lonesome Road



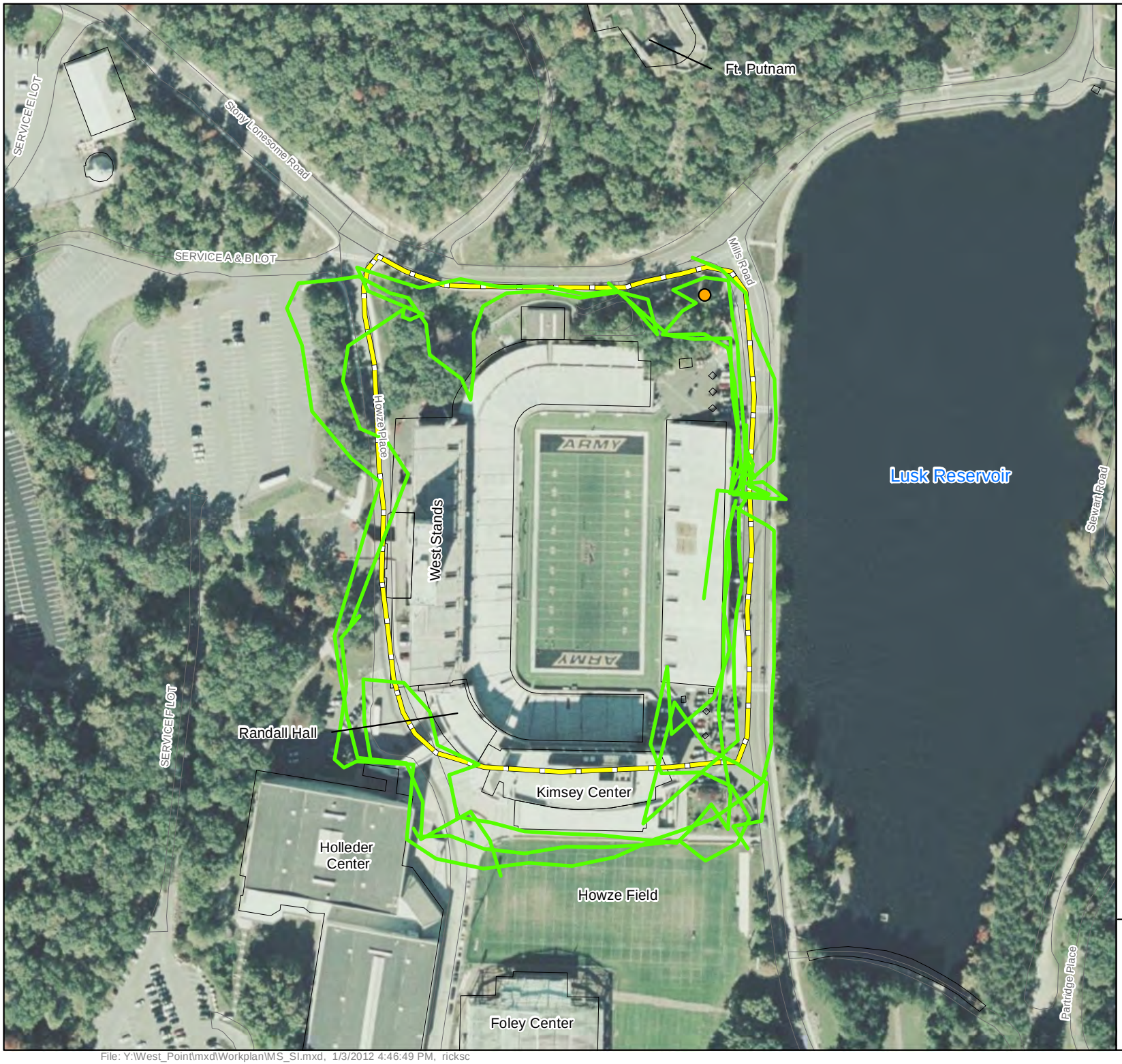
Imagery Source: ESRI, Bing Mapping Service. 2009

N
W E
S

0 150 300
Feet

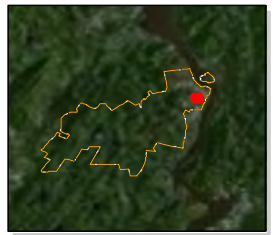
Figure 1-5
Michie Stadium MRS
(WSTPT-022-R-01)
Stony Lonesome Road Extension
U.S. Army Garrison West Point

File: Y:\West_Point\mxd\Workplan\Michie_Stadium_road_extension.mxd, 12/15/2011 10:00:14 AM, ricksc



Legend

- Michie Stadium - 9.5 Acres
- Visual Survey
- MC Sampling Location



Imagery Source: ESRI, Bing Mapping Service. 2009

N
W E
S

0 100 200 Feet

Figure 1-6
Michie Stadium MRS
(WSTPT-022-R-01)
SI Results
U.S. Army Garrison West Point

File: Y:\West_Point\mxd\Workplan\MS_SI.mxd, 1/3/2012 4:46:49 PM, ricksc

2. PROJECT REMEDIAL RESPONSE OBJECTIVES

The goal of the RI was to conduct an on-site investigation at the Michie Stadium MRS to adequately characterize the nature and extent of potential MEC contamination, and to assess any potential risks to human health or the environment that might result from that contamination so that possible remedial alternatives could be developed and assessed. The overall RI approach included the following:

- Developing DQOs and data needs through the Technical Project Planning (TPP) process.
- Delineating the extent of potential MEC within 0.43 acre of accessible areas of the MRS using digital geophysical mapping (DGM).
- Reacquiring 242 anomalies detected by the DGM surveys.
- Intrusively investigating all reacquired anomalies within DGM survey areas to evaluate the nature and extent of MEC and MC if necessary based on determinations of a MEC release.
- Removing and disposing of recovered MEC and MD.
- MC soil sampling as necessary where a MEC release, or where visible explosives residue or other indications of potential MC were observed.
- Reporting results through the TPP process throughout the RI to gain stakeholder concurrence.
- Updating the CSM and MRSPP.
- Submitting the RI Report.

The specific processes and procedures used to conduct this investigation are detailed in the RI Work Plan (WESTON, 2011a). This characterization approach follows the methods presented and approved in the TPP 1 and TPP 2 meetings (see Section 2.4). These investigation methods are summarized in Section 3 of this RI report, and the RI results are presented in Section 4.

2.1 CONCEPTUAL SITE MODEL AND PROJECT APPROACH

2.1.1 Development of a Conceptual Site Model

The CSM is a description of an MRS and its environment that is based on existing knowledge. The CSM describes sources of environmental contaminants or MEC hazards at an MRS, actual

or potential pathways, current or proposed use of property, and potential receptors to contaminants or hazards. It provides a planning tool to integrate MRS information from a variety of sources, evaluate the information with respect to project objectives and data needs, and respond through an iterative process for further data collection or action. The CSM development should be viewed as a process that reflects the progress of activities at an MRS from initial assessment through closeout. Depending on the complexity of the investigation, typical information includes:

- Facility Profile — Describes all man-made features at or near the site.
- Physical Profile — Describes factors that may affect release, fate, and transport.
- Land Use and Exposure Profile — Provides information used to identify and evaluate the applicable exposure scenarios and receptor locations.
- Ecological Profile — Describes the physical relationship between developed and undeveloped portions of the site, use of the undeveloped portions, and ecological use.
- Release Profile — Presents the extent of contaminants or hazards in the environment.

2.1.2 Preliminary Conceptual Site Model

The CSM for the Michie Stadium MRS was based on information collected during the SI (TLI, 2007). The resulting preliminary CSM took into account historical and SI information to support the identification of MEC sources and potential migration pathways and receptors. The preliminary CSM has been updated to reflect the RI findings and results, and the updated CSM is presented in Section 4.2 of this RI report.

2.2 PRELIMINARY CONCEPTUAL SITE EXPOSURE MODEL

2.2.1 Development of a Conceptual Site Exposure Model

Conceptual site exposure models (CSEMs) use the information from CSMs to provide a representation of the MRS in terms of exposure pathways and anticipated receptors based on current and future land use. The CSEM identifies complete, potentially complete, and incomplete exposure pathways for site contaminants. A complete pathway contains four elements:

- Source of contamination.
- Transport mechanism for contamination.
- Receptors (current or potential).
- Mechanism for exposure of receptors.

A pathway is incomplete if it is missing one of the four elements above and there is no expected change to site conditions that would make all four elements available. Accordingly, a potentially complete pathway is an incomplete pathway that may become complete in the future if site conditions change.

Typically, CSEMs are presented as wire frame diagrams that depict site-specific contamination sources (e.g., MEC and MC), release or migration mechanisms, and exposure routes to receptors. Development of a CSEM is a critical step in properly evaluating potential exposures to MEC and MC at a site. Like the CSM, CSEMs are also updated during the life of the project based on new information that is collected.

2.2.2 Preliminary Conceptual Site Exposure Model

During the SI, the Michie Stadium MRS was evaluated for possible MEC and MC exposure to human and ecological receptors. The evaluation of potential MEC exposure concluded that the MEC exposure pathway is complete because although no MEC was observed during the SI field activities, MEC was in fact identified at the Michie Stadium MRS during previous construction projects. The primary exposure mechanism for human and ecological receptors to surface MEC is through handle/tread underfoot. Also, a subsurface pathway may occur because biota may nest or burrow at the MRS (TLI, 2007).

Based on the results of SI soil sampling, no MC was identified above the EPA Region 9 PRGs at the Michie Stadium MRS; therefore, the pathways of MC to all human and ecological receptors were considered incomplete (TLI, 2007).

Figure 2-1, which depicts the exposure pathways for the Michie Stadium MRS, indicates that the exposure pathways for human and ecological receptors to contact MEC are complete based on physical evidence or previous investigations. **Figure 2-2** depicts the exposure pathways for human and ecological receptors to contact MC. This figure demonstrates that the exposure pathways are considered incomplete in areas where MC is not present above the screening criteria.

2.3 INSTITUTIONAL ANALYSIS

An institutional analysis is generally conducted to identify and analyze the institutional framework necessary to support the development of institutional controls. This analysis serves the purposes of gathering background information, documenting stakeholders that have jurisdiction over the subject MRS, and assessing the stakeholders' capability and willingness to assert institutional controls to protect the public from explosives hazards potentially present within the MRS limits. The institutional analysis is presented in **Appendix A**. The following stakeholders are capable and willing to assert MRS controls, as needed:

- The U.S. Army Environmental Command (USAEC) is the executing agency under the MMRP.
- USACE is providing the technical and contractual oversight of the MMRP CERCLA investigations at West Point.
- The Department of Defense – The U.S. Army owns U.S. Army Garrison West Point, New York.
- The New York State Department of Environmental Conservation (NYSDEC) is the lead regulatory agency and is responsible for the environmental protection of the Commonwealth of New York. EPA Region 2 is providing regulatory technical support and assistance to NYSDEC for this project.
- The Orange County Sheriff's Office provides emergency services support to West Point.

Present and future land use for the Michie Stadium MRS is recreational (e.g., sporting events). Future construction of an additional athletic building is planned within the MRS. Future construction within the MRS would be consistent with the current land use of recreational and athletic activities. Once within the main gates, access to the MRS is unrestricted. A probability assessment conducted prior to the RI for West Point determined there is a moderate to high probability to encounter MEC within the Michie Stadium MRS; therefore, UXO construction support will be required for all ground-disturbing activities (Bruno, 2010). As part of the dig permit process, the West Point Directorate of Public Works (DPW) – Environmental Management Division (EMD) provides a UXO Safety Awareness tri-fold and alerts individuals to the potential munitions hazards on-post.

2.4 TECHNICAL PROJECT PLANNING

Prior to the initiation of RI field activities, representatives and stakeholders from USACE, West Point, EPA, NYSDEC, WESTON, and TLI participated in two TPP meetings. TPP 1 was conducted on 29 July 2010. This meeting introduced to the stakeholders the MRS summary and RI approach, objectives, planning documentation, and field investigation and reporting requirements.

TPP 2 was conducted on 3 February 2011, during which the project stakeholders reviewed the RI Work Plan and identified and discussed project goals and DQOs. Details regarding the implementation of the MMRP RI were presented and discussed among the group. Based on the results of the second meeting, specific details of the investigation approach for the MRS, including coverage area, survey type (grid versus transect), and quantities, were determined.

2.5 PRELIMINARY REMEDIATION GOALS AND ACTION OBJECTIVES

PRGs are defined to determine the appropriate investigation approach and the effectiveness of remedial actions. PRGs are both site- and contaminant-specific and define the conditions considered by stakeholders to be protective of human health and the environment. PRGs are developed for MEC based on MRS requirements and exposure pathways. Although there are no established PRGs for MEC, property use and exposure pathways dictate the design requirements for remedial actions. PRGs for MEC focus on limiting or removing the exposure pathway (U.S. Army, 2009). Similar to the CSM, PRGs may be reevaluated and refined throughout the remedial investigation and feasibility study (RI/FS) process as new information becomes available.

The PRGs for the Michie Stadium MRS are based on the screening values agreed upon by the TPP Team to protect potential on-site receptors by identifying any unacceptable risks associated with exposure. Any unacceptable risk will be addressed to minimize or mitigate the risks to human health or the environment. Therefore, the goal of this RI was to gather information to support the evaluation of either an NFA or a remedial action alternative. An NFA recommendation would be made only if it is certain that a MEC or MC release did not occur. If it cannot be proven during the course of the RI that a MEC or MC release did not occur, the implementation of land use controls would be the minimum remedial action alternative recommended.

2.6 DATA QUALITY OBJECTIVES

2.6.1 Overview

DQOs were developed for the Michie Stadium MRS based on the EPA Quality Assurance (QA)/G-4HW guidance (WESTON, 2011b). DQOs are qualitative and quantitative statements that define the type, quantity, and quality of data necessary to support the decision-making process during the RI. The DQO process includes the following seven steps:

1. **State the problem:** Provide a concise description of the problem.
2. **Identify the decisions:** Develop decision statements to solve the problem.
3. **Identify inputs to the decision**: Identify information and measurements needed to make the decisions.
4. **Define study boundaries:** Identify conditions such as spatial and temporal boundaries.
5. **Develop a decision rule:** Qualify the decisions to understand data needs.
6. **Specify tolerable limits on decision errors:** Develop performance criteria.
7. **Optimize the design:** Design an effective data collection strategy based on the previous steps.

2.6.1.1 Michie Stadium (WSTPT-022-R-01) Data Quality Objectives

The following DQOs were created specifically for the Michie Stadium MRS and were agreed upon by the stakeholders during the TPP sessions:

1. **State the problem:** The use of military munitions in this MRS is unknown. MEC was recovered in this MRS during construction activities. Michie Stadium occupies the majority of the MRS. The remaining MEC density in undeveloped areas is unknown. MC also may be present if a MEC release is detected within the undeveloped areas of the MRS.

2. **Identify the decisions:** The primary decisions for this MRS include:

   - Determine whether MEC is present in the undeveloped areas of the MRS.
   - If a MEC release is observed in the MRS, characterize the nature and extent of MEC and evaluate MC, where possible.
   - Recommend a future response action for the MRS based on the RI results.

3. **Identify inputs to the decision:** Several inputs will be acquired during the course of the RI to support the decision. Because the MRS is primarily developed and complete characterization is not possible, areas accessible to the DGM instrumentation will be digitally mapped. The selected anomalies will be investigated. Intrusive results for MEC, MD, and non-MD will be evaluated in the project geographic information system (GIS).

If a MEC release is detected, discrete or incremental soil and sediment sampling will be performed to determine whether MC is present.

4. **Define study boundaries:** This MRS is a 9.5-acre area that includes Michie Stadium. The extent of potential MEC and MC observed during the RI will be delineated using DGM, discrete MC sampling, and incremental sampling.

5. **Develop a decision rule:** The results of the RI at the Michie Stadium MRS will be used to:

   - Assess whether or not MEC is present in accessible areas of the MRS based on the intrusive anomaly investigations.

   - Determine whether or not remedial action is required based on the RI results.

6. **Specify tolerable limits on decision error:** The investigative approach will determine whether or not MEC is present within the accessible areas of the MRS assumed to be 0.23 acres. The investigative approach will not determine whether MEC remains in developed areas of the MRS under or near structures or capped under asphalt and concrete. The DGM survey will cover the accessible areas. If MEC or MC is thought to remain within the MRS, a remedial action will be recommended.

7. **Optimize the design:** DGM surveys will be performed using an EM61-MK2 across the accessible areas of the MRS. Anomalies will be investigated to determine the approximate MEC density.

SECTION 2
FIGURES

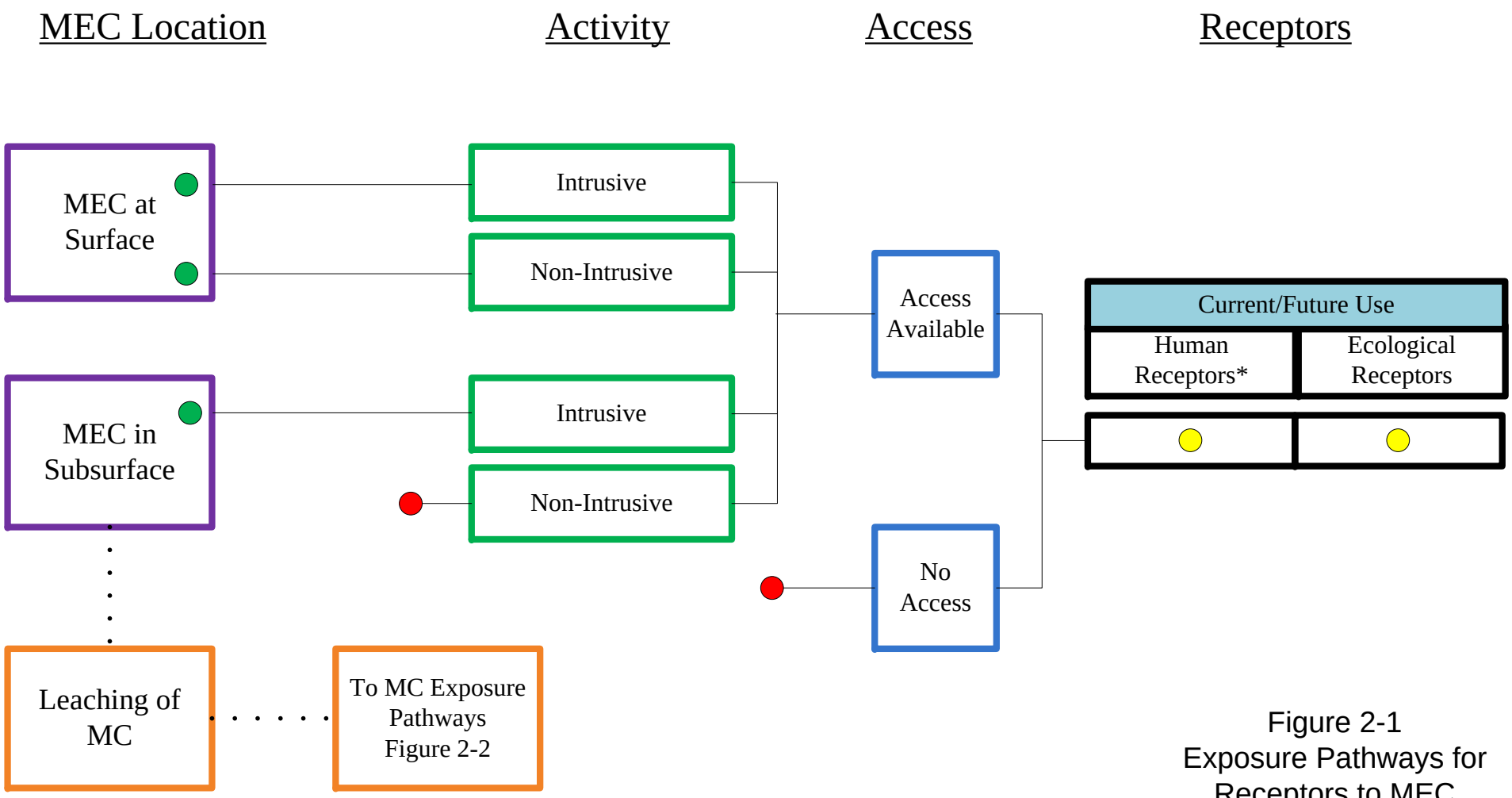


Figure 2-1
Exposure Pathways for Receptors to MEC

Complete Pathway
Potentially Complete Pathway
Incomplete Pathway

* Human receptors include the following: West Point personnel, residents, site visitors, recreational users (athletes), maintenance workers, and contractor personnel.

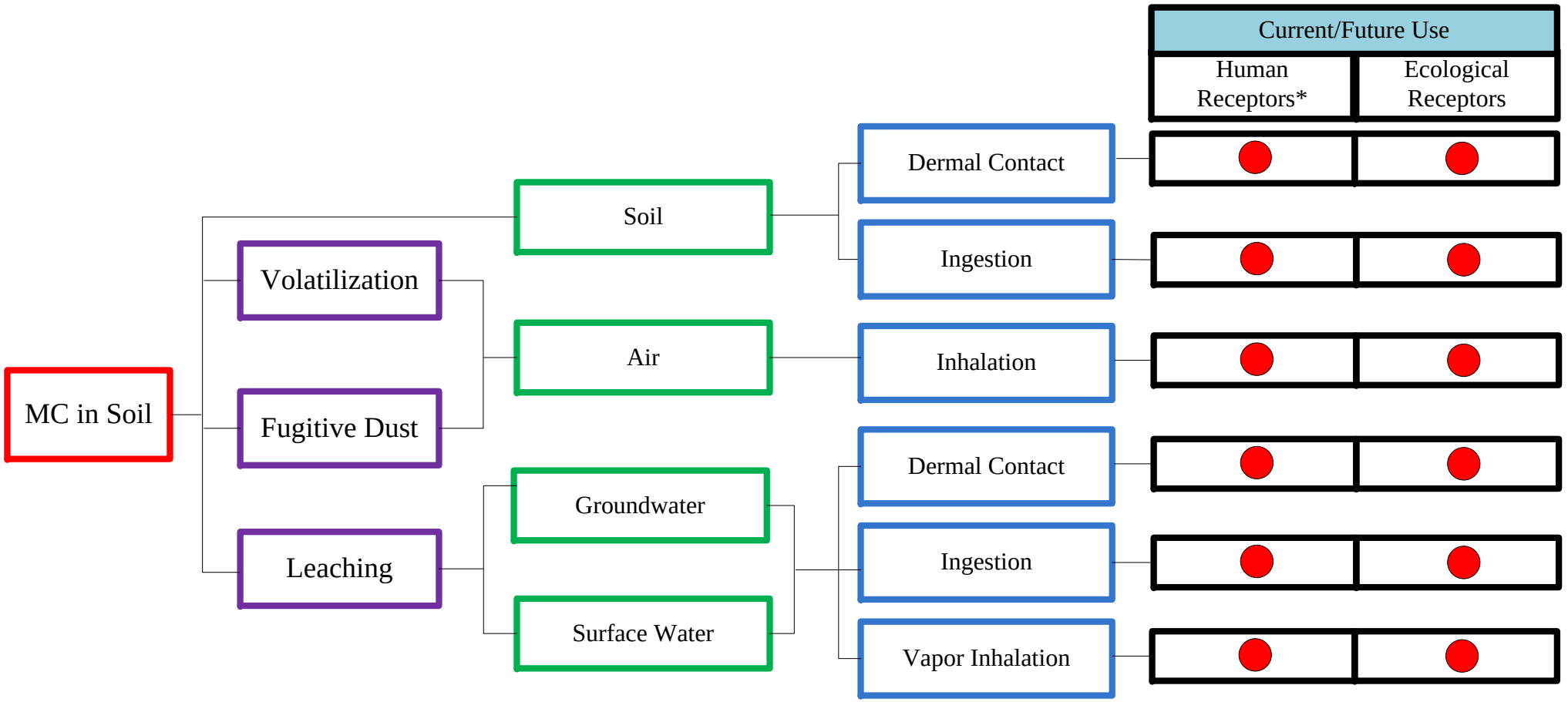


Figure 2-2
Exposure Pathways for Receptors to MC

Complete Pathway
Potentially Complete Pathway
Incomplete Pathway

* Human receptors include the following: West Point personnel, residents, site visitors, recreational users (athletes), maintenance workers, and contractor personnel.

Note: No MC at levels above the EPA Region 9 PRGs was detected at the MRS during the SI and no MEC release was identified during the RS. The pathways for human and ecological receptors to contact MC therefore are considered incomplete. Development has disturbed 100% of the MRS.

3. INVESTIGATION AND CHARACTERIZATION OF MUNITIONS AND EXPLOSIVES OF CONCERN

This section provides the comprehensive approach, methods, and operational procedures used for the MEC characterization performed at the Michie Stadium MRS. The RI field activities were conducted between 20 April and 11 June 2011 (see **Table 3-1**).

Table 3-1 Michie Stadium RI Field Activities

RI Field Activity	Dates
Location Surveying and Mapping	04/20/11
DGM Survey	04/25/11 to 04/27/11
Intrusive Investigation	06/08/11 to 06/11/11

A MEC release would consist of a dense clustering of MEC (in particular UXO) items and associated MD from impact fragmentation. There was no indication of repeated or extensive use of MEC within the MRS, and no MEC releases were observed during intrusive activities, so no MC sampling was conducted.

3.1 MUNITIONS AND EXPLOSIVES OF CONCERN CHARACTERIZATION TASKS

To achieve the characterization requirements based on the DQOs described previously, UXO Estimator was used to determine the area requiring investigation in the Michie Stadium MRS. UXO Estimator assumes that if MEC is present, there is a uniform probability of encountering MEC over the entire MRS. MEC has been randomly recovered at the Michie Stadium MRS during previous construction activities and UXO Estimator was determined to be the appropriate characterization tool for the RI. This is consistent with guidance presented in EM1110-1-4009, Errata Sheet No. 4 (USACE, 2010a).

The assumed maximum MEC density at the Michie Stadium MRS was determined during the TPP process to be 0.5 MEC/acre. In order to be 95% confident that there are less than or equal to 0.5 MEC/acre within the MRS, 3.843 acres of characterization coverage would need to be obtained. The total undeveloped area of the MRS is estimated to be 0.7 acre. The accessible area for the characterization was assumed to be 0.23 acre during DQO development. It was

understood through the TPP process that the coverage requirements based on UXO Estimator could not be achieved. Covering all accessible areas using DGM surveys within the MRS was the approved approach. The following sections detail the characterization performed at the Michie Stadium MRS.

3.1.1 Location Surveys and Mapping

Location surveys and mapping activities were conducted within the Michie Stadium MRS in accordance with the procedures outlined in the Final Work Plan (WESTON, 2011a). Surveying was performed by Beatty & Watson, a New York-licensed surveyor. The location surveys and mapping task included the following:

- Establish site control relative to North American Datum 1983 (NAD 83), Universal Transverse Mercator (UTM) coordinate system, in units of U.S. Survey Feet.
- Install DGM survey control and mark out with survey nails.

Survey control locations utilized during the DGM surveys are listed in **Table 3-2**.

Table 3-2 Michie Stadium DGM Survey Control

Northing	Easting	Comment
15034102.92	1924651.19	Michie Stadium Survey Point
15034107.57	1924711.05	Michie Stadium Survey Point
15034122.54	1924709.86	Michie Stadium Survey Point
15034137.39	1924708.71	Michie Stadium Survey Point
15034132.83	1924648.9	Michie Stadium Survey Point
15034117.86	1924650.06	Michie Stadium Survey Point
15034144.63	1924246.65	Michie Stadium Survey Point
15034155.86	1924305.62	Michie Stadium Survey Point
15034116.51	1924313.04	Michie Stadium Survey Point
15034077.25	1924320.54	Michie Stadium Survey Point
15034057.63	1924324.24	Michie Stadium Survey Point
15034046.45	1924265.33	Michie Stadium Survey Point
15034066.05	1924261.51	Michie Stadium Survey Point
15034105.33	1924254.07	Michie Stadium Survey Point

3.1.2 Digital Geophysical Mapping Surveys

DGM grid surveys were performed based on the DQOs developed in the Final RI Work Plan (WESTON, 2011a). The DQO for Michie Stadium was to perform DGM surveys in areas that were undeveloped and accessible to the digital instrumentation. Approximately 0.43 acre was geophysically mapped and intrusively investigated within the Michie Stadium MRS. This is approximately 0.2 acre more coverage than was assumed during DQO development. Refer to **Figure 3-1** for the locations of accessible survey locations within the MRS. The remainder of the MRS was not accessible for geophysical mapping and intrusive investigation because of development, which includes buildings and structures; impermeable ground surfaces such as concrete and asphalt roads, parking areas, and walkways; and the playing field within Michie Stadium.

Instrumentation detection capabilities and functionality were demonstrated at the Instrument Verification Strip (IVS) and with seed items in production survey areas as part of the project Geophysical System Verification (GSV) process. A sampling frequency of no less than 10 Hertz (Hz) was used for data collection, which resulted in an average sampling rate of between 3 to 4 measurements per linear foot.

DGM survey locations were located based on accessibility and are shown in **Figure 3-1**. Once the general location of the DGM accessible area was established, the licensed surveyor set survey control at regular intervals to be used for digital data positioning. DGM was then performed using the EM61-MK2 utilizing the line and fiducial method of navigation and positioning. Data were collected in parallel lines spaced 3 feet apart with fiducial marks every 20 feet. Any obstructions, such as trees or large boulders, were documented in field notes.

3.1.2.1 Geophysical and Navigational Equipment

The Geonics EM61-MK2 was used for all DGM surveys. The White's XLT all-metals detector was used for anomaly reacquisition and during intrusive activities. The following sections describe the geophysical equipment.

3.1.2.1.1 Geonics EM61-MK2

The EM61-MK2 sensor is battery-powered and operates at a maximum output of 10,000 milliVolts (mV). The EM61-MK2 sensor is a 1 by 0.5 meter (m) air-cored coil that acts as both a transmitter and receiver. The transmitter generates a pulsed magnetic field that induces eddy currents in conductive objects within the subsurface. These currents are proportional to the conductive nature of the material below the instrument. When conductive objects are present below the instrument, the amplitude and decay time of the induced eddy currents vary in response to the size, mass, and orientation of the objects. The receiver measures the amplitude of these eddy currents at 216, 366, 660, and 1260 micro-second intervals during the decay period.

3.1.2.1.2 White's XLT All-Metals Detector

The White's XLT all-metals detector consists of a hand-held, two-coil design that utilizes the electromagnetic method to detect ferrous and non-ferrous metals. An audible signal sounds when the sensors are swept over conductive material. The volume and frequency of the signal changes as the sensor pinpoints the center of the source body. The instrument sensitivity can be adjusted to increase or decrease the capability to detect small, metallic materials.

3.1.2.1.3 Navigation and Positioning Equipment

Navigation and positioning equipment and methods used in surveying and reacquisition activities during the RI include line and fiducial and the Trimble® Robotic Total Station (RTS). The RTS is a laser guided system that allows for sub-meter accuracy without the need for Global Positioning System (GPS), instead utilizing a local X/Y coordinate system. The base station is set up over a known location, such as a grid corner, and the local coordinate is programmed into the unit. A "backshot" is then taken using the prism, or rover, by setting up over a second known location that is within line of sight of the base station. RTS setup utilized the surveyor control points established prior to DGM.

3.1.2.2 Geophysical System Verification

The GSV approach was used to monitor and verify geophysical equipment functionality during the DGM surveys. The GSV approach includes an IVS and a production area seeding program to

monitor sensor detection performance throughout the duration of the DGM survey effort. IVS specific data and results are provided in **Appendix B**.

3.1.2.2.1 Instrument Verification Strip

The IVS provided a means to verify, on an ongoing basis, that the geophysical equipment was operating properly. The IVS was installed near current H-Block Field and linearly seeded with five items, including one small industry standard object (ISO), two medium ISOs, one inert 37 millimeter (mm) projectile, and one inert 75mm projectile. **Table 3-3** lists the IVS seed items and descriptions.

Table 3-3 Instrument Verification Strip Seed Items and Descriptions

IVS Seed Item Type	Northing	Easting	Orientation	Depth	Description
Small ISO[a] (1 inch by 4 inches)	15033479.01	1921684.05	Horizontal	4.2 inches	Part Number[b]: 44615K466 ASTM Specification: A53/A773.
Medium ISO[a] (2 inches by 8 inches)	15033473.57	1921675.82	Horizontal	7.7 inches	Part Number[b]: 44615K529 ASTM Specification: A53/A773.
37mm projectile	15033467.92	1921667.50	Horizontal	4.3 inches	Inert projectile.
75mm projectile	15033462.55	1921659.03	Horizontal	10.7 inches	Inert Shrapnel projectile.
Medium ISO[a] (2 inches by 8 inches)	15033457.11	1921650.70	Horizontal	6.8 inches	Part Number[b]: 44615K529 ASTM Specification: A53/A773.

Notes:
a - ISOs are schedule 40 pipe nipples, threaded on both ends, made from black welded steel and manufactured to an American Society for Testing and Materials (ASTM) specification.
b - Part number from the McMaster-Carr catalog.

The seeds were placed in the IVS to effectively distribute all items to prevent overlapping signals. The seed layout of the IVS is detailed in **Figure 3-2**. The items were seeded linearly over 70 feet and were spaced 10 feet apart horizontally (least favorable orientation) with the long axis aligned parallel to the ground surface. Item types were confirmed with the USACE QA Geophysicist prior to mobilization. Seed locations and depths were surveyed by a New York-

licensed surveyor. An unseeded test strip was also established adjacent to the seeded portion of the IVS to monitor background noise.

3.1.2.2.1.1 Instrument Verification Strip Construction

Prior to the burial of any seed items, a background survey was conducted within the proposed IVS area to determine the suitability of the location and to assist the site geophysicist in placement of the seed items. Following the background survey, the seed items were buried in accordance with the proposed IVS layout as detailed above. Each seed item, as well as the start and end points of each IVS transect, were marked at the surface with a polyvinyl chloride (PVC) pin flag. After the IVS construction, a DGM survey was performed over the pattern detailed in **Figure 3-2** to determine the seed item response baseline.

3.1.2.2.1.2 Instrument Verification Strip Procedure

The IVS and unseeded test strip was visited daily before and after the DGM surveys and intrusive investigations. Both the EM6-MK2 and White's XLT were tested at the IVS. The EM61-MK2 was passed through the IVS as depicted in **Figure 3-2**. The first pass, Line A, was directly over the seed items, followed by Line B, which was offset 2 feet from Line A. A third and final pass was then made over Line C, the unseeded portion of the test strip. The results of this survey were then compared to the seed item response baseline and sensor response curves to determine that the geophysical equipment was operating properly.

IVS results for the 2 days that DGM data were collected at the Michie Stadium MRS are presented in **Table 3-4**. Results collected for each day of DGM at the IVS show agreement and repeatable results for the series of seeds. The seed items placed within the IVS were observed in the geophysical data with signals consistent with the sensor response curves developed for the EM61-MK2. All peak responses from the seed items were observed to be greater than the least favorable orientation response and to have consistent responses between surveys. These results demonstrate that the digital geophysical equipment was functioning within a tolerable range to achieve detection performance metrics. Photographs of the equipment are provided in **Appendix C**.

Table 3-4 Instrument Verification Strip Results

Item Description		Small ISO	Medium ISO	37mm Projectile	75mm Projectile	Medium ISO
Item Depth (inches)		4.2	7.7	4.3	10.7	6.8
Least favorable orientation response (mV)		10.8	64.2	14.8	60.6	73.4
		Response (mV)				
IVS Date/Response Values	25 April 2011 AM	25.99	106.15	40.98	82.15	82.08
	25 April 2011 PM	26.55	109.88	44.19	85.55	87.77
	27 April 2011 AM	27.12	110.09	45.04	86.61	84.18
	27 April 2011 PM	34.21	108.19	42.74	85.9	84.73

3.1.2.2.2 Production Area Seeding

A seeding program was instituted in the production DGM survey areas to provide ongoing monitoring of the geophysical instrumentation detection performance. The seed was blind to the geophysical data collection and processing teams. One seed item consisting of a medium ISO (2-inch by 8-inch steel pipe) was placed at approximately 6 inches below ground surface (bgs). The location and depth of the seed item were surveyed by Beatty & Watson. The seed was recovered by the UXO dig teams during intrusive investigations in grid MS-01. **Table 3-5** lists the depth, type, geophysical response, and offset of the seed item placed within the DGM grid.

Table 3-5 Blind Seeding Results

Grid	Item	Depth (in)	Orientation	Target ID	Status	Peak Response (mV)	Offset (feet)
MS-01	Medium ISO (2-inch x 8-inch pipe)	6.2	Horizontal	MS-01-172	Recovered	74.50	1.45

The blind seed item placed within the DGM survey area was observed in the geophysical data with a signal consistent with the sensor response curves developed for the EM61-MK2 and within the 2-foot offset metric established in the Work Plan.

3.1.2.3 DGM Survey Procedures

Geophysical surveys at Michie Stadium MRS were conducted using line and fiducial navigation because tree canopy interfered with the use of GPS equipment. DGM survey lanes used for

navigation control were established by pulling non-metallic tape measures from previously established survey control points. Data were collected in parallel lines at a spacing of 3 feet apart with fiducial marks every 20 feet. The UTM coordinates of the survey control points were then used to transform or "warp" the Cartesian coordinates and associated geophysical data to UTM coordinates in the post-processing step.

3.1.2.4 Data Processing Quality Control

Data processing quality control (QC) metrics were tracked daily throughout the life of the project. The Project Geophysicist performed QC measures not only on the QC instrument function tests, but also on the data collected by the EM61-MK2. The following parameters were analyzed:

- Coverage.
- Velocity.
- Sample separation.
- Mean noise.
- Noise standard deviation.
- QC seed detection.

3.1.3 Data Management

All data related to DGM surveys were managed using Geosoft® Oasis montaj software. All spatial data were managed using a GIS, and are stored in Environmental Systems Research Institute® (ESRI)-compatible GIS formats, primarily ArcInfo coverage and ArcView shape files. Data were stored in site-specific folders based on individual field efforts, data type, and file extensions. All DGM data were provided electronically to the USACE QA Geophysicist for QA. Data were provided via the WESTON TeamLink® website and were backed up on the WESTON internal network and project workstation.

3.1.4 Digital Data Processing

The EM61-MK2 data were imported into Geonics® Dat-61MK2 software for pre-processing. Dat-61MK2 is used to position the line and fiducial data and to create a Geosoft®-compatible XYZ data file. Each XYZ file contains data for each of the four time gates recorded, the position, and the offsets entered for that unit. The survey data were processed using Geosoft®'s Oasis montaj software. Data were checked for navigational accuracy, line distribution, and coverage. Latency values obtained during the pre- and post-survey QC tests were applied to the data,

correcting for any temporal lags seen in the data. A Geosoft® script was run to automatically progress through the processing steps for each of the four individual data channels. A non-linear drift correction filter was used to remove any drift associated with each data channel occurring throughout the survey period. Velocity and sample separation were calculated for each dataset.

Background noise was evaluated for each dataset by windowing a section of the data and generating statistics using the UX-Process QC module. Statistics calculated for Michie Stadium DGM data are presented in **Table 3-6**. Channel 2 was then gridded using a grid cell size of 0.25 feet with a search radius of 2 feet and blanking distance of 2.25 feet. Processing parameters are listed in **Table 3-7**.

Table 3-6 DGM Data Parameters

Data Metric		Mean Sample Separation (ft)	Mean Velocity (mph)	Background Noise (mean)	Background Noise (std. dev.)
	DQO	**< 0.5ft**	**< 3mph**	**MRS Specific**	**< 2.5**
Grid ID	**MS-01**	0.25	1.77	0.63	1.99
	MS-02	0.24	1.62	0.39	0.75

Table 3-7 EM61-MK2 Data Processing Parameters

Process	Parameter
Drift – Non-Linear Drift Correction Filter (UCEDRIFT.GX)	Window Length: 100 % lowest values ignored: 10% % highest values ignored: 70% All data channels were processed using the same parameters.
Statistical Evaluation of Background Noise	Windowed section of background/using UX-Process QA/QC module to evaluate std dev and mean noise values.
Grid	Cell Size: 0. 25 ft Blanking Distance: 2.25 ft Search Radius: 2 ft
Blakely Peak Picking Algorithm	Smooth Filter: 3 Normal Peak Detection Grid Value Cutoff: EM 7.2 mV
Target Decay Analysis	Performed based on each data channel.
Target Review	Performed.

3.1.5 Anomaly Selection

Anomalies were selected from the Channel 2 gridded data using the Blakely Test target selection algorithm. A target threshold value of 7.2 mV on Channel 2, as approved by the USACE QA

geophysicist, was used to select the initial target list. This threshold was based on the sensor response curve for a 75mm projectile at a depth of 3 feet in the least favorable (horizontal) orientation. Target review consisted of manually evaluating all selected targets and removing or merging multiple targets associated with large anomalies. Where necessary, targets were moved to the location of the peak response associated with a given anomaly.

A target decay analysis was run to remove targets that had an atypical decay between the four time gate channels. An atypical decay occurs when an anomaly undergoes a decay that does not decrease through time, but instead shows an increase in any of the subsequent time gate channels. **Table 3-7** summarizes the details of the EM61-MK2 data processing parameters using Geosoft®. **Figure 3-3** presents the DGM data results with target locations.

3.1.6 Dig List Development

Following the selection of anomalies from the geophysical data evaluation, the anomaly locations and characteristics were compiled into a dig list. The dig list data were logged into a hand-held computer and managed using WESTON's RespondFast UXO Investigation software. The Site Geophysicist assigned each anomaly a unique target identifier and entered the corresponding information for the target into the database. The following information was included in the database for each anomaly:

- Grid ID.
- Unique target ID, including area (i.e., MS-01-001 [Location-Grid ID-unique target ID]).
- Easting and northing position.
- Channel 2 response amplitude for anomalies.

Dig lists developed following digital data analysis are presented in **Appendix D**.

3.1.7 DGM Quality Control

Instrument functionality tests were conducted before and after DGM surveying adjacent to the IVS located at H-Block Field. The Static Test and Static Response Test involved collecting non-dynamic data for a period of 1 minute without and with a small ISO item, respectively. Tests for the EM61-MK2 show background noise levels ranging from 0.5 to 2.2 standard deviations, with

minimum and maximum readings between -6 mV and 2 mV. The Static Spike Test measurements range from minimum and maximum values of 38 mV to 46 mV with a standard deviation between 0.66 and 1.86. Static Response Test data for the EM61-MK2 show consistent response values within the ±20% metric over the test object in pre- and post-survey tests. The project metric for test data was established at a standard deviation of less than 2.5. No anomalous data spikes or outside interference was observed during the static instrument tests.

3.1.8 Anomaly Reacquisition

A total of 242 anomalies detected during the DGM surveys were reacquired for intrusive investigation. Anomaly reacquisition was performed using a Trimble S8® RTS for navigation to the precise location of each target**.** A reacquisition team navigated to the location and marked it with a non-metallic pin flag containing the unique target identifier.

3.1.9 MEC Removal

Intrusive investigations were conducted in accordance with the RI Work Plan (WESTON, 2011a) including the approved Accident Prevention Plan (APP)/Site Safety and Health Plan (SSHP) and Explosives Site Plan (ESP). The investigations were performed at the locations of the 242 anomalies selected as part the DGM survey. Intrusive investigations included the surface inspection of the immediate area and anomaly evaluations by UXO Technicians. Daily reports completed during the intrusive investigation are provided in **Appendix E**.

3.1.9.1 Excavation Procedures

UXO Technicians began the anomaly investigations by sweeping a 3-foot radius around the pin flag with a White's XLT (all-metals) to focus the excavation at the peak response. The offset and northing and easting position of the peak response were recorded for each anomaly. Intrusive operations at each anomaly location were performed using hand tools. The UXO Technicians excavated at the location of the highest detector response until the source of the anomaly was found. The target location was considered clear when a signal source was no longer detected after removal of the conductive item, or the source of the signal had been identified to be associated with a cultural feature such as fence or building. Dig teams utilized the personal handheld computers with RespondFast - UXO Investigation software to electronically log the

target characteristics real-time in the field. Characteristics logged in RespondFast include item category, item type, depth, dig data, and final disposition. Results of the intrusive investigation are provided in the expanded dig lists in **Appendix D.** Photographs of the anomaly reacquisition process are provided in **Appendix C.**

3.1.9.2 Munitions with the Greatest Fragmentation Distance

The munition with the greatest fragmentation distance (MGFD) is the munition with the greatest fragment distance that is reasonably expected (based on research or characterization) to be encountered within the MRS. As specified in the U.S. Army-approved ESP (USACE, 2010b), the MGFD for the Michie Stadium MRS was determined to be the mortar, 3-inch Stokes.

3.1.9.3 Minimum Separation Distance

Based on the characteristics of the MGFD, the minimum separation distance (MSD) is the protective distance at which personnel must be separated from an intentional or unintentional detonation. The hazardous fragment distance (HFD) is the maximum blast effect and the distance a piece of fragment can travel at a velocity that does damage, and is more related to potential harm to individuals. The team separation distance (TSD) is the distance that munitions response teams must be separated from each other during munitions response activities involving intrusive operations. For the Michie Stadium MRS, the MSD/HFD established for nonessential personnel was set at a distance of 219 feet, and the TSD was determined to be 54 feet.

3.1.9.4 Exclusion Zone

Exclusion zones (EZ) were established during intrusive investigations at Michie Stadium MRS to protect nonessential personnel from unintentional detonations. The primary protective distance used was the MSD of 219 feet for unintentional detonations, which was based on the HFD of the 3-inch Stokes mortar. This EZ distance was enforced during all intrusive investigations at the site. Intrusive work within Michie Stadium MRS was performed in proximity to Stony Lonesome Road, a main transportation corridor on West Point. No alternate routes exist for the section of Stony Lonesome Road adjacent to Michie Stadium, so a barricaded EZ could not be established and pedestrian and vehicular traffic had to be managed real-time. Road guard personnel were placed at locations where roads or sidewalks entered the EZ perimeter. Personnel

monitored pedestrian and vehicular traffic, using radios to communicate with dig teams performing the intrusive work. When pedestrian traffic entered the EZ, all intrusive activity was halted until the pedestrian traffic had exited the EZ perimeter. Intrusive activities were also halted when non-enclosed vehicles, such as golf carts, motorcycles, or personnel carriers, passed through the EZ. Once the pedestrian or non-enclosed vehicle had exited the EZ, intrusive activities were resumed.

3.2 MUNITIONS AND EXPLOSIVES OF CONCERN MANAGEMENT

3.2.1 Identification and Removal

Intrusive investigation activities were conducted by a three-man team consisting of one UXO Technician III (Team Leader), one UXO Technician II, and one UXO Technician I. One mortar, 3-inch Stokes, unfuzed, was recovered during the intrusive investigation. The item was initially classified as material potentially presenting an explosive hazard (MPPEH) because the filler could not be determined. The Fort Drum EOD unit responded to the mortar discovery. A final EOD report was not available at the time of this report. Because the item was determined to have been fired and potentially to have been explosively configured, the item is currently being classified as UXO, 3-inch Stokes, MKI, unfuzed.

3.2.2 Munitions and Explosives of Concern Disposal

Due to proximity to infrastructure and traffic routes, the UXO, mortar, 3-inch Stokes, MKI recovered during intrusive investigations was left in place and reported to Army EOD for disposal. The item was transferred to Army EOD for off-site disposal on 09 June 2011. Photographs of the responding EOD unit are provided in **Appendix C**. The item's final disposition was logged in the dig list provided in **Appendix D**.

3.2.3 Inspection of Material Potentially Presenting an Explosive Hazard

During the course of the RI intrusive activities, military munitions related items were considered MPPEH until properly inspected by a qualified UXO Technician II or higher. As it was encountered in the field, MPPEH was inspected by a UXO Technician II and Technician III and classified as material documented as safe (MDAS) or material documented as an explosive

hazard (MDEH). Items classified in the field as MDAS pose no explosive hazard and were transported to a collection point for final disposal as MD (as described below).

3.2.4 Munitions Debris

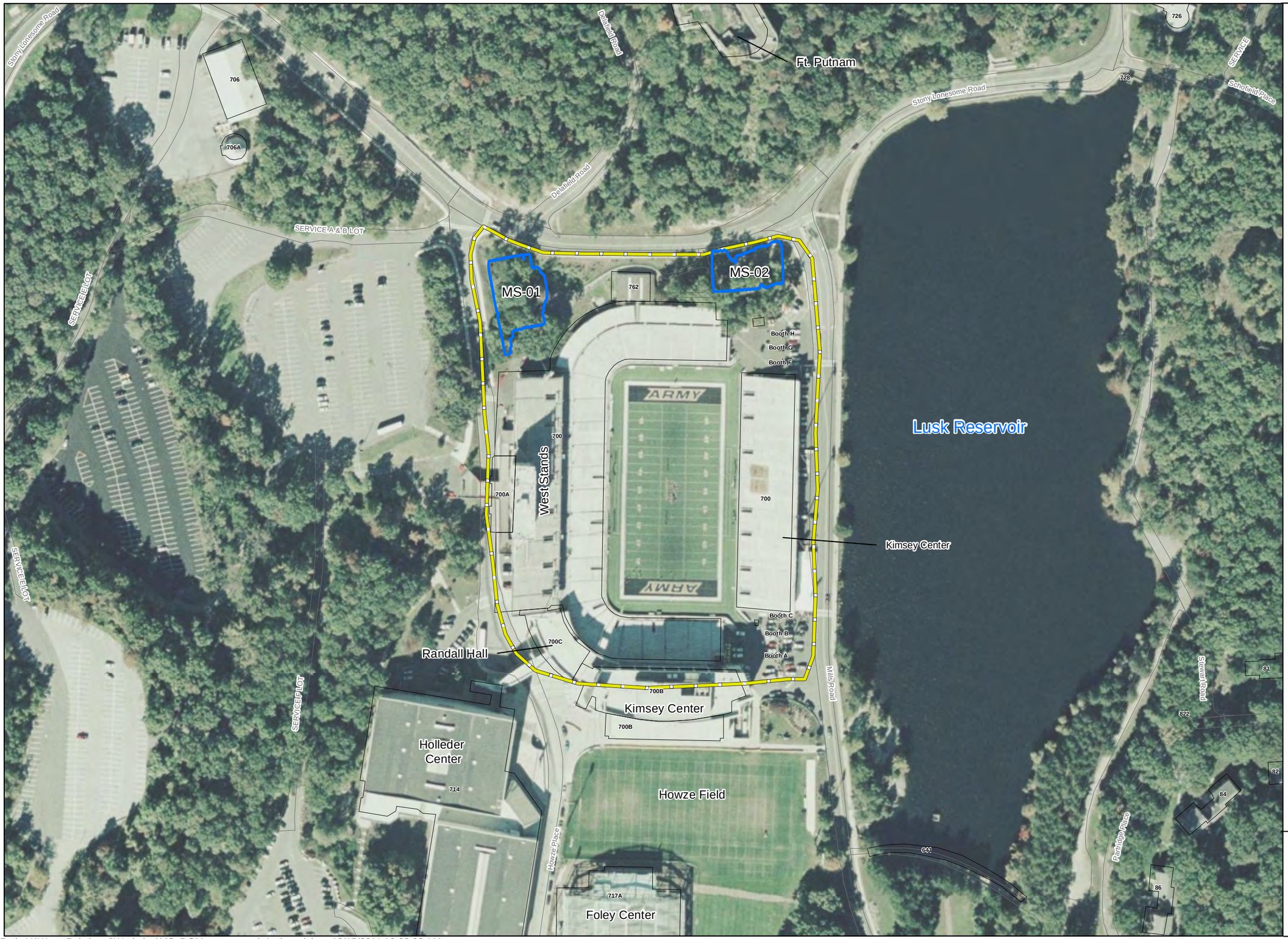
All items classified as MD were recovered from the grids, certified and verified as free from explosives, and stored in a locked container. Following recovery, the Senior UXO Specialist (SUXOS) inspected the MD followed by re-inspection by the UXO Quality Control Specialist (UXOQCS) to verify the process and to ensure that only inert items were stored in the locked container. A final inspection was conducted immediately prior to the transfer of MD to the West Point Recycle Center. Certified MD was transferred to the West Point Recycle Center with the completed DoD Form 1348-1A, signed by the SUXOS to certify that the material listed had been thoroughly inspected and, to the best of the SUXOS' knowledge and belief, was inert and/or free of explosives or related materials.

After the DoD Form 1348-1A was verified and signed by the UXOQCS, a copy was maintained and the original accompanied the MD to its final disposition at the West Point Recycle Center. A copy of the form is available in **Appendix F**.

3.2.5 Intrusive Investigation Quality Control

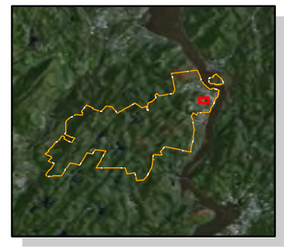
In accordance with the RI Work Plan, the UXOQCS inspected at least 10% of the dig locations using a White's XLT (all metals) to determine whether or not the removal was effective. In practice, this was accomplished by the UXOQCS joining the intrusive team and inspecting all of the digs they made during the day. The results of the QC inspections for the intrusive investigation are provided in the UXOQCS reports (**Appendix E**). There were no QC failures at Michie Stadium. The USACE Ordnance and Explosive Safety Specialist (OESS) also performed a QA inspection at the Michie Stadium MRS grids. The Form 948 accepting the QC results is provided in **Appendix G**.

SECTION 3
FIGURES



Legend

- Michie Stadium - 9.5 Acres
- DGM Survey Area



Imagery Source: ESRI, Bing Mapping Service. 2009

N W E S

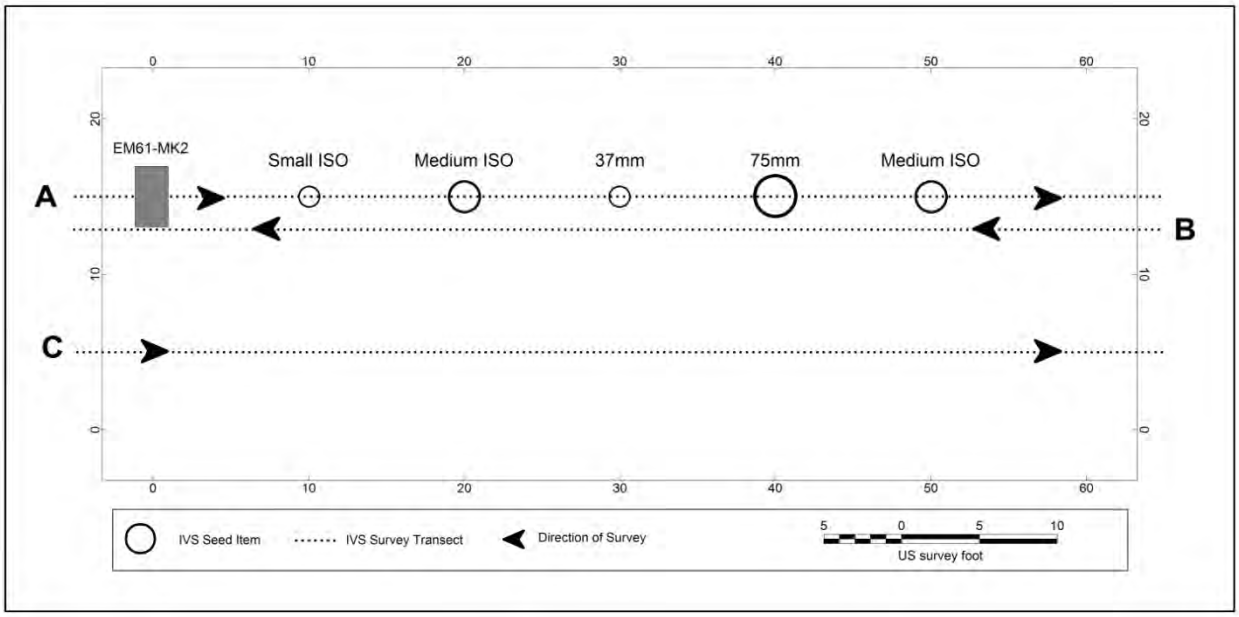
0 125

Feet

Figure 3-1
Michie Stadium MRS
(WSTPT-022-R-01)
DGM Survey Coverage Map
U.S. Army Garrison West Point

Path: Y:\West_Point\mxd\Workplan\MS_DGM_survey.mxd Author: ricksc 12/15/2011 10:02:03 AM

Figure 3-2 Instrument Verification Strip Layout and Process



Notes:
Line A: Directly over IVS seeds; used to verify that instrument response is within established response curve metrics.
Line B: Adjacent to Line A to use for offset detection and evaluate latency.
Line C: 10-ft offset from seeded IVS transect; used to measure local background noise.

Delafield Road

Stony Lonesome Road

Mills Road

Howze Place

MS-01

MS-02

ARMY

Legend

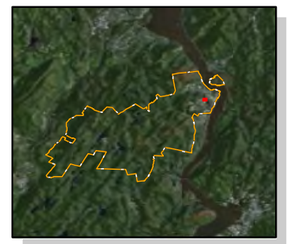
Michie Stadium - 9.5 Acres

DGM Survey Area

Target Locations

CH2 Response (mV)

0 2 4 6 7 8 11 17 26 57



Imagery Source: ESRI, Bing Mapping Service. 2009

N

W E

S

0 40

Feet

Figure 3-3
Michie Stadium MRS
(WSTPT-022-R-01)
DGM Results and Target Locations
U.S. Army Garrison West Point

Path: Y:\West_Point\mxd\Workplan\MS_results_target_locs.mxd Author: ricksc 12/14/2011 2:14:36 PM

4. REMEDIAL INVESTIGATION RESULTS AND REVISED CONCEPTUAL SITE MODEL

This section describes the results of the RI and the estimated extent of MEC at the MRS. It also contains a revised CSM based on the investigation results.

4.1 REMEDIAL INVESTIGATION RESULTS

As described in Section 3 of this report, the characterization performed at the Michie Stadium MRS during the RI involved the following tasks:

- DGM data collection.
- Digital data processing, analysis and anomaly selection.
- Anomaly reacquisition.
- Intrusive investigation of reacquired anomalies;
- Determination that evidence of a MEC release was not present at the MRS and MC sampling was not warranted.

The following paragraphs detail the results of these activities.

4.1.1 Digital Geophysical Mapping Results

DGM surveys were performed using a hand-pulled EM61-MK2 sensor in cart mode. Data were positioned using line and fiducial markers because of tree canopy. Three-foot line spacing was used to accomplish full coverage requirements in all undeveloped and accessible areas of the MRS. Steep slopes, trees/landscaping, and uneven rocky terrain were not traversed during the DGM surveys, which caused data gaps in the coverage. A total of 0.43 acre was found to be accessible for DGM surveys in the undeveloped areas of the MRS. This area was 0.2 acre greater than the acreage anticipated during project DQO development. A total of 242 anomalies were selected from the geophysical data for intrusive investigation. The intrusive investigation results are discussed in Section 4.1.2.

4.1.2 Intrusive Investigation Results

The 242 anomalies were reacquired using a laser total station and investigated by UXO technicians. One mortar, a 3-inch Stokes, unfuzed, was recovered during the intrusive investigation. The item was initially classified as MPPEH because the filler could not be determined. The Fort Drum EOD unit responded to the mortar recovery. EOD determined that

the item was safe to move, and it was subsequently transported by EOD to the West Point training ranges for destruction. A final EOD report was not available at the time of this report. Because the item was determined to have been fired and potentially to have been explosively configured, the item is currently being classified as UXO, 3-inch Stokes, MKI, unfuzed.

A total of seven MD items were also recovered. The MD included one tail boom and one end cap for 3-inch Stokes mortars and unidentifiable fragments from unknown munitions. The remaining 234 anomalies were identified as non-MD related material.

The UXO item was recovered at 6 inches bgs. The MD was recovered between 0 inches and 3 inches bgs. The remaining non-MD related material was recovered between 0 inches and 6 inches bgs. **Figure 4-1** shows the locations of the items recovered from the MRS. **Table 4-1** summarizes the UXO and MD recovered from the MRS. The complete dig list is provided in **Appendix D**. Because a MEC release was not observed during the intrusive investigation, no MC characterization was warranted.

Table 4-1 MEC/MD Summary at the Michie Stadium MRS

Target ID#	Item Type	Item Description	Dig Date	Depth (inches)	Weight (lbs)
MS-01-28	UXO	Mortar, 3-inch Stokes, MKI, unfuzed	06/08/2011	6	15.0
MS-02-75	MD	Mortar, 3-inch Stokes, MKI, tail boom	06/08/2011	0	0.1
MS-02-32	MD	Mortar, 3-inch Stokes, MKI, end cap	06/08/2011	0	0.5
MS-02-33	MD	Fragment, Unknown	06/08/2011	3	1.0
MS-02-46	MD	Fragment, Unknown	06/08/2011	3	1.0
MS-02-52	MD	Fragment, Unknown	06/08/2011	0	1.0
MS-02-63	MD	Fragment, Unknown	06/08/2011	3	1.0
MS-02-95	MD	Fragment, Unknown	06/08/2011	0	1.0

4.2 REVISED CONCEPTUAL SITE MODEL

The original CSM for the Michie Stadium MRS was based on information available during the SI. The CSM is a dynamic document that is evaluated and revised each time new information is received. The following sections describe the CSM that developed from the RI results.

4.2.1 Facility Profile

The Michie Stadium MRS (WSTPT-022-R-01) encompasses 9.5 acres in and around Michie Stadium, which is located near the center of West Point's Main Post area. This MRS is extensively developed with athletic facilities, parking lots, and roads. Several athletic complexes, including Michie Stadium, Holleder Center, Howze Field, the Kimsey Athletic Center, and Randall Hall, are located partially or entirely within, or immediately adjacent to the MRS. This MRS is bounded by Howze Field to the south of the stadium, Holleder Sports Center to the southwest, Lusk Reservoir to the east, terraced parking lots to the west, and Stony Lonesome Road to the north.

Five transformers are located within the bounds of the Michie Stadium MRS, which also contains storm sewer, sanitary sewer, potable water, electric, coaxial cable, and natural gas lines that are associated with Michie Stadium and the other athletic facilities. The Michie Stadium MRS is easily accessible to West Point personnel, residents, site visitors, recreational users (athletes), maintenance workers, and contractor personnel who have passed through initial post security at the entrance gate.

4.2.2 Land Use and Exposure Profile

The Michie Stadium MRS is currently used as a sports complex area. No change to the current land use is anticipated. Future construction of an additional athletic building is planned within the MRS and would be consistent with the current land use of recreational and athletic activities. Potential human receptors include visitors (adult and child), installation personnel and residents, recreational personnel (athletes), maintenance workers, and contractor personnel (i.e., construction workers, environmental). Based on the past, current, and projected future land use, it is not anticipated that the potential human receptors will change.

4.2.3 Ecological Profile

Nearly all of this MRS has been disturbed by the development of the athletic complex facility. There are no wetlands within the bounds of the Michie Stadium MRS. A small area along the northern edge of the MRS is undeveloped and includes wooded, steep terrain.

Potential ecological receptors are presented in Section 1.4.7.5. This list was developed for all of West Point. An MRS-specific list will not be developed for this MRS because, based on the results of this RI, an ecological risk assessment is not warranted. None of the potential ecological receptors listed in Section 1.4.7.5 were observed on-site during RI activities. Habitat for potential ecological receptors is limited within the Michie Stadium MRS because a majority of the MRS is developed and contains buildings, structures, impermeable ground surfaces such as concrete and asphalt roads, parking areas, walkways, and the playing field within Michie Stadium.

4.2.4 Munitions/Release Profile

4.2.4.1 Munitions Types and Release Mechanisms

An inventory of possible MEC and its primary release mechanisms has been developed based on information obtained from the HRR, SI, RI, and responses to MEC found during construction-related activities. This information is presented in **Table 4-2**.

Michie Stadium underwent a seismic upgrade in 2001 that involved the addition of pilings to the west stands for increased stability. During this project, five 3-inch Stokes mortars were found. Additionally, beginning in September 2003, Randall Hall was constructed at the south end of Michie Stadium between the west stands and the Kimsey Athletic Center. Nine 3-inch Stokes mortars were found during the construction of Randall Hall. The SI Report indicates that the 3-inch Stokes mortars recovered from these improvement and construction projects were all documented as DMM (TLI, 2007).

During the 2011 RI intrusive investigations, one UXO item (mortar, 3-inch Stokes, unfuzed) was recovered. The Fort Drum EOD unit responded to the item and destroyed it at the West Point training ranges. In addition, seven MD items were recovered during the RI and transferred to the West Point Recycle Center. The MD items consisted of one tail boom and one end cap from 3-inch Stokes mortars and five fragments from unknown munitions.

Although several Stokes mortars (both DMM and UXO) have been identified in and near the Michie Stadium MRS, it is unknown how or when the items were brought to the MRS. Stokes mortars were designed in 1915 and used primarily during World War I (1914-1918) and until World War II (1939). It is unlikely that Stokes mortars were used in the area considering that

Fort Putnam was restored in 1909 and Michie Stadium was constructed between 1923 and 1924 and used for athletic events and recreation thereafter. Lines of evidence support the determination that UXO and MD recovered during the RI were most likely brought to the area in construction fill collected from a different location.

A review of the historical topographic maps (**Figure 1-4**) was used to delineate the boundaries of the disturbance resulting from earthwork and the areas where UXO and MD were likely brought to the area in construction fill. This determination justifies an expanded MRS boundary to capture the extent of the historically disturbed area. **Figure 4-2** presents the revised boundary, which increases the size of the MRS from 9.5 acres to 14.1 acres. There is a low probability of encountering additional MEC and MD over the entire revised MRS (undeveloped and developed).

Table 4-2 Summary of Potential MEC and Primary Release Mechanisms at the Michie Stadium MRS

MEC/MD Recovered at the MRS	Primary Release Mechanism
(14) DMM, mortar, 3-inch Stokes	Primary release mechanism is unknown. Items might have been discarded during training activities or brought to the MRS in fill used for improvement and construction projects.
(1) UXO, mortar, 3-inch Stokes, MKI	Primary release mechanism is unknown. The item likely was brought to the MRS in fill used for improvement and construction projects.
(7) MD (including one tail boom and one end cap from 3-inch Stokes mortars, and five fragments from unknown munitions)	Primary release mechanism is unknown. MD likely was brought to the MRS in fill used for improvement and construction projects.

4.2.4.2 Extent of Munitions and Explosives of Concern

Based on the summary of results from the RI, SI, and information about MEC previously recovered during construction activities at the Michie Stadium MRS, MEC has been encountered at locations throughout the MRS and there do not appear to be concentrations and clustering of MEC/MD suggestive of a MEC release. **Figure 4-1** presents the locations of the MEC recovered in the Michie Stadium MRS. The probability for encountering MEC within the MRS is the same from one location to another because, as discussed above, the entire MRS has undergone

construction and development, likely requiring fill potentially containing MEC to be transported from other areas. Because of the limited undeveloped area that was accessible to characterization during the RI, an accurate MEC density calculation could not be made using UXO Estimator.

MEC burial sites have a probability of occurrence similar to that of individual MEC items; therefore, the likelihood of encountering an undocumented MEC burial site is uniform throughout a particular MRS. Undocumented MEC burial sites are likely to contain a homogeneous distribution, rather than a heterogeneous distribution, indicative of a MEC release of multiple clustered MEC and associated MD fragments.

4.2.4.3 Extent of Munitions Debris

Seven MD items were recovered at the Michie Stadium MRS during the RI. The MD includes one tail boom and one end cap for Stokes mortars and five fragments from unknown munitions. All MD was recovered in geophysical grid MS-02, which is located in the northwest corner of the MRS. No other MD has been historically documented as being discovered in the MRS; however, the probability for encountering MD within the MRS is the same from one location to another because, as discussed above, the entire MRS has undergone construction and development, likely requiring fill potentially containing MD to be transported from other areas. The extent of MD within the Michie Stadium MRS is presented in **Figure 4-1.**

4.2.5 Revised Conceptual Site Exposure Models

Based on the results of the MEC characterization conducted at the Michie Stadium MRS during the RI, the preliminary CSMs were reviewed and updated to reflect any new applicable information. The revised CSM for the Michie Stadium MRS (**Table 4-3**) summarizes the most current information for the MRS. The MEC exposure pathways shown on the revised CSM are discussed in the following sections.

Table 4-3 Revised CSM for the Michie Stadium MRS

Profile Type	Site Characterization
Facility Profile	**Area and Layout:** ▪ Approximately 9.5 acres located west of Lusk Reservoir. ▪ Several athletic complexes, including Michie Stadium, Holleder Center, Howze Field, Kimsey Athletic Center, and Randall Hall, are located in or adjacent to the MRS.
	Structures: ▪ Structures associated with Michie Stadium.
	Boundaries: ▪ Howze Field located to the south of the stadium. ▪ Holleder Sports Center to the southwest. ▪ Lusk Reservoir to the east. ▪ Terraced parking lots to the west. ▪ Stony Lonesome Road to the north.
	Utilities: ▪ Storm sewer, sanitary sewer, potable water, electric, coaxial cable, and natural gas lines are located within the Michie Stadium MRS. ▪ Five transformers located within the MRS.
	Security: ▪ Once on post, access to the MRS is open.
Land Use and Exposure Profile	**Current Land Use:** ▪ Sports complex area is for recreational and athletic activities; Michie Stadium is used for football and lacrosse.
	Current Human Receptors: ▪ Installation personnel and residents. ▪ Visitors (adult and child). ▪ Recreational personnel (athletes). ▪ Maintenance workers. ▪ Contractors.
	Potential Future Land Use: ▪ No change to the Current Land Use is anticipated. Future construction of an additional athletic building is planned within the MRS and would be consistent with the current land use of recreational activities.
	Potential Future Human Receptors: ▪ No change to the Current Human Receptors is anticipated.

Table 4-3 Revised CSM for the Michie Stadium MRS (Continued)

Profile Type	Site Characterization
Ecological Profile	**Degree of Disturbance:** ▪ Almost 100% of the MRS has been disturbed by the development of the athletic complex.
	Wetlands: ▪ None.
	Current Ecological Receptors: ▪ **Mammals**: Small-footed bat and Indiana bat. ▪ **Birds**: Cooper's hawk, Northern goshawk, sharp-shinned hawk, golden eagle, American bittern, red-shouldered hawk, whip-poor-will, common nighthawk, cerulean warbler, Peregrine falcon, common loon, bald eagle, yellow-breasted chat, least bittern, red-headed woodpecker, osprey, pied-billed grebe, vesper sparrow, and golden-winged warbler. ▪ **Reptiles**: Eastern wormsnake, spotted turtle, wood turtle, timber rattlesnake, Eastern hognose, and Eastern box turtle. ▪ **Amphibians**: Jefferson salamander, blue-spotted salamander, and marbled salamander. ▪ **Fish**: Shortnose sturgeon, Atlantic sturgeon, and Atlantic silverside. ▪ **Insects, Dragonflies and Damselflies**: Lateral bluet, Needham's skimmer. ▪ **S1 Plants**: Virginia snakeroot, glomerate sedge, stripe-fruited sedge, and Carolina cranesbill. ▪ **S2 Plants**: Long's bittercress, midland sedge, slender crabgrass, violet wood sorrel, Carey's smartweed, and small-flowered crowfoot. ▪ **S2S3 Plants**: Cluster sedge, purple milkweed, Emmon's sedge, Bicknell's sedge, Bush's sedge, false hop sedge, weak stellate sedge, yellow harlequin, racemed pinweed, violet bush clover, slender knotweed, and gemmed bladderwort.
	Cultural, Archaeological, and Historical Resources: ▪ Michie Stadium is a cultural resource.
Munitions/Release Profile	**Munitions Types:** ▪ 3-inch Stokes mortars.
	Release Mechanisms: ▪ Discarded munitions. ▪ Unknown: o UXO (mortar, 3-inch Stokes, MKI) - was likely brought to the MRS in fill used for improvement and construction projects. o MD (including one tail boom and one end cap from 3-inch Stokes mortars, and five fragments from unknown munitions) - was likely brought to the MRS in fill used for improvement and construction projects.
	Maximum Probable Penetration Depth: ▪ Recovered between 0-6 inches bgs.

Table 4-3 Revised CSM for the Michie Stadium MRS (Continued)

Profile Type	Site Characterization
	MEC Density: ▪ One UXO (mortar, 3-inch Stokes, MKI) was recovered during the RI field activities. Fourteen additional 3-inch Stokes mortars (classified as DMM) were previously recovered during construction activities. The MEC density is assumed to be low throughout the MRS.
	Munitions Debris: ▪ Seven fragments (MD) were recovered during the RI field activities, including one tail boom and one end cap from 3-inch Stokes mortars and five fragments from unknown munitions. The MD density is assumed to be low throughout the MRS.
	Associated Munitions Constituents: ▪ No MC at levels above the EPA Region 9 PRGs was detected at the MRS during the SI and no MEC release was identified during the RI.
	Transport Mechanisms/Migration Routes: ▪ Primary transport mechanisms are soil disturbance and erosion through stormwater runoff or spring snow melt. Frost heave may cause potential subsurface MEC to migrate to the surface. ▪ Construction activities may move potential MEC during excavations.
	Pathway Analysis: **MEC** ▪ One UXO, mortar, 3-inch Stokes, MKI was recovered during the RI field activities, and MEC was identified at this MRS during previous construction projects; therefore, the pathway for MEC is complete (**Figure 2-1**). ▪ The presence of MEC at the MRS indicates that the primary exposure mechanism for human and ecological receptors to surface MEC is through handle/tread underfoot. ▪ A subsurface pathway could occur as a result of excavations during construction activities. **MC** ▪ No MC at levels above the EPA Region 9 PRGs was detected at the MRS during the SI and no MEC release was identified during the RI; therefore, the pathway for human and ecological receptors to contact MC is considered incomplete (**Figure 2-2**).

4.2.5.1 Revised Conceptual Site Exposure Model for Munitions and Explosives of Concern

The results of MEC characterization activities conducted during the RI show that there is a low probability of encountering MEC over the entire MRS (undeveloped and developed areas). MEC was confirmed to be present in the subsurface during the RI and construction activities. MD has been found only within the northwestern portion of the MRS on the surface and subsurface. Full

coverage surveys totaling 0.43 acre were performed within the undeveloped area during the RI, removing MEC/MD to instrument detection depth. The potential for MEC exists in areas that were not accessible for geophysical mapping and intrusive investigation because of terrain, vegetation, and development, which includes buildings and structures; impermeable ground surfaces such as concrete and asphalt roads, parking areas, and walkways; and the playing field within Michie Stadium.

The pathways for MEC exposure are considered complete based on the RI results.

The primary exposure mechanism for human and ecological receptors to surface MEC is through handle/tread underfoot within the undeveloped areas of the MRS. Exposure to subsurface MEC would also occur through the disturbance of soil as a result of these activities. Therefore, the existence of complete MEC exposure pathways at the surface and in the subsurface of the MRS is confirmed. The MEC exposure pathways are depicted on the CSEM shown in **Figure 2-1**. Based on the RI results, the MEC exposure pathways do not require revision.

4.3 PRELIMINARY IDENTIFICATION OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Although the RI is not considered a response action, preliminary identification of applicable or relevant and appropriate requirements (ARARs) is conducted during RI characterization. The ARARs are used as a "starting point" in determining the protectiveness of a remedy.

As the RI/FS process continues, the list of ARARs will be further refined, particularly as guidance is issued by state and federal agencies. The ARARs will be used as a guide to establish the appropriate extent of cleanup; to aid in scoping, formulating, and selecting proposed treatment technologies; and to govern the implementation and operation of the selected remedial alternative.

Pursuant to Section 300.400(g)(3) of the NCP, a list of ARARs and other to-be-considered benchmarks, advisories, criteria, and guidance (TBCs) is developed for a site or sites to identify the requirements that may apply to SIs, RI/FSs, remedial response actions, and remedial actions (RAs). EPA policy, as reflected in CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the NCP, provides that the development and

evaluation of remedial actions under CERCLA must include remedial alternatives to attain ARARs and ensure protection of public health and the environment.

ARARs are defined as follows:

- Applicable requirements—Those cleanup standards, standards of control, and other substantive environmental protection requirements promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site.
- Relevant and appropriate requirements—Those cleanup standards, standards of control, and other substantive environmental protection requirements promulgated under federal or state law 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 a CERCLA site.

It is first determined if an ARAR is applicable for the site. If it is not applicable, then it is determined if the ARAR is relevant and appropriate. The procedure for determining whether a requirement is relevant and appropriate is a two-step process. First, to determine relevance, it is evaluated whether the requirement addresses problems or situations sufficiently similar to the circumstances of the proposed response action. Second, for appropriateness, the determination must be made about whether the requirement would also be well-suited to the conditions of the site. In some cases, only a portion of a requirement would be both relevant and appropriate. Once a requirement is deemed relevant and appropriate, it must be attained (or waived). If a requirement is not both relevant and appropriate, it is not an ARAR. The results of this selection process for the Michie Stadium site are provided in **Table 4-4**.

'Applicable requirements' and 'relevant and appropriate requirements' are considered to have the same weight under CERCLA. Section 121(d) of CERCLA, as amended by SARA, requires attainment of federal ARARs and of state ARARs in state environmental or facility siting laws where the state requirements are promulgated, more stringent than federal laws, and identified by the state in a timely manner.

SARA also identifies the TBC category, which includes nonpromulgated federal and state criteria, strategies, advisories, and guidance documents. TBCs do not have the same status as

ARARs; however, if no ARAR exists for a substance or particular situation, TBCs may be used to ensure that a remedy is protective.

Generally, ARARs pertain to either contaminant levels or to performance or design standards to ensure protection at all points of potential exposure. ARARs are divided into three general categories: chemical-specific ARARs, location-specific ARARs, and action-specific ARARs.

Throughout the RI/FS phase, ARARs are identified and used by taking into account the following:

- Contaminants suspected or identified to be at the MRS.
- Chemical analysis performed or scheduled to be performed.
- Types of media (air, soil, groundwater, surface water, and sediment).
- Geology and other MRS characteristics.
- Use of MRS resources and media.
- Potential contaminant transport mechanisms.
- Purpose and application of potential ARARs and TBCs.
- Remedial alternatives considered for MRS cleanup.

One category of ARARs (action-specific) were evaluated for the Michie Stadium MRS. Action-specific ARARs are usually technology or activity-based requirements or limitations placed on actions taken with respect to cleanup actions, or requirements to conduct certain actions to address particular circumstances at a MRS. The preliminary ARARs are summarized in **Table 4-4.** Based on the findings of the RI, it is anticipated that the remedial alternatives will not include on-site treatment, on-site storage (greater than 9 days) or on-site disposal of hazardous waste; therefore, certain potential ARARs related to these activities were not considered applicable at this time, The ARARs will be further refined during future phases of work at the Michie Stadium MRS. In addition, there are no wetlands or surface water bodies at or near the MRS that could potentially be affected by remedial alternatives anticipated for this MRS.

Location-specific ARARs were not identified for the Michie Stadium 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. The Michie Stadium MRS does not contain sensitive or unique areas.

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. Chemical-specific ARARs are used to provide benchmarks with which to compare environmental sampling results for metals and explosives. Chemical-specific ARARs were not identified for the Michie Stadium MRS because the field investigation (digital geophysical mapping [DGM)] and intrusive investigation) results did not indicate the need for MC sampling. There were no MEC releases found to require MC sampling.

The institutional analysis in Section 2.3 presents a summary of coordination with the state. NYSDEC has participated in the Technical Project Planning (TPP) meetings 1 (General Project Introduction and Approach) and 2 (Presentation of RI field work approach). TPP 3 will present the RI reports. Discussions generally consisted of establishing which NYSDEC standards for MC would apply to the whole project, and the state approved the ARARs section presented in the Final Work Plan (WESTON, 2011a).

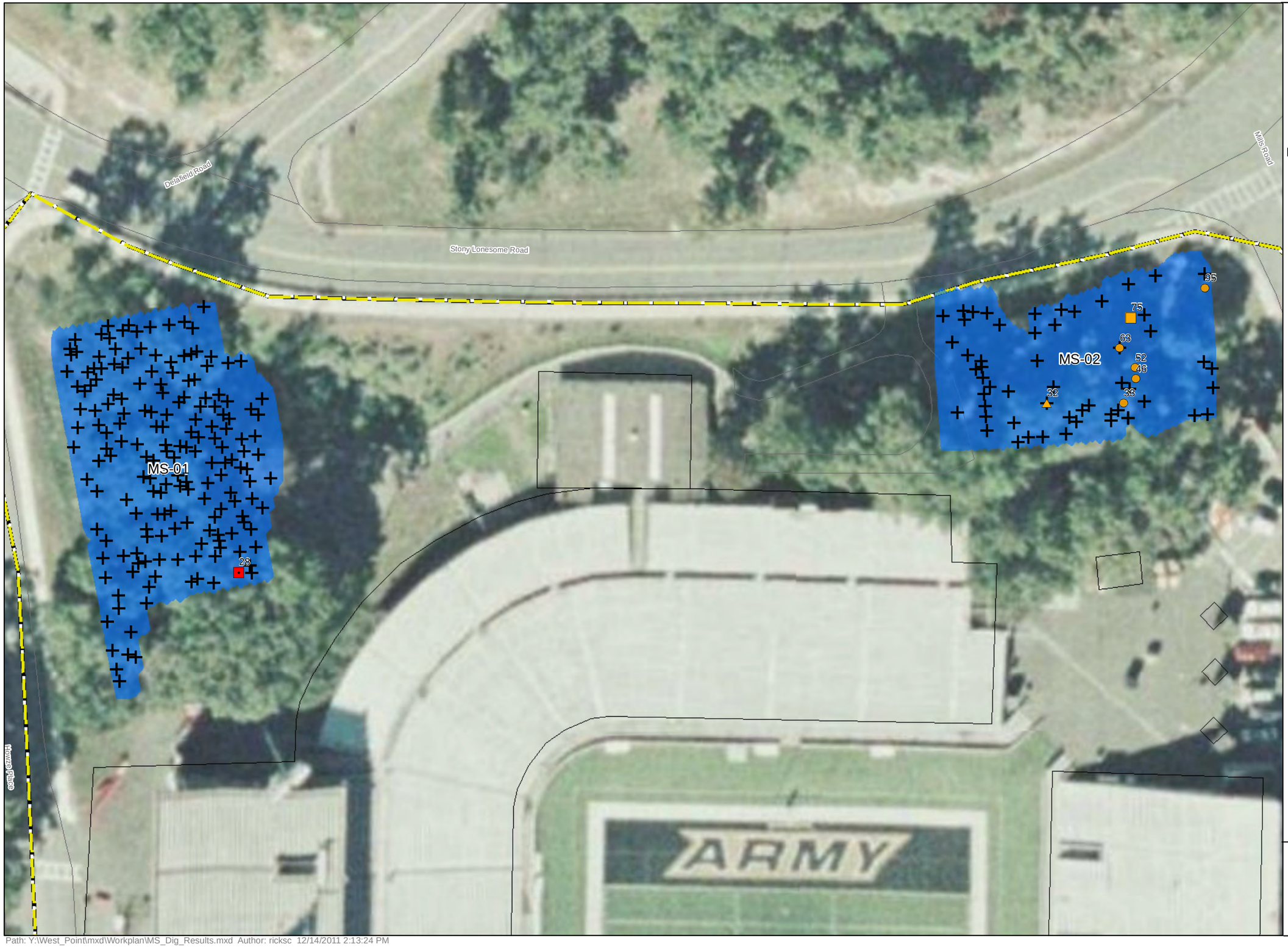
Table 4-4 Applicable or Relevant and Appropriate Requirements and TBCs

Standard, Requirement, Criteria, or Limitation	Citation	Description of Requirement	Comments (Applicable or Relevant and Appropriate, or TBC)
Action-Specific			
CERCLA cleanup standards	42 U.S.C. 9621	CERCLA cleanup standards	*Applicable* CERCLA specifies the cleanup process as well as procedures to ensure that information is available to the public before decisions are made and before remedial actions are taken.
Environmental Protection and Enhancement	AR 200-1, DA PAM 200-1	Requires Army compliance with all environmental statutes and regulations and consultation with federal, state, and local regulatory agencies.	*TBC*
Dept. of Army Ammunition and Explosive Safety Standards	AR 385-64, DA PAM 385-64	Requires that safety measures be taken for the handling of explosive ordnance.	*TBC* Army Regulation that establishes Army standards for the storage, handling, transportation, and disposing of munitions.
DoD Ammunition and Explosives Safety Standards	DoD 6055.09-M	Requires that specialized personnel be employed to detect, remove, and dispose of munitions. This standard also defines the safety precautions and procedures for the detonation or disposal of munitions.	*TBC* Establishes DoD ammunition and explosives safety standards.
Military Munitions Rule	40 CFR Part 266, Subpart M	Regulates unused munitions, munitions used for intended purposes, and used or fired munitions.	*Applicable* Identify when military munitions become a solid waste; and, if these wastes are also hazardous under this subpart or 40 CFR Part 261, identify the management standards that apply to these wastes.
Environment and Explosives Safety Management	DoD Directive (DoDD) 4715.11	Establishes policy for management of active and inactive military ranges. Includes guidelines for range clearance operations, hazard assessment, and recycling /disposal.	*TBC*

Table 4-4 Applicable or Relevant and Appropriate Requirements and TCBs (Continued)

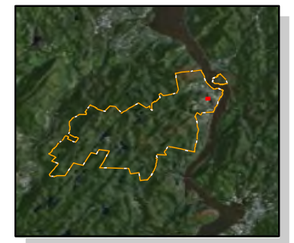
Standard, Requirement, Criteria, or Limitation	Citation	Description of Requirement	Comments (Applicable or Relevant and Appropriate, or TBC)
Division of Water - Classes and Standards of Quality and Purity	6 NYCRR Parts 700-706	Establishes water quality standards, including classifications of New York waters and water quality criteria to protect the ground and surface water resources; and controls stormwater and effluent discharges, including toxic substances, into State waters.	*Relevant and Appropriate* For remedial alternatives where soil excavation activities are performed and require stormwater management.
Hazardous Waste Manifest System and Related Standards For Generators, Transporters and Facilities	6 NYCRR Part 372	Establishes standards for generators and transporters of hazardous waste and standards for generators, transporters, and treatment, storage or disposal facilities relating to the use of the manifest system and its record keeping requirements.	*Applicable* in the event that hazardous waste is generated as part of a remedial alternative; for example, if MEC were removed and would need to be shipped (by a party other than the Army) as hazardous waste.
Waste Transporter Permits	6 NYCRR Part 364	Protects the environment from mishandling and mismanagement of regulated waste transported from the site of generation to the site of ultimate treatment, storage or disposal.	*Applicable* to any off-site transport and disposal of classified hazardous wastes, if generated as part of remedial alternative.
Air Quality Classifications and Standards	6 NYCRR Parts 256-257	Designed to provide protection from the adverse health effects of air contamination; intended to protect and conserve the natural resources and environment.	*Relevant and Appropriate* in the event that a remedial alternative, such as soil excavation/grading, could impact ambient air quality.
Solid Waste Management Facilities	6 NYCRR Part 360	Regulates solid waste management facilities, other than hazardous waste management facilities.	*Applicable.* Pertains to off-site waste disposal facilities. All solid wastes generated from a remedial action will be disposed at appropriately licensed and permitted facilities.
Other			
DoD Contractors Safety Manual for Ammunition and Explosives	DoD 4145.26M	Manual provides safety requirements for contractual work involving ammunition and explosives.	*TBC*

SECTION 4
FIGURES



Legend

- Michie Stadium - 9.5 Acres
- DGM Survey Area
- 3" Stokes Mortar (UXO)
- Cultural Debris
- Frag
- 3" Stokes Mortar Endcap
- 3" Stokes Mortar Tailboom



Imagery Source: ESRI, Bing Mapping Service. 2009

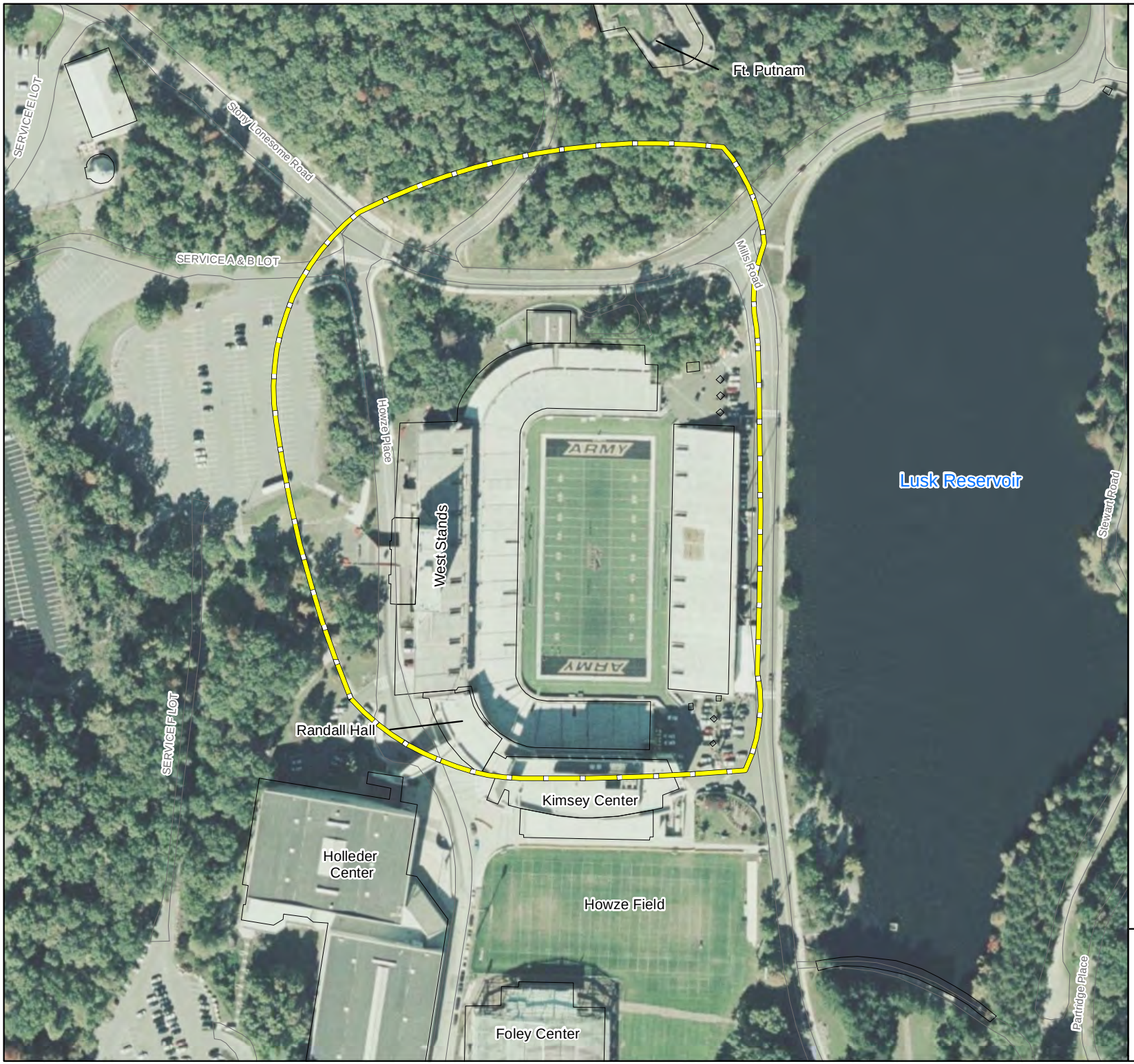
N W E S

0 40

Feet

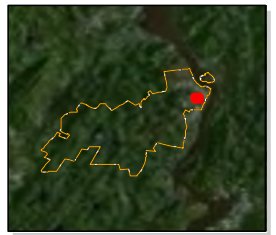
Figure 4-1
Michie Stadium MRS
(WSTPT-022-R-01)
Dig Results
U.S. Army Garrison West Point

Path: Y:\West_Point\mxd\Workplan\MS_Dig_Results.mxd Author: ricksc 12/14/2011 2:13:24 PM



Legend

Revised Michie Stadium MRS Boundary



Imagery Source: ESRI, Bing Mapping Service. 2009

N
W
E
S

0 100 200 Feet

Figure 4-2
Michie Stadium MRS
(WSTPT-022-R-01)
Revised MRS Boundary
U.S. Army Garrison West Point

File: Y:\West_Point\mxd\Workplan\Michie_Stadium_revised_boundary.mxd, 12/15/2011 9:28:49 AM, ricksc

5. CONTAMINANT FATE AND TRANSPORT

Understanding the fate of the MEC present in or released to the environment is important to evaluate the potential hazards to human health and the environment. For example, MEC may be found on the ground surface or in the subsurface; however, it is possible for natural processes to result in the movement, relocation, or unearthing of the MEC, thereby increasing the chance of exposure to it by human and ecological receptors.

It was confirmed that MC investigations were not warranted during the RI characterization. One MEC item and seven MD items were recovered during the RI. Fourteen MEC items were previously discovered in the Michie Stadium MRS. The following sections discuss the potential migration processes and routes for MEC.

5.1 MEC FATE AND TRANSPORT

Potential routes of migration include those physical processes that might result in movement or relocation of MEC from its original placement. If not removed, the MEC will have the potential to pose an explosive hazard to human health. The following physical processes can result in the transport of MEC from its original placement:

- Picking up or moving a potential MEC item by a person(s).
- Disturbance of potential MEC during construction, excavation, or other soil moving activities.
- Natural processes such as erosion/deposition or frost heave.

Natural erosion over time of soil by the wind or by water (surface water or precipitation) can result in the exposure of buried MEC by the removal of the overlying soil. In some cases, if soil is unstable and the erosive force is sufficient to act on the size of MEC item(s) present, this process can also result in the movement of MEC from its original position to another location (typically somewhere downstream of the wash).

In addition to erosion, buried objects have been known to move or migrate toward the surface during freezing and thawing cycles. This movement occurs when cold penetrates the ground, and the water below the buried objects freezes and expands, gradually pushing the items upward.

This phenomenon is often referred to as “frost heave” and is most likely to affect items buried above the frost line. Soil type influences the occurrence of frost heave: gravel, sand, and clay are not typically susceptible to the process, whereas silty soil is susceptible. The Swartswood-Mardin soils, located in the northwest corner of the MRS are likely to be more susceptible to frost heave than the other soils found in the MRS.

6. MUNITIONS AND EXPLOSIVES OF CONCERN HAZARD ASSESSMENT AND MUNITIONS RESPONSE SITE PRIORITIZATION PROTOCOL UPDATE

6.1 MUNITIONS AND EXPLOSIVES OF CONCERN HAZARD ASSESSMENT

The CERCLA process for responding to releases or potential releases of hazardous substances includes the development of site-specific risk assessments appropriate to the requirements of a site. The results of the risk assessments are used to help site managers decide whether a response action is required and to support the risk management decisions that are made through the remedy evaluation, selection, and implementation process.

The CERCLA methodology for human health chemical risk assessment was not designed to address explosive safety hazards at MEC sites. In October 2008, the Technical Working Group for Hazard Assessment, which includes representatives from DoD, Department of the Interior, EPA, and others, made available the technical reference document Interim Munitions and Explosives of Concern Hazard Assessment Methodology (MEC HA) (EPA, 2008). The document was designed to be used as the CERCLA hazard assessment methodology for MRSs where an explosive hazard exists from the known or suspected presence of MEC.

The MEC HA is structured around three components of a potential explosive hazard incident:

- Severity, which relates to the potential consequences (e.g., death, severe injury, property damage) of MEC detonating.
- Accessibility, which is the likelihood that a receptor will be able to come in contact with MEC.
- Sensitivity, which is the likelihood that a receptor will be able to interact with MEC such that it will detonate.

Each of these components is assessed in the MEC HA by input factors for the Michie Stadium MRS. The sum of the input factor scores falls within one of four defined ranges, called hazard levels. Each of the four levels reflects site attributes that describe groups of sites and site conditions ranging from the highest to the lowest hazards. The MEC HA hazard levels are as follows:

- Hazard Level 1 — Sites with the highest hazard potential. There might be instances where an imminent threat to human health exists from MEC.
- Hazard Level 2 — Sites with a high hazard potential. A site with surface MEC or one undergoing intrusive activities such that MEC would be encountered in the subsurface. The site would also have moderate or greater accessibility by the public.
- Hazard Level 3 — Sites with a moderate hazard potential. A site that would be considered safe for the current land use without further munitions responses, although not necessarily suitable for reasonable, anticipated future use. Level 3 areas generally would have restricted access, a low number of contact hours, and, typically, MEC only in the subsurface.
- Hazard Level 4 — Sites with a low hazard potential. A site compatible with current and reasonably anticipated future use. Level 4 sites typically have had a MEC cleanup performed.

The MEC HA fits into MMRP activities and the regulatory structure of CERCLA by addressing the NCP requirements to conduct site-specific risk assessments for threats to human health and the environment; however, it does not directly address environmental or ecological concerns that might be associated with MEC (EPA, 2008).

The MEC HA guidance document (EPA, 2008) includes an automated workbook that develops site scoring through standardized input and formulas. As part of this RI, the automated workbook was used to provide a HA score. A summary of the MEC HA scoring for the Michie Stadium MRS is presented below.

Site ID: Michie Stadium MRS	Hazard Level	Category Score
Current Use Activities	4	525

Source: EPA MEC HA Worksheet V.1.2, 2007.

For current use activities, the Michie Stadium MRS has a Hazard Level Category of 4, which indicates the MRS has low potential explosive hazard conditions. The presence of MEC at an MRS means that an explosive hazard may exist. Therefore, MEC may continue to pose a hazard at a Hazard Level 4 MRS. Typical characteristics of Hazard Level 4 MRS include the following:

- A MEC cleanup was performed or MEC is located only in the subsurface, below the depth of receptor intrusive activities.
- The energetic material type is propellant, spotting charge, or incendiary.

- Accessibility is limited or very limited, and contact hours are few or very few. This may be the result of LUCs. The current and future uses of the MRS are consistent.

Supporting MEC HA input information is provided in **Appendix H**.

6.2 MUNITIONS RESPONSE SITE PRIORITIZATION PROTOCOL SCORING UPDATE

Results from the RI were used to update the MRSPP scoring. Revisions were made to the EHE module as a result of the UXO item recovery at the MRS. The MRS priority was determined to be a 4, which remains unchanged because the MRSPP was originally evaluated as part of the SI. Priority 1 indicates the highest potential hazard and Priority 8 the lowest potential hazard. Under the MRSPP, only MRSs with CWM can be assigned to Priority 1 and no MRS with CWM can be assigned to Priority 8. This MRS falls in the middle of this ranking system. The revised MRSPP forms are provided in **Appendix I**.

7. CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this RI, potential MEC hazards on the surface and in the subsurface are present for West Point personnel, residents, site visitors, recreational users (athletes), maintenance workers, and contractor personnel in the Michie Stadium MRS. There is a low probability of encountering additional MEC over the entire MRS (undeveloped and developed areas).

The UXO and MD recovered during the RI were most likely brought to the area within construction fill collected at different locations and brought to the MRS during various construction projects at Michie Stadium. It is unlikely that Stokes mortars were used within the vicinity of the MRS, given the time frame during which they were designed and used (1914 to 1939) and the activities that occurred in the vicinity of the MRS during that time: a restored Fort Putnam existed to the north, and Michie Stadium was constructed and used for athletic events and recreation.

A review of the historical topographic maps (**Figure 1-4**) was used to delineate the boundaries of the disturbance resulting from earthwork and the areas where UXO and MD were likely brought to the area in construction fill. This determination justifies an expanded MRS boundary to capture the extent of the historically disturbed area. **Figure 4-2** presents the revised boundary, which increases the size of the MRS from 9.5 acres to 14.1 acres. There is a low probability of encountering additional MEC and MD over the entire revised MRS (undeveloped and developed).

An FS is recommended to assess possible response action alternatives such as LUCs (including signage) for addressing MEC that has the potential to remain within the Michie Stadium MRS boundary. For activities such as future construction, UXO construction support activities would be used to mitigate or avoid exposure to MEC.

The collected data and the associated characterization described in this report are considered sufficient to characterize the Michie Stadium MRS, to identify and quantify any associated potential MEC hazards and MC risks, and to support the recommended FS. Therefore, the objectives of this RI have been met.

8. REFERENCES

Bruno, Col. D. V. 2010. *Interim Probability Assessment for Determining the Probability of Encountering MEC during Site Activities at West Point, New York*. U.S. Army Garrison West Point, N.Y. 22 June 2010.

Bedford, Steven, M. 2000. West Point's Michie Stadium: Balancing History and 21st Century Collegiate Sport Programs. In *Cultural Resource Management*, Volume 23, No. 10. U.S. Department of the Interior, National Park Service, Cultural Resources. http://crm.cr.nps.gov/issue.cfm?volume=23&number=10

Cadwell, D.H. 1989. Surficial Geologic Map of New York (Lower Hudson Sheet), New York State Museum and Science Service, Albany, N.Y.

EPA (U.S. Environmental Protection Agency). 1998. *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*. EPA/540/G-89/004. October 1998.

EPA (U.S. Environmental Protection Agency). 2007. *EPA MEC HA Worksheet V.1.2*.

EPA (U.S. Environmental Protection Agency). 2008. *Interim Munitions and Explosives of Concern Hazard Assessment Methodology* (MEC HA).

Fisher, D. W., Y. W. Isachsen, and L. V. Richard. 1970. Geologic Map of New York (Lower Hudson Sheet), New York State Museum and Science Service, Albany, N.Y.

Tetra Tech, Inc. 2010. *Draft Final Integrated Natural Resources Management Plan for the United States Army Garrison – West Point*. 2011-2015, West Point, New York. Prepared for the United States Army Garrison – West Point, New York. December 2010.

TLI. 2006. *Final Historical Records Review, United States Military Academy, West Point, New York*. Prepared for the U.S. Army Corps of Engineers (USACE), Baltimore District. March 2006.

TLI. 2007. *Final Site Inspection Report, United States Military Academy, West Point, New York*. Prepared for the U.S. Army Corps of Engineers (USACE), Baltimore District. January 2007.

U.S. Army. 2009. *Final Munitions Response Remedial Investigation/Feasibility Study Guidance*. Military Munitions Response Program. November 2009.

USACE (U.S. Army Corps of Engineers). 2010a. Engineering Manual (EM) EM1110-1-4009, Errata Sheet No. 4.

USACE (U.S. Army Corps of Engineers), Baltimore District. 2010b. *Remedial Investigation Explosives Site Plan, Military Munitions Response Action, West Point Military Reservation, West Point, New York*. July 2010.

USC&GS (United States Coast and Geodetic Survey) et al. 1892. West Point, NY Quadrangle. Made available by the University of New Hampshire Library Digital Collections Initiative. http://docs.unh.edu/NY/west92sw.jpg

USGS (United States Geological Survey). 1941. West Point, NY Quadrangle. Made available by the University of New Hampshire Library Digital Collections Initiative. http://docs.unh.edu/NY/west41sw.jpg

WESTON (Weston Solutions, Inc.). 2011a. *Final Work Plan: Military Munitions Response Program Remedial Investigations, U.S. Army Garrison - West Point.* Prepared for the United States Army Garrison – West Point, New York. April 2011.

WESTON (Weston Solutions, Inc.). 2011b. *Final Uniform Federal Policy Quality Assurance Project Plan Remedial Investigation for Military Munitions Response Program Sites U.S. Army Garrison – West Point.* Prepared for the United States Army Garrison – West Point, New York. April 2011.

APPENDIX A

INSTITUTIONAL ANALYSIS

APPENDIX A INSTITUTIONAL ANALYSIS

1. INTRODUCTION

The Institutional Analysis was prepared by Weston Solutions, Inc. (WESTON®) for the U.S. Army Garrison West Point (West Point) in accordance with EP 1110-1-24. This institutional analysis identifies the government agencies that have jurisdiction over West Point, specifically the former Michie Stadium munitions response site (MRS) and assesses their capability and willingness to assert control that would protect the public at large from munitions and explosives of concern (MEC) hazards. Additional information on the type of jurisdiction of each entity (i.e., implementing land use controls [LUCs] or Military Munitions Response Program [MMRP]-related actions) is included in the Institution Summary below.

2. INSTITUTION SUMMARY

For institutional control strategies to be successful and effective, cooperation of local and state authorities is required. Assessment of the government agencies associated with the Michie Stadium MRS included collection of the following data:

- Name of Agency.
- Origin of Institution.
- Basis of Authority.
- Sunset Provisions.
- Geographic Jurisdiction.
- Public Safety Function.
- LUC Function.
- Financial Capability.
- Desire to participate in the institutional control program.
- Constraints on institutional effectiveness.

2.1 RESULTS

2.1.1 ARMY ENVIRONMENTAL COMMAND

- **Origin of Institution**: Beginning in 1972, the organization's mission was destruction of chemical agents and munitions. After changes in 1975, 1978, the mid-1980s, and 1993, the U. S. Army Environmental Command (USAEC) transformed into a subordinate command of the Installation Management Command on October 24, 2006.

- **Basis of Authority**: Responsible for executing environmental programs and providing environmental expertise.
- **Sunset Provisions**: None.
- **Geographic Jurisdiction**: Nationwide.
- **Public Safety Function**: Responsible for environmental awareness for the public related to Army operations.
- **Land Use Control Function**: None.
- **Financial Capability**: Limited.
- **Desire to participate:** Yes.
- **Constraints on institutional effectiveness**: Does not have control or authority over the property. May only recommend actions.

2.1.2 U.S. ARMY CORPS OF ENGINEERS

- **Origin of Institution**: The Army established the U. S. Corps of Engineers (USACE) as a separate, permanent branch on March 16, 1802, and gave the engineers responsibility for founding and operating West Point. Since then, USACE has responded to changing defense requirements and played an integral part in the development of the country. USACE assists the military services in environmental management and restoration at former and current military installations.
- **Basis of Authority**: Responsible for planning, designing, building, and operating water resources and other civil works projects; designing and managing the construction of military facilities; providing immediate and long-term support to the public during natural disasters and national emergencies; and offering design and construction management capabilities for other Department of Defense (DoD) and federal agencies and for foreign countries.
- **Sunset Provisions**: None.
- **Geographic Jurisdiction**: Nationwide.
- **Public Safety Function**: Provides vital public engineering services in peace and war to strengthen our Nation's security and reduce risks from disasters.
- **Land Use Control Function**: None.
- **Financial Capability**: Limited.
- **Desire to participate:** Yes.

- **Constraints on institutional effectiveness**: Does not have control or authority over the property. However, provides the technical and contractual oversight of the MMRP Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) investigations at West Point.

2.1.3 U.S. ARMY GARRISON WEST POINT

- **Origin of Institution**: West Point's role in history dates back to the Revolutionary War, when General George Washington stated that he considered West Point to be the most important strategic position in America. In 1802, President Thomas Jefferson signed legislation establishing the United States Military Academy. West Point is the oldest continuously occupied military post in America.

- **Basis of Authority:** Landowner, part of the U.S. Army.

- **Sunset Provisions:** None.

- **Geographic Jurisdiction:** Orange and Putnam Counties, New York (The Michie Stadium MRS is located in Orange County.).

- **Public Safety Function:** Provide a safe and secure environment for the West Point community.

- **Land Use Control Function:** Controls Site.

- **Financial Capability:** Limited.

- **Desire to participate:** Yes.

- **Constraints on institutional effectiveness:** Has control or authority over the property within the Michie Stadium MRS.

2.1.4 NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION

- **Origin of Institution:** The New York State Department of Environmental Conservation (NYSDEC) was created on July 1, 1970 to combine in a single agency all state programs designed to protect and enhance the environment. NYSDEC supports a wide range of environmental programs that protect the quality of air, water, and land in New York.

- **Basis of Authority:** Environmental regulators for the State of New York.

- **Sunset Provisions:** None.

- **Geographic Jurisdiction:** State of New York.

- **Public Safety Function:** Protect the public from environmental hazards.

- **Land Use Control Function:** Only within applicable regulatory framework.
- **Financial Capability:** Limited.
- **Desire to participate:** Yes.
- **Constraints on institutional effectiveness:** Must operate within regulatory framework; authority limited to emergencies that affect the public.

2.1.5 ORANGE COUNTY SHERIFF'S OFFICE

- **Origin of Institution:** The Orange County Sheriff's Office was established in 1789 and is headquartered in Goshen, NY. The sheriff's office provides general-service law enforcement to unincorporated areas of Orange County. Law enforcement on West Point is enforced by the Directorate of Emergency Services (DES).
- **Basis of Authority:** Sheriff's office for Orange County, where Michie Stadium MRS is located.
- **Sunset Provisions:** None.
- **Geographic Jurisdiction:** Orange County.
- **Public Safety Function:** Enforce ordinances and laws developed to protect public safety.
- **Land Use Control Function:** None.
- **Financial Capability:** Limited.
- **Desire to participate:** Yes.
- **Constraints on institutional effectiveness:** Enforces ordinances and laws only.

3. PURPOSE OF STUDY

This report outlines the agencies that have jurisdiction over West Point and assesses their capability and willingness to support and enforce institutional controls. Local and state agencies that would implement the institutional controls recommended for the Michie Stadium MRS are identified.

3.1 METHODOLOGY

The methodology used to evaluate potential institutional controls focused on reducing potential MEC hazards at the Michie Stadium MRS and included review of the government institutions and non-government entities that have some form of jurisdiction or ownership of the properties within the MRS. Once jurisdictions and ownership were determined, information concerning these entities was reviewed. The procedure is defined below:

- Based on knowledge of the area, a list of organizations was outlined.
- The primary institutions having jurisdiction over the Michie Stadium MRS addressed under the RI were reviewed. West Point is the governmental agency exercising sole authority over the land of the MRS. It has jurisdiction and the capability and willingness to assert control over the land containing potential MEC hazards.

3.2 SCOPE OF EFFORT

WESTON has prepared this detailed institutional analysis report, which supports the development of strategies that require the cooperation of local and state authorities. The local, state, and federal government agencies with jurisdiction over West Point have been assessed with regard to their concern and capability to exercise institutional controls over the property. This study includes outlines of these discussions of potential control strategies and recommendations for specific control strategies.

3.3 SELECTION CRITERIA

Agencies, individuals, and organizations were selected based on their relevance to the institutional control process. The following criteria were used in the selection of the agencies and organizations. The selected entities should have these attributes:

- Jurisdiction as a public agency.
- Primary concern for munitions hazards because of ownership or use.
- Technical capability for access control and/or behavior modification strategies.
- Ability to provide a variety of media sources (i.e., print, and visual) to attain complete coverage/contact with users.
- Capability to repeat the same or different strategy at a later date.
- Authority to assist in implementation of institutional controls.
- Responsibility for LUC and/or public safety.
- Capacity to conduct public information and education activities.
- Expressed ability and willingness to assist.

3.4 ACCEPTANCE OF JOINT RESPONSIBLITIES

Relationships with West Point stakeholders have been established through Technical Project Planning (TPP) meetings and joint efforts with the local community. West Point is the current property owner of all of the Michie Stadium MRS. Institutional controls recommended to West Point will provide a mechanism to reduce the risk of exposure to MEC.

3.5 TECHNICAL CAPABLITIES

West Point has the ability to limit access and provide awareness to West Point personnel, residents, site visitors, recreational users (athletes), maintenance workers, and contractors within the boundaries of the Michie Stadium MRS. The Orange County Sheriff's Office has the capability to provide additional emergency response if DES cannot respond. West Point also has the capability to apply planning and zoning restrictions within its property boundary.

3.6 INTERGOVERNMENTAL RELATIONSHIPS

West Point will continue to recognize the safety concerns at the Michie Stadium MRS and will follow the recommendations made during the remaining CERCLA phases of the project and approved by USACE and USAEC. These recommendations may include instituting LUCs for the Michie Stadium MRS beyond those currently in place.

3.7 STABILITY

West Point is a government entity and, hence, is expected to be the most stable type of organization.

3.8 FUNDING SOURCE RECOMMENDED FOR DETAILED ANALYSIS

The source of funding for recommendations (possible LUCs) made during the remaining CERCLA phases should be provided by USAEC.

3.9 RECOMMENDATIONS

Recommendations will be presented during the remaining CERCLA phases of the project and will be made considering overall knowledge of the Michie Stadium MRS.

APPENDIX B

DIGITAL GEOPHYSICAL MAPPING DATA

Appendix B is provided as a separate file on this CD.

APPENDIX C

PHOTOGRAPH LOG

Photo No. 01	**Date:** 4/25/2011

Description:

Field geophysicist collecting data in grid MS-01. Operator is using an EM61-MK2 in wheel mode.

Photo No. 02	**Date:** 4/27/2011

Description:

Field geophysicists collecting data in grid MS-02. Operator is using an EM61-MK2 in gurney mode.

Photo No. 03	**Date:** 4/25/2011
Description: Field geophysicist collecting data in grid MS-01. Yellow pins flags are used as fiducial markers.	

Photo No. 04	**Date:** 6/8/2011
Description: Field geophysicists reacquiring anomalies in MS-01 using Robotic Total Station.	

Photo No. 05	Date: 6/8/2011

Description:

UXO Technicians investigating a geophysical anomaly in MS-01.

Photo No. 06	Date: 6/8/2011

Description:

Seed item located in MS-01 during intrusive investigation of geophysical anomalies.

Photo No. 07	Date: 6/9/2011
Description: EOD personnel responding to the discovery of UXO within MS-01.	

Photo No. 08	Date: 6/9/2011
Description: Mortar, 3” Stokes, MkI, unfuzed located in MS-01. Item was transferred to EOD for disposal off site.	

Photo No. 09	Date: 6/8/2011
Description: Munitions debris located in MS-02. Item is an end-cap for a 3" Stokes Mortar MK1.	

Photo No. 10	Date: 6/8/2011
Description: UXO Technicians investigating a geophysical anomaly. Tarps were used to assist in restoring the grass to original conditions prior following intrusive activity.	

APPENDIX D

DIG LIST

Project Name: West Point
Project Location: West Point
Date: 6/8/2011
Coordinate System: UTM
Survey Area ID: MS-01

Geophysical Contractor: WESTON
Project Geophysicist: Ryan Steigerwalt
Site Geophysicist: Brian Junck
USACE Geophysicist: Tom Colozza

		DGM Survey					Dig Results											
MRS	Unique Target ID	Easting Coord. (USft)	Northing Coord. (USft)	Channel ID	Amplitude Response (mV)	Date	Reacquisition Instrument	Item Category	Item Type	Description	Approx. Weight (lbs)	Offset: Distance (in)	Item Easting Coord. (USft)	Item Northing Coord. (USft)	Depth: Top of Item	Dig Date	Team Leader Initials	Final Disposition
Michie Stadium	MS-01-2	15033994.50	1924275.50	CH2	16.41	4/25/2011	White's XLT	Cultural Debris	Iron Scrap		0.10	3	15033994.50	1924275.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-5	15033999.50	1924274.25	CH2	34.30	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	0	15033999.50	1924274.25	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-7	15034004.75	1924282.50	CH2	1235.91	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	0	15034004.75	1924282.50	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-8	15034006.00	1924279.25	CH2	1768.21	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	6	15034006.00	1924279.75	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-9	15034007.75	1924272.50	CH2	965.25	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	0	15034007.75	1924272.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-10	15034015.75	1924280.50	CH2	153.28	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.00	4	15034016.08	1924280.50	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-13	15034020.25	1924270.25	CH2	495.19	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	6	15034020.25	1924270.75	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-14	15034026.00	1924275.25	CH2	300.78	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	3	15034026.00	1924275.50	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-15	15034028.25	1924287.25	CH2	11186.69	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	5	15034028.25	1924287.67	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-18	15034031.50	1924275.00	CH2	179.47	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	2	15034031.50	1924275.17	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-21	15034035.25	1924288.25	CH2	2481.67	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	2	15034035.25	1924288.42	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-22	15034037.00	1924316.25	CH2	62.01	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	5	15034036.58	1924316.25	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-23	15034037.50	1924306.75	CH2	146.44	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	3	15034037.50	1924307.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-24	15034038.75	1924309.25	CH2	99.18	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	5	15034038.75	1924309.67	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-25	15034039.25	1924269.50	CH2	7.54	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	15034039.25	1924269.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-26	15034039.75	1924291.00	CH2	1221.16	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	6	15034040.25	1924291.00	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-27	15034041.25	1924332.75	CH2	82.96	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	2	15034041.25	1924332.92	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-28	15034041.50	1924327.25	CH2	119.83	4/25/2011	White's XLT	UXO	Mortar, 3" Stokes, MKI	Unfuzed	15.00	0	15034041.50	1924327.25	6	6/8/2011	BA	Transferred to EOD
Michie Stadium	MS-01-29	15034041.75	1924281.25	CH2	1227.43	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	4	15034041.75	1924281.58	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-31	15034044.50	1924332.00	CH2	68.02	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	2	15034044.50	1924331.83	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-31	15034044.50	1924332.00	CH2	68.02	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	2	15034044.50	1924332.17	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-32	15034045.50	1924283.75	CH2	1083.12	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	6	15034045.50	1924284.25	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-32	15034045.50	1924283.75	CH2	1083.12	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	6	15034045.50	1924284.25	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-33	15034046.25	1924286.75	CH2	1111.65	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	4	15034046.25	1924286.42	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-34	15034047.00	1924292.75	CH2	1108.38	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	4	15034047.00	1924293.08	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-35	15034047.00	1924300.75	CH2	2571.34	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.00	6	15034047.00	1924300.25	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-37	15034047.75	1924268.25	CH2	1532.47	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	1	15034047.75	1924268.33	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-38	15034048.50	1924308.50	CH2	20.36	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034048.50	1924308.00	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-39	15034048.50	1924317.00	CH2	41.77	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	0	15034048.50	1924317.00	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-40	15034048.75	1924277.25	CH2	495.86	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	4	15034048.75	1924277.58	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-41	15034049.75	1924283.00	CH2	615.05	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	3	15034049.75	1924283.25	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-42	15034050.50	1924327.75	CH2	69.41	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	4	15034050.83	1924327.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-43	15034052.25	1924319.25	CH2	45.80	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	2	15034052.25	1924319.42	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-44	15034052.50	1924334.50	CH2	11629.46	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	3	15034052.25	1924334.50	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-45	15034054.00	1924311.00	CH2	15.52	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	15034054.00	1924311.00	6	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-46	15034055.25	1924269.75	CH2	8.43	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034055.25	1924270.08	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-47	15034055.25	1924318.75	CH2	17.13	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	15034055.25	1924318.75	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-49	15034057.00	1924287.50	CH2	55.15	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	5	15034056.58	1924287.50	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-50	15034057.25	1924293.75	CH2	11.50	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034057.25	1924294.00	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-51	15034057.75	1924318.25	CH2	8.03	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034057.75	1924318.75	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-52	15034058.50	1924324.25	CH2	53.06	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	1	15034058.50	1924324.33	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-53	15034059.75	1924314.50	CH2	12.24	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034059.42	1924314.50	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-54	15034060.25	1924265.75	CH2	15.13	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	15034060.25	1924265.92	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-55	15034060.25	1924287.25	CH2	60.33	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	6	15034060.25	1924287.75	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-56	15034060.25	1924332.50	CH2	1680.04	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	3	15034060.00	1924332.50	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-57	15034060.50	1924299.50	CH2	23.31	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	15034060.33	1924299.50	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-58	15034063.00	1924304.75	CH2	29.16	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	15034062.83	1924304.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-59	15034063.25	1924329.50	CH2	50.79	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	2	15034063.25	1924329.67	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-61	15034065.50	1924316.75	CH2	23.45	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	15034065.50	1924316.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-62	15034065.75	1924328.75	CH2	76.84	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	0	15034065.75	1924328.75	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-63	15034066.75	1924292.00	CH2	7.34	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034066.75	1924291.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-64	15034066.75	1924295.00	CH2	10.83	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034066.75	1924295.33	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-65	15034067.00	1924282.75	CH2	25.84	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	8	15034067.00	1924283.42	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-66	15034068.25	1924297.75	CH2	7.61	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	7	15034068.83	1924297.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-67	15034069.00	1924319.50	CH2	45.38	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	10	15034069.00	1924320.33	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-68	15034069.50	1924337.50	CH2	4048.92	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	3	15034069.50	1924337.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-69	15034072.40	1924325.40	CH2	85.16	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	5	15034072.40	1924325.82	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-70	15034073.00	1924278.50	CH2	61.63	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	5	15034073.00	1924278.08	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-72	15034073.50	1924312.25	CH2	184.71	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	4	15034073.50	1924312.58	6	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-73	15034073.50	1924333.00	CH2	24.55	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	8	15034073.50	1924332.33	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-74	15034076.00	1924293.50	CH2	8.85	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	7	15034076.00	1924294.08	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-75	15034076.00	1924323.75	CH2	48.01	4/25/2011	White's XLT	Cultural Debris	Nail		0.05	0	15034076.00	1924323.75	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-76	15034076.75	1924265.75	CH2	10.46	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034076.75	1924265.50	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-77	15034076.75	1924290.25	CH2	8.84	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	15034076.75	1924290.42	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-78	15034077.50	1924305.25	CH2	19.52	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	8	15034077.50	1924305.92	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-79	15034079.00	1924301.75	CH2	12.15	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034078.67	1924301.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-80	15034079.75	1924295.75	CH2	38.13	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	2	15034079.75	1924295.92	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-81	15034080.25	1924313.75	CH2	58.42	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	4	15034080.58	1924313.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-83	15034080.75	1924304.50	CH2	10.42	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034080.75	1924304.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-84	15034081.00	1924332.00	CH2	137.77	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	6	15034081.00	1924332.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-85	15034081.75	1924261.50	CH2	86.61	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	3	15034082.00	1924261.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-86	15034082.25	1924288.75	CH2	21.70	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	15034082.25	1924288.92	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-87	15034082.25	1924341.00	CH2	1039.58	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	0	15034082.25	1924341.00	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-88	15034083.00	1924286.00	CH2	32.34	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	2	15034083.00	1924286.17	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-89	15034083.50	1924300.75	CH2	15.65	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034084.00	1924300.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-90	15034083.75	1924319.50	CH2	429.41	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	0	15034083.75	1924319.50	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-93	15034086.25	1924330.75	CH2	47.96	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	7	15034086.25	1924331.33	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-94	15034086.50	1924294.50	CH2	59.94	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	0	15034086.50	1924294.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-95	15034087.00	1924328.00	CH2	43.39	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	5	15034086.58	1924328.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-96	15034089.00	1924315.50	CH2	89.68	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	7	15034089.58	1924315.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-97	15034089.00	1924321.25	CH2	13.06	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034089.00	1924321.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-98	15034089.75	1924266.50	CH2	23.61	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034090.08	1924266.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-100	15034090.00	1924290.25	CH2	14.51	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	1	15034090.08	1924290.25	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-101	15034090.25	1924324.25	CH2	44.93	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	4	15034090.58	1924324.25	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-103	15034091.25	1924299.25	CH2	13.57	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034091.25	1924299.75	3	6/8/2011	BA	Transferred to DRMO

Project Name: West Point
Project Location: West Point
Date: 6/8/2011
Coordinate System: UTM
Survey Area ID: MS-01

Geophysical Contractor: WESTON
Project Geophysicist: Ryan Steigerwalt
Site Geophysicist: Brian Junck
USACE Geophysicist: Tom Colozza

		DGM Survey					Dig Results											
MRS	Unique Target ID	Easting Coord. (USft)	Northing Coord. (USft)	Channel ID	Amplitude Response (mV)	Date	Reacquisition Instrument	Item Category	Item Type	Description	Approx. Weight (lbs)	Offset: Distance (in)	Item Easting Coord. (USft)	Item Northing Coord. (USft)	Depth: Top of Item	Dig Date	Team Leader Initials	Final Disposition
Michie Stadium	MS-01-104	15034091.50	1924287.25	CH2	12.55	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	15034091.33	1924287.25	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-105	15034092.00	1924271.75	CH2	10.60	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	10	15034092.00	1924272.58	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-106	15034092.50	1924335.75	CH2	33.31	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	2	15034092.50	1924335.92	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-107	15034094.00	1924296.00	CH2	29.29	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034093.67	1924296.00	9	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-108	15034094.00	1924308.25	CH2	14.37	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	15034094.00	1924308.25	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-109	15034094.00	1924329.50	CH2	71.61	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	3	15034094.00	1924329.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-110	15034095.08	1924269.99	CH2	21.43	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	15034095.08	1924269.99	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-111	15034095.75	1924255.75	CH2	268.60	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	5	15034096.17	1924255.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-112	15034095.75	1924304.50	CH2	7.37	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	1	15034095.75	1924304.58	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-113	15034095.75	1924320.00	CH2	20.35	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034096.00	1924320.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-114	15034096.25	1924301.75	CH2	8.56	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034096.50	1924301.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-115	15034096.75	1924295.50	CH2	20.20	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034096.75	1924295.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-116	15034097.00	1924283.25	CH2	24.23	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	1	15034097.00	1924283.33	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-117	15034098.25	1924276.25	CH2	13.55	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	15034098.67	1924276.25	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-118	15034099.25	1924328.50	CH2	228.90	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	0	15034099.25	1924328.50	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-120	15034099.50	1924316.75	CH2	31.09	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	3	15034099.50	1924317.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-121	15034100.00	1924309.75	CH2	19.02	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	15034100.00	1924309.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-122	15034100.50	1924334.25	CH2	18.38	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	1	15034100.50	1924334.17	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-123	15034102.00	1924270.00	CH2	12.87	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034102.00	1924269.67	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-124	15034102.25	1924306.50	CH2	69.92	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	10	15034102.25	1924307.33	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-125	15034103.75	1924321.75	CH2	21.78	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034103.75	1924322.00	9	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-126	15034104.25	1924257.50	CH2	36.74	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	1	15034104.25	1924257.42	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-127	15034104.50	1924294.25	CH2	36.79	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	5	15034104.50	1924294.67	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-128	15034104.75	1924291.50	CH2	38.89	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	4	15034104.75	1924291.17	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-129	15034104.75	1924315.50	CH2	49.88	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	6	15034104.75	1924315.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-130	15034105.25	1924266.50	CH2	219.95	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	3	15034105.25	1924266.25	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-131	15034106.00	1924275.75	CH2	15.64	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	15034106.00	1924275.75	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-132	15034107.75	1924308.50	CH2	223.89	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	8	15034107.75	1924307.83	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-133	15034108.00	1924323.00	CH2	15.81	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034107.67	1924323.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-134	15034109.75	1924296.00	CH2	138.51	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	6	15034109.25	1924296.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-135	15034109.75	1924320.50	CH2	13.06	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034109.42	1924320.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-136	15034109.75	1924335.75	CH2	2186.14	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		4.00	6	15034110.25	1924335.75	12	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-137	15034110.25	1924277.50	CH2	91.34	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	2	15034110.42	1924277.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-138	15034111.00	1924289.25	CH2	77.60	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	2	15034111.00	1924289.08	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-139	15034111.50	1924265.00	CH2	9.81	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034111.00	1924265.00	6	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-140	15034111.50	1924286.50	CH2	121.94	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	2	15034111.50	1924286.33	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-141	15034112.25	1924258.50	CH2	87.66	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	6	15034111.75	1924258.50	6	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-142	15034112.25	1924332.50	CH2	2019.40	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		10.00	4	15034112.58	1924332.50	12	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-144	15034113.25	1924310.50	CH2	30.60	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	6	15034113.25	1924311.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-145	15034113.25	1924316.75	CH2	34.75	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	4	15034113.25	1924317.08	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-147	15034114.50	1924270.50	CH2	7.62	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	15034114.50	1924270.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-148	15034115.25	1924301.25	CH2	95.73	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	10	15034115.25	1924302.08	9	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-149	15034115.50	1924322.25	CH2	47.40	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	2	15034115.50	1924322.42	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-150	15034116.75	1924276.50	CH2	18.05	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034116.75	1924276.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-151	15034116.75	1924337.25	CH2	115.61	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	11	15034116.75	1924338.17	18	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-152	15034117.00	1924312.75	CH2	52.99	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	3	15034117.00	1924313.00	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-153	15034117.25	1924303.50	CH2	75.95	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	5	15034117.25	1924303.92	9	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-154	15034118.50	1924273.00	CH2	28.28	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	15034118.50	1924273.17	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-155	15034118.50	1924318.50	CH2	15.37	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034118.50	1924318.83	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-156	15034119.25	1924294.25	CH2	27.68	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034119.25	1924294.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-157	15034120.00	1924260.50	CH2	32.89	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	0	15034120.00	1924260.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-158	15034122.00	1924257.25	CH2	41.10	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	3	15034122.00	1924257.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-159	15034122.50	1924263.00	CH2	18.51	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034122.50	1924263.33	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-160	15034123.00	1924293.50	CH2	100.82	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	2	15034123.00	1924293.33	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-161	15034123.25	1924284.25	CH2	35.64	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	6	15034123.25	1924283.75	6	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-162	15034124.50	1924305.50	CH2	16.16	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034124.50	1924305.83	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-164	15034125.00	1924265.50	CH2	35.60	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	5	15034125.00	1924265.92	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-165	15034125.00	1924308.00	CH2	15.47	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	15034125.00	1924307.83	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-166	15034128.00	1924298.50	CH2	116.45	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	2	15034128.00	1924298.67	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-167	15034128.25	1924261.75	CH2	12.81	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034127.92	1924261.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-168	15034128.50	1924252.75	CH2	251.30	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	6	15034128.50	1924253.25	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-169	15034128.50	1924289.50	CH2	56.22	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	5	15034128.08	1924289.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-170	15034129.75	1924264.50	CH2	14.97	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	15034129.33	1924264.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-171	15034129.75	1924267.75	CH2	13.88	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034129.75	1924268.08	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-172	15034130.25	1924276.75	CH2	74.50	4/25/2011	White's XLT	Seed	2" x 8" Pipe		1.00	3	15034130.25	1924277.00	6	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-173	15034131.00	1924313.50	CH2	18.30	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034131.00	1924313.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-174	15034131.75	1924273.25	CH2	17.48	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	10	15034132.58	1924273.25	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-175	15034132.25	1924322.50	CH2	2581.43	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		6.00	6	15034132.25	1924323.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-176	15034132.50	1924297.75	CH2	72.63	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	2	15034132.50	1924297.92	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-177	15034133.00	1924328.25	CH2	7048.82	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	6	15034133.00	1924327.75	6	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-178	15034134.25	1924279.25	CH2	132.66	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	2	15034134.25	1924279.08	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-179	15034135.00	1924266.75	CH2	256.28	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	6	15034135.00	1924267.25	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-180	15034135.00	1924315.25	CH2	22.60	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	15034135.00	1924315.25	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-181	15034135.25	1924303.50	CH2	13.82	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034135.25	1924303.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-182	15034135.50	1924291.25	CH2	1091.40	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		8.00	3	15034135.50	1924291.00	6	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-183	15034135.75	1924254.50	CH2	25.18	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034135.75	1924254.83	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-184	15034136.00	1924306.50	CH2	9.11	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	10	15034136.00	1924305.67	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-186	15034137.00	1924257.00	CH2	17.24	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034137.00	1924257.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-187	15034137.25	1924309.00	CH2	15.28	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	8	15034137.25	1924308.33	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-188	15034138.23	1924273.68	CH2	101.90	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	2	15034138.23	1924273.85	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-189	15034138.25	1924254.00	CH2	17.01	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034137.75	1924254.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-191	15034138.50	1924284.75	CH2	64.56	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	2	15034138.50	1924284.58	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-192	15034142.25	1924256.25	CH2	118.05	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	3	15034142.25	1924256.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-193	15034143.00	1924271.25	CH2	15.35	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	1	15034143.00	1924271.17	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-194	15034144.75	1924267.75	CH2	88.39	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	3	15034145.00	1924267.75	3	6/8/2011	BA	Transferred to DRMO

Project Name:	West Point	Geophysical Contractor:	WESTON
Project Location:	West Point	Project Geophysicist:	Ryan Steigerwalt
Date:	6/8/2011	Site Geophysicist:	Brian Junck
Coordinate System:	UTM		
Survey Area ID:	MS-02	USACE Geophysicist:	Tom Colozza

		Original Survey					Dig Results											
MRS	Unique Target ID	Easting Coord. (USft)	Northing Coord. (USft)	Channel ID	Amplitude Response (mV)	Date	Reacquisition Instrument	Item Category	Item Type	Description	Approx. Weight (lbs)	Offset: Distance (in)	Item Easting Coord. (USft)	ItemNorthing Coord. (USft)	Depth: Top of Item	Dig Date	Team Leader Initials	Final Disposition
Michie Stadium	MS-02-1	15034098.00	1924664.75	CH2	16.45	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034098.00	1924665.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-2	15034100.00	1924669.25	CH2	27.26	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	15034099.83	1924669.25	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-5	15034100.25	1924675.50	CH2	6026.01	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		6.00	6	15034100.25	1924676.00	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-7	15034101.50	1924685.50	CH2	9.52	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	15034101.50	1924685.92	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-8	15034103.00	1924651.25	CH2	104.18	4/27/2011	White's XLT	Cultural Debris	Nail		2.00	6	15034102.50	1924651.25	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-13	15034106.25	1924663.00	CH2	13.04	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034105.75	1924663.00	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-15	15034106.75	1924690.00	CH2	15.97	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	15034106.33	1924690.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-16	15034107.25	1924705.00	CH2	9.17	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034107.25	1924705.25	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-18	15034108.31	1924712.33	CH2	77.85	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		2.00	0	15034108.31	1924712.33	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-18	15034108.31	1924712.33	CH2	77.85	4/27/2011	White's XLT	Cultural Debris	Nail		2.00	0	15034108.31	1924712.33	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-20	15034108.75	1924687.00	CH2	27.94	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034108.75	1924686.67	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-21	15034109.00	1924650.75	CH2	8.28	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	15034109.00	1924651.17	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-23	15034109.50	1924741.25	CH2	44.87	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	6	15034109.50	1924741.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-24	15034110.00	1924705.00	CH2	15.05	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034110.50	1924705.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-25	15034110.00	1924746.75	CH2	51.91	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	3	15034110.00	1924747.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-26	15034110.75	1924638.50	CH2	42.52	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	3	15034110.75	1924638.75	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-27	15034111.75	1924692.50	CH2	10.89	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	15034111.75	1924692.67	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-28	15034111.75	1924708.00	CH2	12.11	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034111.75	1924707.75	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-29	15034113.50	1924650.50	CH2	76.14	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		2.00	0	15034113.50	1924650.50	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-31	15034113.75	1924695.50	CH2	11.31	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034113.75	1924695.00	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-32	15034114.75	1924677.25	CH2	45.11	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	2	15034114.75	1924677.42	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-32	15034114.75	1924677.25	CH2	45.11	4/27/2011	White's XLT	Munitions Debris	Mortar, 3" Stokes, MKI	End Cap	0.10	3	15034114.75	1924677.50	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-33	15034115.00	1924710.50	CH2	55.17	4/27/2011	White's XLT	Munitions Debris	Frag		1.00	0	15034115.00	1924710.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-35	15034115.50	1924719.50	CH2	20.53	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034115.50	1924719.83	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-38	15034118.75	1924650.00	CH2	29.37	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	1	15034118.75	1924650.08	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-40	15034119.81	1924660.52	CH2	249.05	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	4	15034119.81	1924660.85	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-41	15034121.00	1924713.00	CH2	9.41	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034121.00	1924712.75	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-42	15034121.50	1924749.25	CH2	12.42	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	15034121.50	1924749.42	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-43	15034121.75	1924652.50	CH2	10.05	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034121.75	1924653.00	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-44	15034121.75	1924680.00	CH2	7.25	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034121.50	1924680.00	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-45	15034123.50	1924709.75	CH2	28.74	4/27/2011	White's XLT	Cultural Debris	Nail		0.10	5	15034123.50	1924710.17	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-46	15034125.50	1924715.75	CH2	38.94	4/27/2011	White's XLT	Munitions Debris	Frag		1.00	0	15034125.50	1924715.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-47	15034125.75	1924649.50	CH2	20.78	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034125.75	1924649.75	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-50	15034129.50	1924646.50	CH2	32.95	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	2	15034129.33	1924646.50	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-51	15034129.75	1924748.75	CH2	7.60	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034129.75	1924749.25	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-52	15034130.25	1924715.50	CH2	85.53	4/27/2011	White's XLT	Munitions Debris	Frag		1.00	0	15034130.25	1924715.50	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-53	15034130.50	1924649.00	CH2	39.15	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	0	15034130.50	1924649.00	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-54	15034132.75	1924745.25	CH2	22.83	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034132.50	1924745.25	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-55	15034133.00	1924648.75	CH2	51.47	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	6	15034133.00	1924649.25	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-56	15034133.25	1924673.00	CH2	216.03	4/27/2011	White's XLT	Cultural Debris	2" x 8" Pipe		2.50	3	15034133.25	1924673.25	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-58	15034135.50	1924643.00	CH2	11.79	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	5	15034135.50	1924643.42	6	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-63	15034138.75	1924708.75	CH2	37.91	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	3	15034138.50	1924708.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-63	15034138.75	1924708.75	CH2	37.91	4/27/2011	White's XLT	Munitions Debris	Frag		1.00	0	15034138.75	1924708.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-65	15034141.25	1924636.25	CH2	25.61	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034141.25	1924636.75	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-68	15034145.25	1924672.00	CH2	24.59	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	15034145.25	1924672.17	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-69	15034146.03	1924722.09	CH2	207.48	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	6	15034146.03	1924722.59	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-70	15034148.75	1924656.75	CH2	8.10	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034148.42	1924656.75	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-71	15034148.75	1924680.75	CH2	355.25	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	5	15034148.75	1924681.17	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-73	15034151.00	1924641.50	CH2	36.74	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	1	15034151.00	1924641.58	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-75	15034151.75	1924713.75	CH2	38.55	4/27/2011	White's XLT	Munitions Debris	Mortar, 3" Stokes, MKI	Tailboom	0.50	0	15034151.75	1924713.75	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-76	15034152.50	1924632.25	CH2	56.78	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.50	4	15034152.17	1924632.25	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-78	15034153.00	1924719.50	CH2	14.22	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034153.00	1924719.83	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-79	15034153.50	1924672.00	CH2	14.45	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	1	15034153.50	1924672.08	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-81	15034153.75	1924651.25	CH2	24.72	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034154.25	1924651.25	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-82	15034154.25	1924645.25	CH2	25.16	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	3	15034154.25	1924645.50	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-83	15034154.50	1924689.25	CH2	13.21	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	2	15034154.50	1924689.42	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-84	15034154.75	1924641.00	CH2	7.69	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034154.75	1924641.50	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-85	15034155.25	1924683.50	CH2	12.53	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034155.25	1924683.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-87	15034159.00	1924701.00	CH2	14.91	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	1	15034159.00	1924701.08	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-95	15034164.75	1924745.75	CH2	248.13	4/27/2011	White's XLT	Munitions Debris	Frag		1.00	0	15034164.75	1924745.75	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-96	15034166.25	1924712.50	CH2	18.98	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	4	15034166.25	1924712.83	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-97	15034170.00	1924724.25	CH2	10.33	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	0	15034170.00	1924724.25	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-02-98	15034170.75	1924745.50	CH2	18.49	4/27/2011	White's XLT	Cultural Debris	Metal Scrap		0.10	6	15034170.75	1924746.00	3	6/8/2011	BA	Transferred to DRMO

Project Name:	West Point	Geophysical Contractor:	WESTON
Project Location:	West Point	Project Geophysicist:	Ryan Steigerwalt
Date:	6/8/2011	Site Geophysicist:	Brian Junck
Coordinate System:	UTM		
Survey Area ID:	MS-01	USACE Geophysicist:	Tom Colozza

		DGM Survey					Dig Results											
MRS	Unique Target ID	Easting Coord. (USft)	Northing Coord. (USft)	Channel ID	Amplitude Response (mV)	Date	Reacquisition Instrument	Item Category	Item Type	Description	Approx. Weight (lbs)	Offset: Distance (in)	Item Easting Coord. (USft)	Item Northing Coord. (USft)	Depth: Top of Item	Dig Date	Team Leader Initials	Final Disposition
Michie Stadium	MS-01-195	15034145.75	1924283.00	CH2	105.90	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	4	15034145.42	1924283.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-196	15034146.25	1924277.00	CH2	160.66	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	2	15034146.25	1924276.83	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-197	15034147.25	1924307.25	CH2	2695.10	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		5.00	2	15034147.25	1924307.08	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-198	15034147.75	1924288.75	CH2	66.53	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		1.00	4	15034147.75	1924289.08	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-199	15034148.25	1924270.50	CH2	52.25	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	0	15034148.25	1924270.50	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-200	15034148.50	1924279.50	CH2	271.91	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	5	15034148.50	1924279.92	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-201	15034148.75	1924297.00	CH2	44.76	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	4	15034148.75	1924297.33	0	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-202	15034150.00	1924303.75	CH2	4674.06	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		2.50	3	15034150.00	1924304.00	3	6/8/2011	BA	Transferred to DRMO
Michie Stadium	MS-01-203	15034156.50	1924312.00	CH2	38.95	4/25/2011	White's XLT	Cultural Debris	Metal Scrap		0.05	0	15034156.50	1924312.00	3	6/8/2011	BA	Transferred to DRMO

APPENDIX E

DAILY REPORTS

Daily Site Progress Report

MMRP RI - US Army Garrison – West Point

CONTRACT NO. / D.O. NO.:	WORK ORDER NO.:	DATE / TIME ON AND OFF SITE
W912DR-09-D-0006	03886.551.001	04/25/2011 0700 - 1700

WEATHER/TEMPERATURE: Sunny and cool 65 high/42 Low °F

WORK LOCATION: West Point, NY

WORK COMPLETED:

- ☐ Surveyor activities.
- ☐ Mag and Dig activities).
- ☒ DGM activities (List grids).
- ☐ Reacquisition of DGM anomaly targets (List grids).
- ☐ Grid QC List (List completed grids).
- ☐ Grid QA (CENAB-List completed grids).
- ☐ Munitions Constituents Sampling.
- ☒ UXO Technician Escort activities.
- ☐ Equipment Transport (mob/demob to/from site-List).
- ☐ Equipment Maintenance
- ☐ Equipment Issues (List below).
- ☐ _____

Comments:

MATERIALS DELIVERED (Amount, Condition, and Purpose):

None

PROBLEMS/RESOLUTIONS:

None

DATA TRACKING:

Conducted DGM surveys at Grey Ghost and Michie Stadium MRS.
Completed Grids:
GGHA-02, GGHA-03, GGHA-04, MS-01

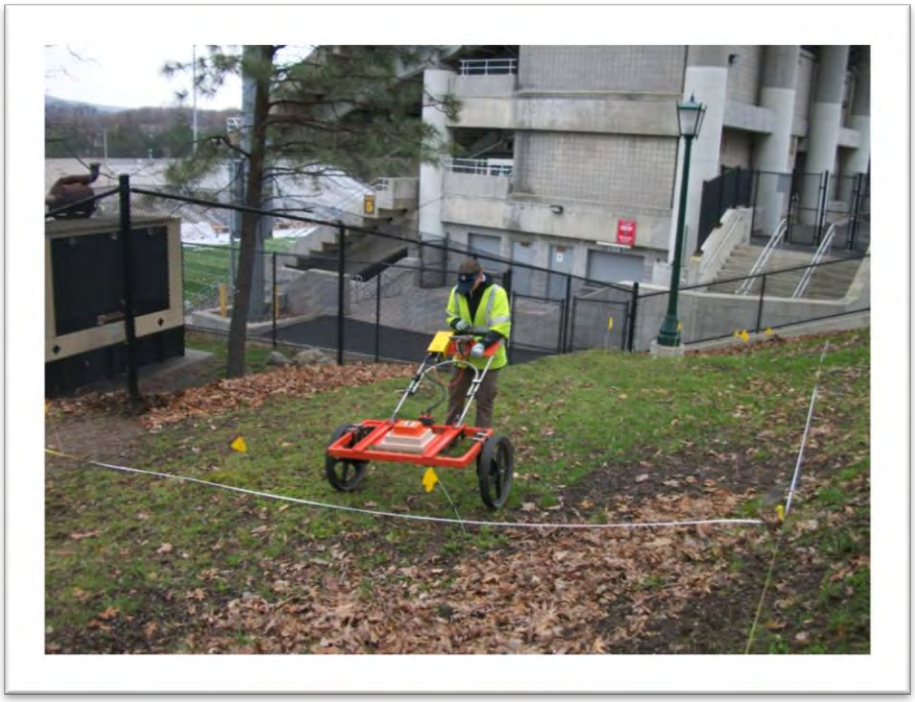
Surveyors completed survey activities on 04/22/11 and have demobilized from site

Comments:

FURTHER DISCUSSION (List Topic and Comment):

Planned activities for 04/26/11: Continue DGM surveys in Lusk Reservoir and Redoubt No. 2.

PREPARED BY:	SIGNATURE:
Brian Junck – Site Geophysicist	



Geophysical Technician collecting DGM data at grid MS-01 in Michie Stadium MRS.

Geophysical Technician collecting DGM data at grid LR-09 in Lusk Reservoir MRS.

Grid layout at LR-09 in Lusk Reservoir MRS.

Geophysical Technician collecting DGM data at grid LR-09 in Lusk Reservoir MRS.

Daily Safety Quality Control Report

CONTRACT NO. / D.O. NO.:	WESTON PROJECT NO.	DATE / TIME ON AND OFF SITE
W912DR-09-D-0006	03886.551.001	4-25-11 0700

WEATHER/TEMPERATURE:
LOW- 42 HIGH- 65° Sunny and cool

WORK LOCATION:
West Point, NY

PERSONNEL/AFFILIATION (PRINT)	SIGNATURE
BRIAN JUNCK - WESTON	NOT ONSITE TODAY
BRIAN GRASSMEYER - WESTON	Brian R Grassmeyer
BRIAN GUTHRIE - WESTON	NOT ONSITE TODAY
Kim Churchill - WESTON	Kim Churchill
Mark Saunders	Mark

HEALTH AND SAFETY:

☒ Daily H&S Brief and Discussion
- Prior to work and as needed.

☒ UXO Safety Discussion
- Prior to work and as needed.

Discussion Topics:
Weather (Heat, Hydration) Vehicle Safety

☒ Personnel Sign In ☐ Review Applicable SOPs ☒ Phone/Radio Check ☐ Wetland Issues ☐ First Aid Kit ☐ Fire Prevention Equipment ☐ Issues / Injuries

Daily Site Progress Report

MMRP RI - US Army Garrison – West Point

CONTRACT NO. / D.O. NO.:	WORK ORDER NO.:	DATE / TIME ON AND OFF SITE
W912DR-09-D-0006	03886.551.001	04/27/2011 0700 - 1700

WEATHER/TEMPERATURE: Sunny and warm 74 high/52 Low °F

WORK LOCATION: West Point, NY

WORK COMPLETED:

- ☐ Surveyor activities.
- ☐ Mag and Dig activities).
- ☒ DGM activities (List grids).
- ☐ Reacquisition of DGM anomaly targets (List grids).
- ☐ Grid QC List (List completed grids).
- ☐ Grid QA (CENAB-List completed grids).
- ☐ Munitions Constituents Sampling.
- ☒ UXO Technician Escort activities.
- ☐ Equipment Transport (mob/demob to/from site-List).
- ☐ Equipment Maintenance
- ☐ Equipment Issues (List below).
- ☐ _____

Comments:

MATERIALS DELIVERED (Amount, Condition, and Purpose):

None

PROBLEMS/RESOLUTIONS:

None

DATA TRACKING:

Conducted DGM surveys at Michie Stadium and Redoubt No2 MRS.
Completed Grids:
MS-02, RD-08

Comments:

FURTHER DISCUSSION (List Topic and Comment):

Planned activities for 04/28/11: DGM surveys in Lusk Reservoir and Target Hill MRS.

PREPARED BY:	SIGNATURE:
Brian Junck – Site Geophysicist	

Geophysical Technicians collecting DGM data at grid RD-08 in Redoubt No2 MRS.

Grid layout at MS-02 in Michie Stadium MRS.

Geophysical Technicians collecting DGM data at grid MS-02 in Michie Stadium MRS.

Daily Safety Quality Control Report

CONTRACT NO. / D.O. NO.:	WESTON PROJECT NO.	DATE / TIME ON AND OFF SITE
W912DR-09-D-0006	03886.551.001	4-27-11 0700

WEATHER/TEMPERATURE:
LOW- 52 HIGH- 74° SUNNY & WARM

WORK LOCATION:
West Point, NY

PERSONNEL/AFFILIATION (PRINT)	SIGNATURE
BRIAN JUNCK - WESTON	
BRIAN GRASSMEYER - WESTON	
BRIAN GUTHRIE - WESTON	
Kim Churchill - WESTON	
Mark Saunders	

HEALTH AND SAFETY:

☒ Daily H&S Brief and Discussion
- Prior to work and as needed.

☒ UXO Safety Discussion
- Prior to work and as needed.

Discussion Topics:
HEAT STRESS, SUN TICK FORM, VEHICLE SAFETY

☒ Personnel Sign In ☐ Review Applicable SOPs ☒ Phone/Radio Check ☐ Wetland Issues ☐ First Aid Kit ☐ Fire Prevention Equipment ☐ Issues / Injuries

Daily Site Progress Report

MMRP RI - US Army Garrison – West Point

CONTRACT NO. / D.O. NO.:	WORK ORDER NO.:	DATE / TIME ON AND OFF SITE
W912DR-09-D-0006	03886.551.001	06/08/2011 0430 - 1500

WEATHER/TEMPERATURE: Sunny and hot 94 high/75 Low °F

WORK LOCATION: West Point, NY

WORK COMPLETED:

- ☐ Surveyor activities.
- ☒ Mag and Dig activities).
- ☐ DGM activities (List grids).
- ☒ Reacquisition of DGM anomaly targets (List grids).
- ☐ Grid QC List (List completed grids).
- ☐ Grid QA (CENAB-List completed grids).
- ☐ Munitions Constituents Sampling.
- ☐ UXO Technician Escort activities.
- ☐ Equipment Transport (mob/demob to/from site-List).
- ☐ Equipment Maintenance
- ☐ Equipment Issues (List below).
- ☐ _____

Comments:

MATERIALS DELIVERED (Amount, Condition, and Purpose):
None

PROBLEMS/RESOLUTIONS:
None

DATA TRACKING:

DGM Grids Reacquired: MS-01 (partially complete)

Mag and Dig Transects: Lusk Reservoir: LR-T04 (1400' surveyed)

Mag and Dig Grids: None today

Comments: Megan Garrett (USACE) was onsite in the AM to observe anomaly reacquisition procedures

FURTHER DISCUSSION (List Topic and Comment):

Planned activities for 06/09/11: Continue DGM reacquisition in Michie Stadium MRS, grid MS-01.

PREPARED BY:	SIGNATURE:
Brian Junck – Site Geophysicist	

Geophysical Technicians setting up survey equipment for anomaly reacquisition in grid MS-01 in Michie Stadium MRS.

UXO Technicians investigating an anomaly at grid MS-01 in Michie Stadium MRS.

Munitions debris recovered from grid MS-02 in Michie Stadium MRS.

Munitions debris recovered from grid MS-02 in Michie Stadium MRS

Daily UXO SUXOS Site Report

CONTRACT NO. / REQ. NO.:W912DR-09-D-0006 Delivery Order: 0001

DATE: 08June 2011

WORK LOCATION: West Point, NY (MMRP Remedial Investigation)

WORK COMPLETED:

- ☒ Mag and Dig activities.
- ☐ Survey work.
- ☐ Brush clearing.
- ☐ Grid QC List.
- ☐ Grid QA (CENAB).
- ☐ UXO Technician Escort activities.
- ☐ Magazine secured
- ☐ Equipment Maintenance
- ☐ Reacquire Anomaly
- ☒ Safety briefing given

Comments:

PROBLEMS/RESOLUTIONS:

DAILY ACTIVITIES:

Total Number of grids completed MRS : Partial Grid MS-02 (50% complete). Partial Grid MS-01 (10% completed).

Total Transect completed MRS: Lusk Reservoir Transects– LR-T05 completed. Total area cleared – 1,400 ft.

Cultural Debris, Munitions Debris, and UXO:
CD: 26 lbs
MD: 2 lbs (2 pieces of frag and 1end cap of a 3' Stokes Mortar) (Total: 3 pieces of MD)
UXO: 0

Total Number of Areas QC / QA (List Areas):

UXO items located: None

UXO Daily Total: None

Remarks:

Start-up Work completed:
Teams filled 100 sandbags to be used for future demo operations.
DGM MS-01; 122 anomalies pin flagged by GEO team. 55 anomalies still require pin flags.

Team 1: Brian Addison, Chris George, Donald Koetje, Cindy Grassmyer

Team 2: Terry Wilson, Roger Perkins

Geo Team: Brian Junck, Paul Novak

PREPARED BY:	**SIGNATURE:**
Brian Grassmyer	

Daily Health & Safety Report

General Information:

MMRP Remedial Investigation, West Point, NY **Report #3** **Date: 6/8/2011**
Contract #: W912DR-09-D-006 **Delivery Order: 0001**
Start Time: 0430 **End Time: 1500**
Project Manager:John Gerhard

Weather Conditions:

High Temp: 94	**Low Tem: 75**		**Precipitation:** None	**Lightning:** None
Winds: Light	**Sunrise: 0523**	**Sunset: 2027**	**Humidity: 50%**	

Site Personnel:

SUXOS:	**UXOSO/UXOSQC:**
Brian Grassmyer	**Bruce Carnal**

Detail Of Daily Events:

Daily safety brief given by UXOSO. Topics covered are APP for Field House and Lusk Resevoir to coincide again with work on Field House/Stadium and Lusk Reservoir transects. Marking on Field House/Stadium second portion started. Sand bags filled for anticipated demo work.

Repeater set up and functioning.

I CERTIFY THAT THE ABOVE REPORT IS COMPLETE, CORRECT AND IN STRICT COMPLIANCE WITH THE SPECIFIC HEALTH AND SAFETY PLAN.

UXO Safety Officer

Safety Meeting Attendance Log

Date:	6/8/2011	Time:	0430	Contract Number:	W912DR-09-D-0006
Delivery Order Number:	0001	Location:	West Point, New York		
Weather Conditions:	Temp: 75 High: 94 Sunrise: 5:23 Sunset: 8:27 Humidity: 50% (approx)				

I. Safety Meeting Topic (Briefly describe):	APP in association with Field House and Lusk Reservoir transects again. Exclusion areas for both. Traffic issues with field house addressed. SPEED ON BASE. VT FUZES,

II. Attendees:	

Name	Signature	Company
Elbert Caraballo	Elbert A Caraballo	USACE Baltimore
John Gerhard		Weston
Brian Grassmyer		Weston
Brian Junck		Weston
Paul Novak		Weston
Bruce Carnal		Weston
Brian Addison		Weston
Terry Wilson		Weston
Roger Perkins		Weston
Chris George		Weston
Donald Koetje		Weston
Cindy Grassmyer		Weston
MEGAN GARRETT		US ARMY CORPS OF ENGINEERS

Daily Site Progress Report

MMRP RI - US Army Garrison – West Point

CONTRACT NO. / D.O. NO.:	WORK ORDER NO.:	DATE / TIME ON AND OFF SITE
W912DR-09-D-0006	03886.551.001	06/09/2011 0430 - 1500

WEATHER/TEMPERATURE: Sunny and hot 94 high/75 Low °F

WORK LOCATION: West Point, NY

WORK COMPLETED:

- ☐ Surveyor activities.
- ☒ Mag and Dig activities).
- ☐ DGM activities (List grids).
- ☒ Reacquisition of DGM anomaly targets (List grids).
- ☐ Grid QC List (List completed grids).
- ☐ Grid QA (CENAB-List completed grids).
- ☐ Munitions Constituents Sampling.
- ☐ UXO Technician Escort activities.
- ☐ Equipment Transport (mob/demob to/from site-List).
- ☐ Equipment Maintenance
- ☐ Equipment Issues (List below).
- ☐ _____

Comments:

MATERIALS DELIVERED (Amount, Condition, and Purpose):
None

PROBLEMS/RESOLUTIONS:
None

DATA TRACKING:

DGM Grids Reacquired: MS-01

Mag and Dig Transects: None today

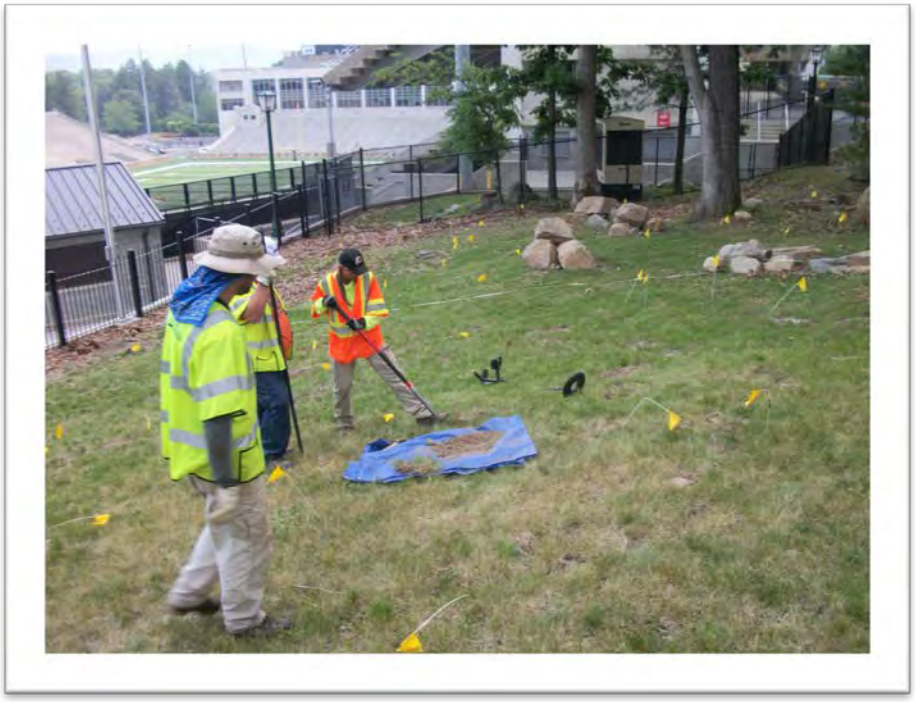
Mag and Dig Grids: None today

Comments:
Team recovered 1ea 3" stokes training mortar (unfuzed) from grid MS-01 in Michie Stadium MRS. Army EOD (Ft Drum) responded and took possession of the item.

FURTHER DISCUSSION (List Topic and Comment):

Planned activities for 06/10/11: Continue intrusive investigation in Michie Stadium MRS, grid MS-01, and mag and dig transects in Lusk Reservoir MRS..

PREPARED BY:	SIGNATURE:
Brian Junck – Site Geophysicist	



UXO Technicians investigating an anomaly at grid MS-01 in Michie Stadium MRS.

3" Stokes training mortar (unfuzed) recovered from grid MS-01 in Michie Stadium MRS.

Army EOD (Ft Drum) responding to take possession of the 3” stokes training mortar

3” stokes mortar tail boom (munitions debris) recovered from grid MS-02 in Michie Stadium MRS

Daily UXO SUXOS Site Report

CONTRACT NO. / REQ. NO.:W912DR-09-D-0006 Delivery Order: 0001	DATE: 09June 2011

WORK LOCATION: West Point, NY (MMRP Remedial Investigation)

WORK COMPLETED:

- ☒ Mag and Dig activities.
- ☐ Survey work.
- ☐ Brush clearing.
- ☐ Grid QC List.
- ☐ Grid QA (CENAB).
- ☐ UXO Technician Escort activities.
- ☐ Magazine secured
- ☐ Equipment Maintenance
- ☒ Reacquire Anomaly
- ☒ Safety briefing given

Comments:

PROBLEMS/RESOLUTIONS:

DAILY ACTIVITIES:

Total Number of grids completed MRS : Grid MS-02 (100% complete). Partial Grid MS-01 (69% completed).

Total Transect completed MRS:. None

Cultural Debris, Munitions Debris, and UXO:

CD: 67 lbs

MD: 4 lbs (4 pieces of frag) (Total: 4 pieces of MD)

UXO: 1

Total Number of Areas QC / QA (List Areas): None

UXO items located: 1 ea 3" Stokes Training Mortar

UXO Daily Total: 1

Remarks:

Mag and Dig teams located a 3" Stokes Mortar in Michie Stadium grid (MS-01) on target flag 28. Munitions item was unfuzed and fired. Followed notification process from Work Plan and Explosive Site Plan. After, further research and discussion with West Point staff a mutual decision was made by SUXO, OESS, UXOSO, and Mr. Jeff Sanborn (DPW-EMD) to have Army EOD respond to the site. Army EOD (Fort Drum) was notified by Mr. Jeff Sandborn (DPW-EMD) through West Point protocol. Army EOD (Fort Drum) arrived on site and declared munitions item a 3" Stokes Training Mortar. Army EOD transported munitions item to range for disposal.

GEO Team reacquired targets in MS-01

Team 1: Brian Addison, Chris George, Donald Koetje, Cindy Grassmyer

Team 2: Terry Wilson, Roger Perkins

Geo Team: Brian Junck, Paul Novak

PREPARED BY:	SIGNATURE:
Brian Grassmyer	Brian K Grassmyer

Weston Solutions, Inc. (Weston) SUXOS Timeline Report

Location: Michie Stadium (DGM MS-01), U.S. Army Garrison – West Point, West Point, NY

Date: 09Jun11 **Time:** 0831

0831 – Brian Grassmyer (Weston SUXOS) received phone call from Bruce Carnal (UXOSO) concerning suspect UXO item. Further investigation by the UXOSO, indicated a 3″ Stokes Mortar unfuzed, and fired.

0831 – SUXOS notified Elbert Caraballo (OESS).

0831 – SUXOS and OESS discussed the munitions item and did some publication research.

0836 – OESS notified Paul Greene.

0845 – OESS and Weston SUXOS in route to Michie Stadium (DGM MS-01).

0850 – OESS and Weston SUXOS arrive at Michie Stadium (DGM MS-01), and OESS notifies and briefs Tom Meyer (CENAB Project Manager).

0853 – UXOSO secured grid work in Michie Stadium (DGM MS-01). SUXOS, OESS, and UXOSO entered DGM MS-01 and confirmed munitions item as 3″ Stokes Mortar as unfuzed and fired.

0856 – OESS notifies Jeff Sanborn (DPW-EMD) and briefs Mr. Sanborn as to the munitions item description and location.

0900- Keith Katz (West Point Base Safety) arrived on site. OESS briefed Mr. Katz and escorted Mr. Katz into grid to observe munitions item.

0905 – Base Security arrived on site at Michie Stadium (DGM MS-01). Security was briefed by SUXOS and OESS.

0910 – Mr. Sanborn arrived on site at Michie Stadium (DGM MS-01). SUXOS, OESS, and UXOSO briefed Mr. Sanborn as to the type, and condition of munitions item. Afterwards, members discussed best approach to least impact the Garrison. Due to the items proximity to structures, it was decided to contact Army EOD to move the item. A mutual decision was made by Weston SUXOS and UXOSO, USACE OESS Mr. Caraballo, and Mr. Sanborn West Point (DPW-EMD) to call in military Army EOD support to remove and transport the munitions item to the range for disposal. Mr. Sanborn activated West Point protocol and notified Range Control to deploy Army EOD.

0950 – Army EOD (Fort Drum) arrived on site at Michie Stadium (DGM Grid MS-01). SUXOS, OESS, and UXOSO briefed the Army EOD (Fort Drum) as to type and condition of munitions item. Army EOD (Fort Drum) determined munitions item as a 3″ Stokes Training Mortar.

1015 – Army EOD (Fort Drum) transported the item off site. They plan to detonate the item in the range area and will provide a report to U.S. Army Corps of Engineer (USACE).

Personnel:

Brian Grassmyer (Weston SUXOS)

Bruce Carnal (Weston UXOSO)

Elbert Caraballo (USACE OESS)

Mr. Paul Greene (CENAB OESS)

Mr. Tom Meyer (CENAB Project Manager)

Mr. Jeff Sanborn (West Point DPW-EMD)

Mr. Keith Katz (West Point Base Safety)

Mr. John Gerhard (Weston Project Manager

Army EOD (Fort Drum) Staff Sergeant Burris

Daily Health & Safety Report

General Information:

MMRP Remedial Investigation, West Point, NY **Report #4** **Date: 6/9/2011**
Contract #: W912DR-09-D-006 **Delivery Order: 0001**
Start Time: 0430 **End Time: 1500**
Project Manager: John Gerhard

Weather Conditions:

High Temp: 95 **Low Tem: 73** **Precipitation:** None **Lightning:** None
Winds: Light **Sunrise: 0523** **Sunset: 2027** **Humidity: 55%**

Site Personnel:

SUXOS: **Brian Grassmyer**
UXOSO/UXOSQC: **Bruce Carnal**

Detail Of Daily Events:

Safey meeting given by UXOSO covered APP for MC-02 and MC-01, heat conditions and bears, which had been sighted in the area. MC-02 completed. UXO found in MC-01 and is stated in SUXOS report. Work continued on MC-01.

I CERTIFY THAT THE ABOVE REPORT IS COMPLETE, CORRECT AND IN STRICT COMPLIANCE WITH THE SPECIFIC HEALTH AND SAFETY PLAN.

UXO Safety Officer

Safety Meeting Attendance Log

Date:	6/9/2011	Time:	0430	Contract Number:	W912DR-09-D-0006
Delivery Order Number:	0001	Location:	West Point, New York		
Weather Conditions:	Temp: 69 High: 94 Sunrise: 5:23 Sunset: 8:27 Humidity: 55% (approx)				

I. Safety Meeting Topic (Briefly describe):	APP in association with Field House/Stadium and Lusk Reservoir transects again. Exclusion areas for both. Bear sitings addressed. Thunder storms possible in PM and lightning safety addressed.

II. Attendees:	

Name	Signature	Company
Elbert Caraballo		USACE Baltimore
John Gerhard		Weston
Brian Grassmyer		Weston
Brian Junck		Weston
Paul Novak		Weston
Bruce Carnal		Weston
Brian Addison		Weston
Terry Wilson		Weston
Roger Perkins		Weston
Chris George		Weston
Donald Koetje		Weston
Cindy Grassmyer		Weston

Daily Site Progress Report

MMRP RI - US Army Garrison – West Point

CONTRACT NO. / D.O. NO.:	WORK ORDER NO.:	DATE / TIME ON AND OFF SITE
W912DR-09-D-0006	03886.551.001	06/10/2011 0430 - 1500

WEATHER/TEMPERATURE: Sunny and warm 85 high/69 Low °F

WORK LOCATION: West Point, NY

WORK COMPLETED:

- ☐ Surveyor activities.
- ☒ Mag and Dig activities).
- ☒ DGM activities (List grids).
- ☒ Reacquisition of DGM anomaly targets (List grids).
- ☒ Grid QC List (List completed grids).
- ☒ Grid QA (CENAB-List completed grids).
- ☐ Munitions Constituents Sampling.
- ☐ UXO Technician Escort activities.
- ☐ Equipment Transport (mob/demob to/from site-List).
- ☐ Equipment Maintenance
- ☐ Equipment Issues (List below).
- ☐ _____

Comments: Grid QA/QC was performed on grid MS-02

MATERIALS DELIVERED (Amount, Condition, and Purpose):
None

PROBLEMS/RESOLUTIONS:
None

DATA TRACKING:

DGM Grids Reacquired: MS-01 (100% complete)

Mag and Dig Transects: Lusk Reservoir: LR-T02 (450' surveyed), LR-T03 (850' surveyed), LR-T04 (850' surveyed)

Mag and Dig Grids: None today

Comments:
Geo team collected DGM data at grid TH-04 in Target Hill MRS

FURTHER DISCUSSION (List Topic and Comment):

Planned activities for 06/13/11: Begin intrusive investigation in North Athletic Field MRS, grid MS-01, and continue mag and dig transects in Lusk Reservoir MRS.

PREPARED BY:	SIGNATURE:
Brian Junck – Site Geophysicist	

Grid MS-01 in Michie Stadium MRS.

Cultural debris recovered from grid MS-01 in Michie Stadium MRS.

Geophysical Technician re-establishing survey control near Target Hill and North Athletic Field MRS

Daily UXO SUXOS Site Report

CONTRACT NO. / REQ. NO.:W912DR-09-D-0006 Delivery Order: 0001 | **DATE: 10June 2011**

WORK LOCATION: West Point, NY (MMRP Remedial Investigation)

WORK COMPLETED:

- ☒ Mag and Dig activities.
- ☐ Survey work.
- ☐ Brush clearing.
- ☒ Grid QC List.
- ☐ Grid QA (CENAB).
- ☐ UXO Technician Escort activities.
- ☐ Magazine secured
- ☐ Equipment Maintenance
- ☒ Reacquire Anomaly
- ☒ Safety briefing given

Comments:

PROBLEMS/RESOLUTIONS:

DAILY ACTIVITIES:

Total Number of grids completed MRS : Grid MS-01 (100% completed).

Total Transect completed MRS: Lusk Reservoir Transects – LR-T02 (450 ft); LR-T03 (850 ft); LR-T04 (850 ft). Total area cleared 2,150 ft.

Cultural Debris, Munitions Debris, and UXO:

Grid CD: 30 lbs	**Transect CD:** 12 lbs
Grid MD: 0 lbs	**Transect MD:** 0 lbs
Grid UXO: 0	**Transect UXO:** 0

Total Number of Areas QC / QA (List Areas): MS-02

UXO items located: None

UXO Daily Total: None

Remarks:

GEO Team collected DGM data in TH-04.

Team 1: Brian Addison, Chris George, Donald Koetje, Cindy Grassmyer

Team 2: Terry Wilson, Roger Perkins

Geo Team: Brian Junck, Paul Novak

PREPARED BY:
Brian Grassmyer

SIGNATURE:
Brian Grassmyer

Daily Health & Safety Report

General Information:

MMRP Remedial Investigation, West Point, NY **Report #5** **Date: 6/10/2011**
Contract #: W912DR-09-D-006 **Delivery Order: 0001**
Start Time: 0430 **End Time: 1500**
Project Manager: John Gerhard

Weather Conditions:

High Temp: 85	**Low Tem: 69**		**Precipitation:** None	**Lightning:** None
Winds: Light	**Sunrise: 0522**	**Sunset: 2028**	**Humidity: 60%**	

Site Personnel:

SUXOS:	**UXOSO/UXOSQC:**
Brian Grassmyer	**Bruce Carnal**

Detail Of Daily Events:

Daily safety meeting given by UXOSO. Topics covered were heat casualty recognition, response and first aid. Also covered were actions in case of thunderstorms, safe driving, alcohol and the weekend and how they don't combine. A review of the 3" Stokes mortar Mk I & II HE and the Mk III sand fille practice covered.

Performmed QC of MS-02 and also observed CEO Representative perform his QA on it and told it passed.

Observed Teams 1 & 2 in MS-01 and ensured that site control and exclusion areas were adheared to. Teams working proficiently and keeping to the safety guidelines.

MS-01 Completed and QC will be done on Monday.

I CERTIFY THAT THE ABOVE REPORT IS COMPLETE, CORRECT AND IN STRICT COMPLIANCE WITH THE SPECIFIC HEALTH AND SAFETY PLAN.

UXO Safety Officer

Safety Meeting Attendance Log

Date:	6/10/2011	Time:	0430	Contract Number:	W912DR-09-D-0006
Delivery Order Number:	0001	Location:	West Point, New York		
Weather Conditions:	Temp: 65 High: 82-86 Sunrise: 5:22 Sunset: 8:28 Humidity: 65-70% (approx)				

I. Safety Meeting Topic (Briefly describe):	Heat casualty recognition, response and first aid. Actions in case of thunderstorms. Safe driving, alcohol and the weekend. Review of 3" Stokes Mortar Mk I, II, III

II. Attendees:	

Name	Signature	Company
Elbert Caraballo		USACE Baltimore
John Gerhard		Weston
Brian Grassmyer		Weston
Brian Junck		Weston
Paul Novak		Weston
Bruce Carnal		Weston
Brian Addison		Weston
Terry Wilson		Weston
Roger Perkins		Weston
Chris George		Weston
Donald Koetje		Weston
Cindy Grassmyer		Weston

Daily UXO QC Site Report

West Point, NY

CONTRACT NO. / D.O. NO.:		DATE:
W912DR-09-0006		6/10/11

WORK LOCATION: MS-02

WORK COMPLETED:

- ☑ Mag and Dig activities.
- ☑ Grid QC List (List Grids).
- ☑ Grid QA (CENAB-List Grids)
- ☑ Observed sweeping procedures
- ☐ UXO Technician Escort activities.
- ☐ GPO prove out of equipment
- ☑ Equipment Maintenance
- ☑ Equipment QC

Comments: MS-02 done with QC/QA. MS-01 done with QC on Monday.

PROBLEMS/RESOLUTIONS:

No problems encountered.

DAILY ACTIVITIES:

Total Number Grids QC (List Grids): MS-02.

Total Number of Excavation Areas QA (List Grids): MS-02

Equipment QC (List Equipment): White XLT

Equipment maintenance (list equipment): White XLT performed IVS

Comments: Passed QC an QA.

PREPARED BY:	SIGNATURE:
Bruce A. Carnal	

APPENDIX F

DOD FORM 1348-1A

MPPEH residue, Range Residue, and/or Explosive Contaminated Property

Number 9 of 12

GENERAL

1. Generator's Name and Mailing Address
Weston Solutions, 4 Ordnance Rd, USMA West Point, NY 10996

1a. Generator's Phone # (502) 664-7926

2. Generator's Project Location
West Point MMRP RI Contract No. W912DR-09-D0006

2a. Project Phone # (845) 839-0621

3. Transporter 1 Name and Mailing Address
USMA Recycling Center

3a. Transporter 1 phone # (845) 938-4281

4. Transporter 2 Name and Mailing Address
N/A

4a. Transporter 2 phone # ( )

5. Qualified Recycler (QR) Name and Mailing Address
N/A

5a. QR phone # ( )

5b. QR Identification #

GENERATOR

6. Security Seal #	7. Gross Wt. Lbs/Kgs	8. Tare Wt. Lbs/Kgs	9. Net Wt. Lbs/Kgs	10. Weight Ticket #
1832951/52/55/56/59/60	43100Lbs			

11. Description	12. Material	13. Quantity	14. Units (Wt., Vol)
Barrels containing Munitions Debris from West Point MMRP/RI. No MEC or MC in barrels.	Munitions Debris	3	55 gal Drum

FREE FROM EXPLOSIVES CERTIFICATION

This certifies and verifies that the MPPEH residue, Range Residue, and/or Explosive Contaminated Property listed has been 200 percent properly inspected and to the best of our knowledge and belief, is free of explosive hazards.

15. Inspector 1

Printed/Typed Name	Signature	Month Day Year
Brian Grassmyer	Brian Grassmyer	08 12 13

16. Inspector 2

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	08 23 11

17. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	08 23 11

DEMILITERIZATION CERTIFICATION

I certify that each item or items listed hereon were demilitarized in accordance with ECC/FACT Standard Operating Procedures used to inspect scrap ordnance and range, DoD 4160.21-M-1 and other applicable regulations.

18. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	08 23 11

TRANSPORTER

19. Transporter 1 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
CARL Iagrosse	Carl Iagrosse	08 23 11

20. Transporter 2 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

QUALIFIED RECYCLER

21. Discrepancy Indication Space

N/A

22. Qualified Recycler Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

23. Qualified Recycler Certification of Consumption	24. Final Disposition of Material
N/A	N/A

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

PREVIOUS EDITION MAY BE USED

1	2	3	4	5	6	7	23	24	25	26	27	28	29	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
DOC	IDENT		RI FROM			M&S	UNIT		ISS		QUANTITY			SMR	SUPPLEMENTARY ADDRESS				SIG	FUND		DISTRIBUTION			PROJECT			PRI		REQD	DEL	DATE	ADV		RI			O/P	COND	MGT										

UNIT PRICE DOLLARS	CTS	1. TOTAL PRICE DOLLARS	CTS	2. SHIP FROM	3. SHIP TO
				Weston Solutions Office	USMA Recycling Center
				4. MARK FOR	

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS
082311				

10. QTY. REC'D	11.UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL
3					

24. DOCUMENT NUMBER & SUFFIX (30-44)

Weston Solutions
4 Ordnance Road
USMA West Point, NY 10996
West Point MMRP/RI
Contract No. W912DR-09-D0006
Delivery Order No. 0001

16. FREIGHT CLASSIFICATION NOMENCLATURE

17. ITEM NOMENCLATURE
Munitions Debris

25. NATIONAL STOCK NO. & ADD (8-22)

MUNITIONS DEBRIS

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE
	6	4300 LBS	

22. RECEIVED BY	23. DATE RECEIVED
Cho Iqua	0825-11

26. RIC (4-6)
UI (23-24)
QTY (25-29)
CON CODE (71)
DIST (55-56)
UP (74-80)

(3) 55 gal drums containing Munitions Debris. No Munitions of Explosive Concern (MEC) or Munitions Constituents (MC) .are contained within.
(3) 55 gal drums containing steel/iron scrap having no MD/MEC/MC.

27. ADDITIONAL DATA

This certifies and verifies that the material listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials.

Brian Grassmyer, Senior UXO Supervisor

Bruce A. Carnal, UXO Safety/Quality Control Officer

Adobe Designer 7.0

MPPEH residue, Range Residue, and/or Explosive Contaminated Property

Number 6/12

GENERAL

1. Generator's Name and Mailing Address
Weston Solutions, 4 Ordnance Rd, USMA West Point, NY 10996

1a. Generator's Phone #
(502) 664-7926

2. Generator's Project Location
West Point MMRP RI Contract No. W912DR-09-D0006

2a. Project Phone #
(845) 839-0621

3. Transporter 1 Name and Mailing Address
USMA Museum (Les Jenkins)

3a. Transporter 1 phone #
(845) 938-7339

4. Transporter 2 Name and Mailing Address
N/A

4a. Transporter 2 phone #
( )

5. Qualified Recycler (QR) Name and Mailing Address
N/A

5a. QR phone #
( )

5b. QR Identification #

GENERATOR

6. Security Seal #	7. Gross Wt. Lbs/Kgs	8. Tare Wt. Lbs/Kgs	9. Net Wt. Lbs/Kgs	10. Weight Ticket #

11. Description	12. Material	13. Quantity	14. Units (Wt., Vol)
8" Butler Cored Shot fragments of full round	Munitions Debris	1	180 lbs
10" Parrot Chilled Shot (Bottle Nosed Bolt)	Munitions Debris	1	223 lbs
24 Pdr Solid Shot	Munitions Debris	1	24 lbs
5.3" Parrot Chilled Shot (Bottle Nosed Bolt(	Munitions Debris	1	51 lbs

FREE FROM EXPLOSIVES CERTIFICATION

This certifies and verifies that the MPPEH residue, Range Residue, and/or Explosive Contaminated Property listed has been 200 percent properly inspected and to the best of our knowledge and belief, is free of explosive hazards.

15. Inspector 1

Printed/Typed Name	Signature	Month Day Year
Brian Grassmyer	Brian K Grassmyer	08 01 4 2011

16. Inspector 2

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	08 05 11

17. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	08 05 11

DEMILITERIZATION CERTIFICATION

I certify that each item or items listed hereon were demilitarized in accordance with ECC/FACT Standard Operating Procedures used to inspect scrap ordnance and range, DoD 4160.21-M-1 and other applicable regulations.

18. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	08 05 11

TRANSPORTER

19. Transporter 1 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
Leslie D Jenson		08 05 11

20. Transporter 2 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

QUALIFIED RECYCLER

21. Discrepancy Indication Space

N/A

22. Qualified Recycler Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

23. Qualified Recycler Certification of Consumption
N/A

24. Final Disposition of Material
N/A

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

PREVIOUS EDITION MAY BE USED

DOC IDENT	RI FROM	M&S	UNIT ISS	QUANTITY	SER	SUPPLEMENTARY ADDRESS	SIG	FUND	DISTRIBUTION	PROJECT	PRI	REQD	DELDATE	ADV	RI	O/P	CONDMGT	UNIT PRICE DOLLARS	UNIT PRICE CTS	1. TOTAL PRICE DOLLARS	1. TOTAL PRICE CTS

2. SHIP FROM	3. SHIP TO
Weston Solutions Office	USMA Museum

4. MARK FOR

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS
072911				

10. QTY. REC'D	11.UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL
4					

24. DOCUMENT NUMBER & SUFFIX (30-44)

Weston Solutions
4 Ordnance Road
USMA West Point, NY 10996
West Point MMRP/RI
Contract No. W912DR-09-D0006
Delivery Order No. 0001

16. FREIGHT CLASSIFICATION NOMENCLATURE

17. ITEM NOMENCLATURE

Munitions Debris

25. NATIONAL STOCK NO. & ADD (8-22)

MUNITIONS DEBRIS

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE

22. RECEIVED BY

23. DATE RECEIVED 8/5/11

26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)

8" Butler Cored Shot Fragments of Full Round	QTY: 1
10" Parrot Chilled Shot (Bottle Nosed Bolt)	QTY: 1
5.3" Parrot Chilled Shot (Bottle Nosed Bolt)	QTY: 1
24 Pdr Round Solid Shot	QTY: 1

27. ADDITIONAL DATA

This certifies and verifies that the material listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials.

Brian Grassmyer, Senior UXO Supervisor

Bruce A. Carnal, UXO Safety/Quality Control Officer

Adobe Designer 7.0

MPPEH residue, Range Residue, and/or Explosive Contaminated Property

Number 5

GENERAL

1. Generator's Name and Mailing Address
Weston Solutions, 4 Ordnance Rd, USMA West Point, NY 10996

1a. Generator's Phone # (502) 664-7926

2. Generator's Project Location
West Point MMRP RI Contract No. W912DR-09-D0006

2a. Project Phone # (845) 839-0621

3. Transporter 1 Name and Mailing Address
USMA Range Control (Andrew Felo)

3a. Transporter 1 phone # (845) 938-3930

4. Transporter 2 Name and Mailing Address
N/A

4a. Transporter 2 phone # ( )

5. Qualified Recycler (QR) Name and Mailing Address
N/A

5a. QR phone # ( )

5b. QR Identification #

GENERATOR

6. Security Seal #	7. Gross Wt. Lbs/Kgs	8. Tare Wt. Lbs/Kgs	9. Net Wt. Lbs/Kgs	10. Weight Ticket #

11. Description	12. Material	13. Quantity	14. Units (Wt., Vol)
3" Stokes Mortar, Fired/Empty (originally sand filled)	Munitions Debris	1	10 Lbs

FREE FROM EXPLOSIVES CERTIFICATION

This certifies and verifies that the MPPEH residue, Range Residue, and/or Explosive Contaminated Property listed has been 200 percent properly inspected and to the best of our knowledge and belief, is free of explosive hazards.

15. Inspector 1

Printed/Typed Name	Signature	Month Day Year
Brian Grassmyer	Brian R Grassmyer	07 29 2011

16. Inspector 2

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	07 29 11

17. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	07 29 11

DEMILITERIZATION CERTIFICATION

I certify that each item or items listed hereon were demilitarized in accordance with ECC/FACT Standard Operating Procedures used to inspect scrap ordnance and range, DoD 4160.21-M-1 and other applicable regulations.

18. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	07 29 11

TRANSPORTER

19. Transporter 1 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
Andrew R. Felo	Andrew R. Felo	07 29 11

20. Transporter 2 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

QUALIFIED RECYCLER

21. Discrepancy Indication Space

N/A

22. Qualified Recycler Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

23. Qualified Recycler Certification of Consumption	24. Final Disposition of Material
N/A	N/A

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

PREVIOUS EDITION MAY BE USED

1 2 3 4 5 6 7	23 24 25 26 27 28 29	45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	1. TOTAL PRICE	2. SHIP FROM	3. SHIP TO
DOC IDENT / RI FROM / M&S	UNIT / ISS / QUANTITY	SER / SUPPLEMENTARY ADDRESS / SIG / FUND / DISTRIBUTION / PROJECT / PRI / REQD / DEL / DATE / ADV / RI / O/P / COND / MGT	UNIT PRICE DOLLARS CTS / DOLLARS / CTS	Weston Solutions Office	USMA Range Control
				4. MARK FOR	

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS
072911				

10. QTY. REC'D	11. UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL
1					

16. FREIGHT CLASSIFICATION NOMENCLATURE

17. ITEM NOMENCLATURE
Munitions Debris

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE

22. RECEIVED BY

23. DATE RECEIVED
07/29/11

24. DOCUMENT NUMBER & SUFFIX (30-44)

Weston Solutions
4 Ordnance Road
USMA West Point, NY 10996
West Point MMRP/RI
Contract No. W912DR-09-D0006
Delivery Order No. 0001

25. NATIONAL STOCK NO. & ADD (8-22)

MUNITIONS DEBRIS

26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)

3" Stokes Mortar, Fired/Empty QTY: 1

27. ADDITIONAL DATA

This certifies and verifies that the material listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials.

Brian Grassmyer, Senior UXO Supervisor

Bruce A. Carnal, UXO Safety/Quality Control Officer

Adobe Designer 7.0

MPPEH residue, Range Residue, and/or Explosive Contaminated Property

Number 4

GENERAL

1. Generator's Name and Mailing Address
Weston Solutions, 4 Ordnance Rd, USMA West Point, NY 10996

1a. Generator's Phone #
(502) 664-7926

2. Generator's Project Location
West Point MMRP RI Contract No. W912DR-09-D0006

2a. Project Phone #
(845) 839-0621

3. Transporter 1 Name and Mailing Address
USMA Museum (Les Jenkins)

3a. Transporter 1 phone #
(845) 938-7339

4. Transporter 2 Name and Mailing Address
N/A

4a. Transporter 2 phone #
( )

5. Qualified Recycler (QR) Name and Mailing Address
N/A

5a. QR phone #
( )

5b. QR Identification #

GENERATOR

6. Security Seal #	7. Gross Wt. Lbs/Kgs	8. Tare Wt. Lbs/Kgs	9. Net Wt. Lbs/Kgs	10. Weight Ticket #

11. Description	12. Material	13. Quantity	14. Units (Wt., Vol)
Revolutionary War 4 (?) Pdr French Solid Shot	Munitions Debris	1	4 lbs
WW I US Mk I Hand Grenade Body	Munitions Debris	1	2 lbs
WW I US Mk II Hand Grenade Body	Munitions Debris	1	2 lbs
WW I French F-1 Hand Grenade Body	Munitions Debris	1	2 lbs

FREE FROM EXPLOSIVES CERTIFICATION

This certifies and verifies that the MPPEH residue, Range Residue, and/or Explosive Contaminated Property listed has been 200 percent properly inspected and to the best of our knowledge and belief, is free of explosive hazards.

15. Inspector 1

Printed/Typed Name	Signature	Month Day Year
Brian Grassmyer	Brian Grassmyer	07 29 2011

16. Inspector 2

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	07 29 11

17. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	07 29 11

DEMILITERIZATION CERTIFICATION

I certify that each item or items listed hereon were demilitarized in accordance with ECC/FACT Standard Operating Procedures used to inspect scrap ordnance and range, DoD 4160.21-M-1 and other applicable regulations.

18. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	07 29 11

TRANSPORTER

19. Transporter 1 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
Les Jensen	Les Jensen	08 03 11

20. Transporter 2 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

QUALIFIED RECYCLER

21. Discrepancy Indication Space

N/A

22. Qualified Recycler Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

23. Qualified Recycler Certification of Consumption	24. Final Disposition of Material
N/A	N/A

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

MPPEH residue, Range Residue, and/or Explosive Contaminated Property

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

PREVIOUS EDITION MAY BE USED

1	2	3	4	5	6	7	23	24	25	26	27	28	29	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
DOC	IDENT			RI FROM		M&S	UNIT		ISS	QUANTITY				SER	SUPPLE-MENTARY ADDRESS				SIG	FUND	DIS-TRI-BU-TION		PRO-JECT		PRI	REQD	DEL	DATE	ADV		RI		O/P	COND	MGT	UNIT PRICE DOLLARS	CTS	1. TOTAL PRICE DOLLARS	CTS	2. SHIP FROM Weston Solutions Office						3. SHIP TO USMA Museum			

4. MARK FOR

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS
072911				

10. QTY. REC'D	11.UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL
4					

16. FREIGHT CLASSIFICATION NOMENCLATURE

17. ITEM NOMENCLATURE

Munitions Debris

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE

22. RECEIVED BY

23. DATE RECEIVED 8/3/11

24. DOCUMENT NUMBER & SUFFIX (30-44)

Weston Solutions
4 Ordnance Road
USMA West Point, NY 10996
West Point MMRP/RI
Contract No. W912DR-09-D0006
Delivery Order No. 0001

25. NATIONAL STOCK NO. & ADD (8-22)

MUNITIONS DEBRIS

26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)

Revolutionary War 4 (?) pdr French Solid Shot	QTY: 1
WW I US Mk I Hand Grenade Body	QTY: 1
WW I US Mk II Hand Grenade Body	QTY: 1
WW I French F-1 Hand Grenade Body	QTY: 1

27. ADDITIONAL DATA

This certifies and verifies that the material listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials.

Brian Grassmyer, Senior UXO Supervisor

Bruce A. Carnal, UXO Safety/Quality Control Officer 07/29/11

Adobe Designer 7.0

MPPEH residue, Range Residue, and/or Explosive Contaminated Property

Number 3

GENERAL

1. Generator's Name and Mailing Address
Weston Solutions, 4 Ordnance Rd, USMA West Point, NY 10996

1a. Generator's Phone # (502) 664-7926

2. Generator's Project Location
West Point MMRP RI Contract No. W912DR-09-D0006

2a. Project Phone # (845) 839-0621

3. Transporter 1 Name and Mailing Address
USMA Museum (Les Jenkins)

3a. Transporter 1 phone # (845) 938-7339

4. Transporter 2 Name and Mailing Address
N/A

4a. Transporter 2 phone # ( )

5. Qualified Recycler (QR) Name and Mailing Address
N/A

5a. QR phone # ( )

5b. QR Identification #

GENERATOR

6. Security Seal #	7. Gross Wt. Lbs/Kgs	8. Tare Wt. Lbs/Kgs	9. Net Wt. Lbs/Kgs	10. Weight Ticket #

11. Description	12. Material	13. Quantity	14. Units (Wt., Vol)
Revolutionary War 6 Pdr Solid Shot	Munitions Debris	1	6 lbs
Butler 8" Cored Shot	Munitions Debris	1	182 lbs

FREE FROM EXPLOSIVES CERTIFICATION

This certifies and verifies that the MPPEH residue, Range Residue, and/or Explosive Contaminated Property listed has been 200 percent properly inspected and to the best of our knowledge and belief, is free of explosive hazards.

15. Inspector 1

Printed/Typed Name	Signature	Month Day Year
Brian Grassmyer	Brian R Grassmyer	07 15 2011

16. Inspector 2

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	07 13 11

17. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	07 13 11

DEMILITERIZATION CERTIFICATION

I certify that each item or items listed hereon were demilitarized in accordance with ECC/FACT Standard Operating Procedures used to inspect scrap ordnance and range, DoD 4160.21-M-1 and other applicable regulations.

18. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A Carnal	07 13 11

TRANSPORTER

19. Transporter 1 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
Les Jenson		07 13 11

20. Transporter 2 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

QUALIFIED RECYCLER

21. Discrepancy Indication Space

N/A

22. Qualified Recycler Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

23. Qualified Recycler Certification of Consumption
N/A

24. Final Disposition of Material
N/A

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

1 2 3 4 5 6 7	23 24 25 26 27 28 29	45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	1. TOTAL PRICE	2. SHIP FROM	3. SHIP TO
DOC IDENT / RI FROM / M&S	UNIT / ISS / QUANTITY	SER / SUPPLEMENTARY ADDRESS / SIG / FUND / DISTRIBUTION / PROJECT / PRI / REQD / DEL / DATE / ADV / RI / O/P / COND / MGT	UNIT PRICE DOLLARS CTS / DOLLARS / CTS	Weston Solutions Office	USMA Museum
				4. MARK FOR	

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS
071311				

10. QTY. REC'D	11.UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL
1					

16. FREIGHT CLASSIFICATION NOMENCLATURE

17. ITEM NOMENCLATURE
Munitions Debris

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE

22. RECEIVED BY

23. DATE RECEIVED
7/13/11

PREVIOUS EDITION MAY BE USED

24. DOCUMENT NUMBER & SUFFIX (30-44)

Weston Solutions
4 Ordnance Road
USMA West Point, NY 10996
West Point MMRP/RI
Contract No. W912DR-09-D0006
Delivery Order No. 0001

25. NATIONAL STOCK NO. & ADD (8-22)

MUNITIONS DEBRIS

26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)

Revolutionary War 6 pdr Solid Shot QTY: 1
Butler 8" Cored Shot QTY: 1

27. ADDITIONAL DATA

This certifies and verifies that the material listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials.

Brian Grassmyer, Senior UXO Supervisor

Bruce A. Carnal, UXO Safety/Quality Control Officer

Adobe Designer 7.0

MPPEH residue, Range Residue, and/or Explosive Contaminated Property

Number 1

GENERAL

1. Generator's Name and Mailing Address Weston Solutions, 4 Ordnance Rd, USMA West Point, NY 10996	1a. Generator's Phone # (502) 664-7926
2. Generator's Project Location West Point MMRP RI Contract No. W912DR-09-D0006	2a. Project Phone # (845) 839-0621
3. Transporter 1 Name and Mailing Address US Military Academy Museum, West Point, NY 10996	3a. Transporter 1 phone # (845) 938-7339
4. Transporter 2 Name and Mailing Address N/A	4a. Transporter 2 phone # ( )
5. Qualified Recycler (QR) Name and Mailing Address N/A	5a. QR phone # ( ) 5b. QR Identification #

GENERATOR

6. Security Seal #	7. Gross Wt. Lbs/Kgs	8. Tare Wt. Lbs/Kgs	9. Net Wt. Lbs/Kgs	10. Weight Ticket #

11. Description	12. Material	13. Quantity	14. Units (Wt., Vol)
Civil War 32 Pdr Solid Shot Canon Ball	Munitions Debris	1	32 lbs
Civil War 8" Mortar Shell (Empty)	Munitions Debris	1	48 lbs
Civil War Rodman 15" Solid Shot	Munitions Debris	1	450 lbs
Civil War 4.26" x 12" Parrot Shell (Empty)	Munitions Debris	1	25 lbs

FREE FROM EXPLOSIVES CERTIFICATION

This certifies and verifies that the MPPEH residue, Range Residue, and/or Explosive Contaminated Property listed has been 200 percent properly inspected and to the best of our knowledge and belief, is free of explosive hazards.

15. Inspector 1		
Printed/Typed Name Brian Grassmyer	Signature Brian Grassmyer	Month Day Year 01 16 19 2011
16. Inspector 2		
Printed/Typed Name Bruce A. Carnal	Signature Bruce A Carnal	Month Day Year 01 01 21 91 11
17. Certified By:		
Printed/Typed Name Bruce A. Carnal	Signature Bruce A Carnal	Month Day Year 01 01 21 91 11

DEMILITERIZATION CERTIFICATION

I certify that each item or items listed hereon were demilitarized in accordance with ECC/FACT Standard Operating Procedures used to inspect scrap ordnance and range, DoD 4160.21-M-1 and other applicable regulations.

18. Certified By:		
Printed/Typed Name Bruce A. Carnal	Signature Bruce A Carnal	Month Day Year 01 01 21 91 11

TRANSPORTER

19. Transporter 1 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)		
Printed/Typed Name Les Jensen	Signature Les Jensen	Month Day Year 01 16 21 91 11
20. Transporter 2 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)		
Printed/Typed Name N/A	Signature N/A	Month Day Year

QUALIFIED RECYCLER

21. Discrepancy Indication Space N/A		
22. Qualified Recycler Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)		
Printed/Typed Name N/A	Signature N/A	Month Day Year

23. Qualified Recycler Certification of Consumption N/A	**24. Final Disposition of Material** N/A

Printed/Typed Name N/A	Signature N/A	Month Day Year

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

PREVIOUS EDITION MAY BE USED

1 2 3 4 5 6 7	23 24 25 26 27 28 29	45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	1. TOTAL PRICE	2. SHIP FROM	3. SHIP TO
DOC IDENT / RI FROM / M&S	UNIT / ISS / QUANTITY	SER / SUPPLEMENTARY ADDRESS / SIG / FUND / DISTRIBUTION / PROJECT / PRI / REQD / DELL / DATE / ADV / RI / O/P / COND / MGT	UNIT PRICE DOLLARS CTS / DOLLARS / CTS	Weston Solutions Office	USMA Museum
				4. MARK FOR	

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS
062911				

10. QTY. REC'D	11.UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL
1					

16. FREIGHT CLASSIFICATION NOMENCLATURE

17. ITEM NOMENCLATURE: Munitions Debris

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE

22. RECEIVED BY

23. DATE RECEIVED: 06/29/11

24. DOCUMENT NUMBER & SUFFIX (30-44)

Weston Solutions
4 Ordnance Road
USMA West Point, NY 10996
West Point MMRP/RI
Contract No. W912DR-09-D0006
Delivery Order No. 0001

25. NATIONAL STOCK NO. & ADD (8-22)

MUNITIONS DEBRIS

26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)

Civil War 15" Rodman Solid Shot	QTY: 1
Civil War 4.26" Parrot Shell (Empty)	QTY: 1
Civil War 8" Mortar Shell (Empty)	QTY: 1
Civil War 32 Pdr Solid Shot	QTY: 1

27. ADDITIONAL DATA

This certifies and verifies that the material listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials.

Brian Grassmyer, Senior UXO Supervisor

Bruce A. Carnal, UXO Safety/Quality Control Officer

Adobe Designer 7.0

MPPEH residue, Range Residue, and/or Explosive Contaminated Property

Number 2

GENERAL

1. Generator's Name and Mailing Address
Weston Solutions, 4 Ordnance Rd, USMA West Point, NY 10996

1a. Generator's Phone # (502) 664-7926

2. Generator's Project Location
West Point MMRP RI Contract No. W912DR-09-D0006

2a. Project Phone # (845) 839-0621

3. Transporter 1 Name and Mailing Address
USMA Range Control (Andrew Felo)

3a. Transporter 1 phone # (845) 938-3930

4. Transporter 2 Name and Mailing Address
N/A

4a. Transporter 2 phone # ( )

5. Qualified Recycler (QR) Name and Mailing Address
N/A

5a. QR phone # ( )

5b. QR Identification #

GENERATOR

6. Security Seal #	7. Gross Wt. Lbs/Kgs	8. Tare Wt. Lbs/Kgs	9. Net Wt. Lbs/Kgs	10. Weight Ticket #

11. Description	12. Material	13. Quantity	14. Units (Wt., Vol)
Civil War 12 Pdr Solid Shot	Munitions Debris	1	12 lbs

FREE FROM EXPLOSIVES CERTIFICATION

This certifies and verifies that the MPPEH residue, Range Residue, and/or Explosive Contaminated Property listed has been 200 percent properly inspected and to the best of our knowledge and belief, is free of explosive hazards.

15. Inspector 1

Printed/Typed Name	Signature	Month Day Year
Brian Grassmyer	Brian Grassmyer	

16. Inspector 2

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	01 02 19 11

17. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	01 02 19 11

DEMILITERIZATION CERTIFICATION

I certify that each item or items listed hereon were demilitarized in accordance with ECC/FACT Standard Operating Procedures used to inspect scrap ordnance and range, DoD 4160.21-M-1 and other applicable regulations.

18. Certified By:

Printed/Typed Name	Signature	Month Day Year
Bruce A. Carnal	Bruce A. Carnal	01 02 19 11

TRANSPORTER

19. Transporter 1 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
ANDREW FELO	Andrew R. Felo	06 21 19 11

20. Transporter 2 Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

QUALIFIED RECYCLER

21. Discrepancy Indication Space

N/A

22. Qualified Recycler Acknowledgement of Receipt of Materials (Receiving Signature Verifies that Container was Received with Seal Intact)

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

23. Qualified Recycler Certification of Consumption	24. Final Disposition of Material
N/A	N/A

Printed/Typed Name	Signature	Month Day Year
N/A	N/A	

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

PREVIOUS EDITION MAY BE USED

1 2 3 4 5 6 7	23 24 25 26 27 28 29	45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	1. TOTAL PRICE	2. SHIP FROM	3. SHIP TO
DOC IDENT / RI FROM / M&S	UNIT ISS / QUANTITY	SER / SUPPLEMENTARY ADDRESS / SIG / FUND / DISTRIBUTION / PROJECT / PRI / REQD / DELDATE / ADV / RI / O/P / COND / MGT	UNIT PRICE DOLLARS CTS / DOLLARS CTS	Weston Solutions Office	USMA Range Control
				4. MARK FOR	

24. DOCUMENT NUMBER & SUFFIX (30-44)

Weston Solutions
4 Ordnance Road
USMA West Point, NY 10996
West Point MMRP/RI
Contract No. W912DR-09-D0006
Delivery Order No. 0001

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS
062911				

10. QTY. REC'D	11. UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL
1					

16. FREIGHT CLASSIFICATION NOMENCLATURE

17. ITEM NOMENCLATURE
Munitions Debris

25. NATIONAL STOCK NO. & ADD (8-22)

MUNITIONS DEBRIS

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE

22. RECEIVED BY

23. DATE RECEIVED
6/29/2011

26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)

Civil War 12 pdr Solid Shot QTY: 1

27. ADDITIONAL DATA

This certifies and verifies that the material listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials.

Brian Grassmyer, Senior UXO Supervisor

Bruce A. Carnal, UXO Safety/Quality Control Officer

Adobe Designer 7.0

APPENDIX G

CENAB FORM 948

U.S. Army Corps of Engineers Baltimore District
Ordnance and Explosives Safety
Memo

TO: Weston Solutions.	**DATE**: 13 Jun 2011	**TIME**: 1200
Contract Number: W912DR-09-D-0006	**Project Location**: USMA, West Point, NY	
DOCUMENT #: 1		

SUBJECT ITEMS **(CHECK ALL THAT APPLY)**

- [ ] **Work Plan**
- [X] **Quality Assurance**
- [ ] **Safety Violation**
- [ ] **Other**
- [ ] **Safety Comments**

DESCRIPTION: The following grids pass government QA for Michie Stadium (MS-01)10, 14, 28, 29, 45,50,61,73,93,100,122,149,154,155,166,168,182,198 and for (MS-02) 98, 56, 42, 97, 70, 31.

- [ ] **Prompt correction or compliance with contract specifications is requested**

Elbert A Caraballo
USACE Site Representative
Elbert A. Caraballo, CENAB OE Safety Specialist

RECEIPT ACKNOWLEDGED:
Contractor's Representative

ACTION TAKEN:

CENAB FORM 948
1 April 96

APPENDIX H

MUNITIONS AND EXPLOSIVES OF CONCERN HAZARD ASSESSMENT

MEC HA Summary Information

Site ID: Michie Stadium
Date: 2/28/2012

Please identify the single specific area to be assessed in this hazard assessment. From this point forward, all references to "site" or "MRS" refer to the specific area that you have defined.

A. Enter a unique identifier for the site:

(WSTPT-022-R-01) Michie Stadium

Provide a list of information sources used for this hazard assessment. As you are completing the worksheets, use the "Select Ref(s)" buttons at the ends of each subsection to select the applicable information sources from the list below.

Ref. No.	Title (include version, publication date)
1	Site Inspection, Final, 2007
2	Field Investigations, 2011
3	http://www.goarmysports.com/facilities/michie-stadium.html
4	Remedial Investigation Explosives Site Plan Amendment 1, 2011
5	
6	
7	
8	
9	
10	
11	
12	

B. Briefly describe the site:

1. Area (include units): Approximately 14.1 acres
2. Past munitions-related use:

Safety Buffer Areas

3. Current land-use activities (list all that occur):

Recreational and athletic activities

4. Are changes to the future land-use planned? No — Future construction will not change current land use.
5. What is the basis for the site boundaries?

Current stadium boundaries, to include parking lots and buildings.

6. How certain are the site boundaries?

Confident in boundaries.

Reference(s) for Part B:

Select Ref(s)

C. Historical Clearances

1. Have there been any historical clearances at the site? No, none
2. If a clearance occurred:
   a. What year was the clearance performed?
   b. Provide a description of the clearance activity (e.g., extent, depth, amount of munitions-related items removed, types and sizes of removed items, and whether metal detectors were used):

Reference(s) for Part C:

Select Ref(s)

1 & 2

D. Attach maps of the site below (select 'Insert/Picture' on the menu bar.)

Comments

Site ID: **Michie Stadium**
Date: **2/28/2012**

Cased Munitions Information

Item No.	Munition Type (e.g., mortar, projectile, etc.)	Munition Size	Munition Size Units	Mark/ Model	Energetic Material Type	Is Munition Fuzed?	Fuzing Type	Fuze Condition	Minimum Depth for Munition (ft)	Location of Munitions	Comments (include rationale for munitions that are "subsurface only")
1	Mortars	3	inches	MKI (Stokes)	High Explosive	No	Impact	Unarmed	0.5	Subsurface Only	Unfuzed mortar removed from site.
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

Reference(s) for table above:

Select Ref(s)

Item No.	Explosive Type	Comments
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Reference(s) for table above:

Select Ref(s)

Site ID: **Michie Stadium**
Date: **2/28/2012**

Activities Currently Occurring at the Site

Activity No.	Activity	Number of people per year who participate in the activity	Number of hours per year a single person spends on the activity	Potential Contact Time (receptor hours/year)	Maximum intrusive depth (ft)	Comments
1	Athletics and visitors	10,000	8	80,000	0	Exposure time to non hard surface areas for 16 events at 1/2 hour per event.
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

Total Potential Contact Time (receptor hrs/yr): **80,000**
Maximum intrusive depth at site (ft): **0**

Reference(s) for table above:

Select Ref(s)

Activities Planned for the Future at the Site (If any are planned: see 'Summary Info' Worksheet, Question 4)

Activity No.	Activity	Number of people per year who participate in the activity	Number of hours per year a single person spends on the activity	Potential Contact Time (receptor hours/year)	Maximum intrusive depth (ft)	Comments
1	Construction of an additional athletic building within the ESQD arc for athletics.	40,000	16	**80,000**	0	Future construction within the MRS will not change the current land use. Exposure time to non hard surface areas for 32 events at 1/2 hour per event.
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

Total Potential Contact Time (receptor hrs/yr): **80,000**
Maximum intrusive depth at site (ft): **0**

Reference(s) for table above:

Select Ref(s)

Site ID: **Michie Stadium**
Date: **2/28/2012**

Energetic Material Type Input Factor Categories

The following table is used to determine scores associated with the energetic materials. Materials are listed in order from most hazardous to least hazardous.

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
High Explosive and Low Explosive Filler in Fragmenting Rounds	100	100	100
White Phosphorus	70	70	70
Pyrotechnic	60	60	60
Propellant	50	50	50
Spotting Charge	40	40	40
Incendiary	30	30	30

The most hazardous type of energetic material listed in the 'Munitions, Bulk Explosive Info' Worksheet falls under the category 'High Explosive and Low Explosive Filler in Fragmenting Rounds'.

Score

Baseline Conditions: **100**
Surface Cleanup: **100**
Subsurface Cleanup: **100**

Location of Additional Human Receptors Input Factor Categories

1. What is the Explosive Safety Quantity Distance (ESQD) from the Explosive Siting Plan or the Explosive Safety Submission for the MRS? 225 feet

Comments: Intentional detonations, hazardous fragment distance.

2. Are there currently any features or facilities where people may congregate within the MRS, or within the ESQD arc? Yes

3. Please describe the facility or feature.

Sports stadium for football and lacrosse.

MEC Item(s) used to calculate the ESQD for current use activities

Select MEC(s)

3" Stokes Mortar (MK1)

The following table is used to determine scores associated with the location of additional human receptors (current use activities):

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Inside the MRS or inside the ESQD arc	30	30	30
Outside of the ESQD arc	0	0	0

4. Current use activities are 'Inside the MRS or inside the ESQD arc', based on Question 2.'

Score

Baseline Conditions: **30**
Surface Cleanup: **30**
Subsurface Cleanup: **30**

5. Are there future plans to locate or construct features or facilities where people may congregate within the MRS, or within the ESQD arc? Yes

6. Future plans include the construction of an additional athletic building within the ESQD arc.

Comments: Current land use will not change.

MEC Item(s) used to calculate the ESQD for future use activities

Select MEC(s)

The following table is used to determine scores associated with the location of additional human receptors (future use activities):

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Inside the MRS or inside the ESQD arc	30	30	30
Outside of the ESQD arc	0	0	0

7. Future use activities are 'Inside the MRS or inside the ESQD arc', based on Question 5.'

Score

Baseline Conditions: **30**
Surface Cleanup: **30**
Subsurface Cleanup: **30**

Site Accessibility Input Factor Categories

The following table is used to determine scores associated with site accessibility:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Full Accessibility	No barriers to entry, including signage but no fencing	80	80	80
Moderate Accessibility	Some barriers to entry, such as barbed wire fencing or rough terrain	55	55	55
Limited Accessibility	Significant barriers to entry, such as unguarded chain link fence or requirements for special transportation to reach the site	15	15	15
Very Limited Accessibility	A site with guarded chain link fence or terrain that requires special equipment and skills (e.g., rock climbing) to access	5	5	5

Current Use Activities ***Score***

Select the category that best describes the site accessibility under the current use scenario:

Full Accessibility

Baseline Conditions: **80**
Surface Cleanup: **80**
Subsurface Cleanup: **80**

Select Ref(s)

Potential Contact Hours Input Factor Categories

Select Ref(s)

The following table is used to determine scores associated with the total potential contact time:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Many Hours	≥1,000,000 receptor-hrs/yr	120	90	30
Some Hours	100,000 to 999,999 receptor hrs/yr	70	50	20
Few Hours	10,000 to 99,999 receptor-hrs/yr	40	20	10
Very Few Hours	<10,000 receptor-hrs/yr	15	10	5

Current Use Activities :

Input factors are only determined for baseline conditions for current use activities. Based on the 'Current and Future Activities' Worksheet, the Total Potential Contact Time is: **80,000** hrs/yr receptor

Based on the table above, this corresponds to a input factor score for baseline conditions of: **40** Score

Amount of MEC Input Factor Categories

The following table is used to determine scores associated with the Amount of MEC:

	Description	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Target Area	Areas at which munitions fire was directed	180	120	30
OB/OD Area	Sites where munitions were disposed of by open burn or open detonation methods. This category refers to the core activity area of an OB/OD area. See the "Safety Buffer Areas" category for safety fans and kick-outs.	180	110	30
Function Test Range	Areas where the serviceability of stored munitions or weapons systems are tested. Testing may include components, partial functioning or complete functioning of stockpile or developmental items.	165	90	25
Burial Pit	The location of a burial of large quantities of MEC items.	140	140	10
Maneuver Areas	Areas used for conducting military exercises in a simulated conflict area or war zone	115	15	5
Firing Points	The location from which a projectile, grenade, ground signal, rocket, guided missile, or other device is to be ignited, propelled, or released.	75	10	5
Safety Buffer Areas	Areas outside of target areas, test ranges, or OB/OD areas that were designed to act as a safety zone to contain munitions that do not hit targets or to contain kick-outs from OB/OD areas.	30	10	5
Storage	Any facility used for the storage of military munitions, such as earth-covered magazines, above-ground magazines, and open-air storage areas.	25	10	5
Explosive-Related Industrial Facility	Former munitions manufacturing or demilitarization sites and TNT production plants	20	10	5

Select the category that best describes the ***most hazardous*** amount of MEC: ***Score***

Safety Buffer Areas

Baseline Conditions: **30**
Surface Cleanup: **10**
Subsurface Cleanup: **5**

Minimum MEC Depth Relative to the Maximum Intrusive Depth Input Factor Categories

Current Use Activities

The shallowest minimum MEC depth, based on the 'Cased Munitions Information' Worksheet: **0.5** ft
The deepest intrusive depth: **0.5** ft

The table below is used to determine scores associated with the minimum MEC depth relative to the maximum intrusive depth:

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Baseline Condition: MEC located surface and subsurface. After Cleanup: Intrusive depth overlaps with subsurface MEC.	240	150	95
Baseline Condition: MEC located surface and subsurface, After Cleanup: Intrusive depth does not overlap with subsurface MEC.	240	50	25
Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.	150	N/A	95
Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth does not overlap with minimum MEC depth.	50	N/A	25

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth will overlap after cleanup. MECs are located only subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.' For 'Current Use Activities', only Baseline Conditions are considered.

150 ***Score***

Future Use Activities

Deepest intrusive depth: **1** ft

Because the shallowest minimum MEC depth is less than or equal to the deepest intrusive depth, the intrusive depth overlaps. MECs are located only subsurface, based on the 'Munitions, Bulk Explosive Info' Worksheet. Therefore, the category for this input factor is 'Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.'. For 'Future Use Activities', only Baseline Conditions are considered.

150 ***Score***

Migration Potential Input Factor Categories

Is there any physical or historical evidence that indicates it is possible for natural physical forces in the area (e.g., frost heave, erosion) to expose subsurface MEC items, or move surface or subsurface MEC items? **No**

Frost heave would be an unreasonable migration factor based on improved ground.

If "yes", describe the nature of natural forces. Indicate key areas of potential migration (e.g., overland water flow) on a map as appropriate (attach a map to the bottom of this sheet, or as a separate worksheet).

Frost heave or movement from original placement from human processes (e.g., construction) unlikely

The following table is used to determine scores associated with the migration potential:

	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Possible	30	30	10
Unlikely	10	10	10

Based on the question above, migration potential is 'Unlikely.' ***Score***

Baseline Conditions: **10**
Surface Cleanup: **10**
Subsurface Cleanup: **10**

Reference(s) for above information:

Select Ref(s)

MEC Classification Input Factor Categories

Cased munitions information has been inputed into the 'Munitions, Bulk Explosive Info' Worksheet; therefore, bulk explosives do not comprise all MECs for this MRS.

The 'Amount of MEC' category is 'Safety Buffer Areas'. It cannot be automatically assumed that the MEC items from this category are DMM. However, because all cased munitions are unarmed (see 'Munitions, Bulk Explosive Info' Worksheet), it is assumed that the MEC items are DMM.

Has a technical assessment shown that MEC in the OB/OD Area is DMM?

Are any of the munitions listed in the 'Munitions, Bulk Explosive Info' Worksheet: **No**

- Submunitions
- Rifle-propelled 40mm projectiles (often called 40mm grenades)
- Munitions with white phosphorus filler
- High explosive anti-tank (HEAT) rounds
- Hand grenades
- Fuzes
- Mortars

None of the items listed in the 'Munitions, Bulk Explosive Info' Worksheet were identified as 'fuzed'.

The following table is used to determine scores associated with MEC classification categories:

Unfuzed DMM	Baseline Conditions	Surface Cleanup	Subsurface Cleanup
UXO Special Case	180	180	180
UXO	110	110	110
Fuzed DMM Special Case	105	105	105
Fuzed DMM	55	55	55
Unfuzed DMM	45	45	45
Bulk Explosives	45	45	45

Based on your answers above, the MEC classification is 'Unfuzed DMM'. ***Score***

Baseline Conditions: **45**
Surface Cleanup: **45**
Subsurface Cleanup: **45**

MEC Size Input Factor Categories

The following table is used to determine scores associated with MEC Size:

Description		Baseline Conditions	Surface Cleanup	Subsurface Cleanup
Small	Any munitions (from the 'Munitions, Bulk Explosive Info' Worksheet) weigh less than 90 lbs; small enough for a receptor to be able to move and initiate a detonation	40	40	40
Large	All munitions weigh more than 90 lbs; too large to move without equipment	0	0	0

Based on the definitions above and the types of munitions at the site (see 'Munitions, Bulk Explosive Info' Worksheet), the MEC Size Input Factor is: **Small**

Score

Baseline Conditions: **40**
Surface Cleanup: **40**
Subsurface Cleanup: **40**

MEC Hazard Assessment Scoring Summary

Site ID:	Michie Stadium	a. Scoring Summary for Current Use Activities	
Date:	2/28/2012	Response Action Cleanup:	No Response Action
Input Factor		**Input Factor Category**	**Score**
I. Energetic Material Type		High Explosive and Low Explosive Filler in Fragmenting Rounds	100
II. Location of Additional Human Receptor		Inside the MRS or inside the ESQD arc	30
III. Site Accessibility		Full Accessibility	80
IV. Potential Contact Hours		10,000 to 99,999 receptor-hrs/yr	40
V. Amount of MEC		Safety Buffer Areas	30
VI. Minimum MEC Depth Relative to Maximum Intrusive Depth		Baseline Condition: MEC located only subsurface. Baseline Condition or After Cleanup: Intrusive depth overlaps with minimum MEC depth.	150
VII. Migration Potential		Unlikely	10
VIII. MEC Classification		Unfuzed DMM	45
IX. MEC Size		Small	40
		Total Score	**525**
		Hazard Level Category	**4**

MEC HA Hazard Level Determination			
Site ID:	**Michie Stadium**		
Date:	**2/28/2012**		
		Hazard Level Category	**Score**
a. Current Use Activities		**4**	**525**
Characteristics of the MRS			
Is critical infrastructure located within the MRS or within the ESQD arc?		Yes	
Are cultural resources located within the MRS or within the ESQD arc?		Yes	
Are significant ecological resources located within the MRS or within the ESQD arc?		No	

APPENDIX I

MUNITIONS RESPONSE SITE PRIORITIZATION PROTOCOL

COMPANHIA TEXTIL KARSTEN, Calle Grande, 25–27, 67890 Lisbon, Portugal, PTKAR2527LIS
HURON LANDMARK, 1840 Huron Road, Windsor, ON, Canada N9C 2L5; XOHURLAN1840WIN

PART 141—ENTRY OF MERCHANDISE

■ 5. The general authority citation for Part 141 and specific authority citation for § 114.113 continue to read as follows:

Authority: 19 U.S.C. 66, 1448, 1624.

* * * * *

Section 141.113 also issued under 19 U.S.C. 1499, 1623.

§ 141.113 [Amended]

■ 6. In § 141.113, paragraph (b) is amended by removing the words ''12.130 of this chapter'' and by adding, in their place, the words ''§ 102.21 or § 102.22 of this chapter, as applicable,''.

PART 144—WAREHOUSE AND REWAREHOUSE ENTRIES AND WITHDRAWALS

■ 7. The general authority citation for Part 144 continues to read as follows:

Authority: 19 U.S.C. 66, 1484, 1557, 1559, 1624.

* * * * *

§ 144.38 [Amended]

■ 8. In § 144.38, paragraph (f)(1) is amended by removing the words ''§ 12.130 of this chapter'' and by adding, in their place, the words ''§ 102.21 or § 102.22 of this chapter, as applicable''.

PART 146—FOREIGN TRADE ZONES

■ 9. The authority citation for Part 146 is revised to read as follows:

Authority: 19 U.S.C. 66, 81a–81u, 1202 (General Note 3(i), Harmonized Tariff Schedule of the United States), 1623, 1624.

§ 146.63 [Amended]

■ 10. In § 146.63, paragraph (d)(1) is amended by removing the words § 12.130 of this chapter'' and by adding, in their place, the words ''§ 102.21 or § 102.22 of this chapter, as applicable''.

PART 163—RECORDKEEPING

■ 11. The authority citation for Part 163 continues to read as follows:

Authority: 5 U.S.C. 301; 19 U.S.C. 66, 1484, 1508, 1510, 1624.

■ 12. The Appendix to Part 163 is amended by removing under section IV the listing of ''§ 12.130 Textiles and textile products Single country declaration Multiple country declaration VISA'' and the listing of ''§ 12.132 NAFTA textile requirements'', and by adding a new listing under section IV in numerical order to read as follows:

Appendix to Part 163—Interim (a)(1)(A) List.

* * * * *

IV. * * *

§ 102.25 NAFTA textile requirements

* * * * *

Robert C. Bonner,

Commissioner of Customs and Border Protection.

Approved: September 30, 2005.

Timothy E. Skud,

Deputy Assistant Secretary of the Treasury.

[FR Doc. 05–19985 Filed 9–30–05; 2:38 pm]

BILLING CODE 9110–06–P

DEPARTMENT OF DEFENSE

Office of the Secretary

32 CFR Part 179

Munitions Response Site Prioritization Protocol

AGENCY: Department of Defense.

ACTION: Final rule.

SUMMARY: The Department of Defense (hereinafter the Department) is promulgating the Munitions Response Site (MRS) Prioritization Protocol (MRSPP) (hereinafter referred to as the rule) as a rule. This rule implements the requirement established in section 311(b) of the National Defense Authorization Act for Fiscal Year 2002 for the Department to assign a relative priority for munitions responses to each location (hereinafter MRS) in the Department's inventory of defense sites known or suspected of containing unexploded ordnance (UXO), discarded military munitions (DMM), or munitions constituents (MC).

DATES: This rule is effective October 5, 2005.

FOR FURTHER INFORMATION CONTACT: If there are specific questions or to request an opportunity to review the docket for this rulemaking, please contact Ms. Patricia Ferrebee, Office of the Deputy Under Secretary of Defense (Installations & Environment) [ODUSD (I&E)], 703–571–9060. This final rule along with relevant background information is available on the World Wide Web at the Defense Environmental Network & Information eXchange Web site, *https://www.denix.osd.mil/MMRP*.

SUPPLEMENTARY INFORMATION:

Preamble Outline

I. Authority

This rule is being finalized under the authority of section 311(b) of the National Defense Authorization Act for Fiscal Year 2002, codified at section 2710(b) of title 10 of the U.S. Code [10 U.S.C. 2710(b)].

II. Background

The Department of Defense (hereinafter the Department) developed the rule in consultation with states and tribes, as required by statute. The Department published the proposed rule in the **Federal Register** as a proposed rule on August 22, 2003, at 68 FR 50900. A technical correction to the proposed rule was published on September 10, 2003, at 68 FR 53430.

The public comment period for the proposed rule ended November 19, 2003. Sixteen commenters submitted comments on the proposed rule. The preamble to this final rule consists mainly of an explanation of the Department's responses to these comments. Therefore, both this preamble and the preamble to the proposed rule should be reviewed should a question arise as to the meaning or intent of the final rule. Unless directly contradicted or superseded by this preamble to the rule or by the rule, the preamble to the proposed rule reflects the Department's intent for the rule.

The preamble to the final rule provides a discussion of each proposed rule section on which comments were received. Revisions to the proposed rule that are simply editorial or that do not

reflect substantive changes are not addressed in this preamble.

In addition to the comments on the proposed rule, the Department received a number of comments that addressed topics outside the scope of the proposed rule. These topics included: The universe of sites that comprise the inventory, which is established by statute; funding for munitions responses; comments on data quality; a proposal for training to educate Department personnel, regulators, and/or stakeholders; and implementing guidance that the Department may develop for the rule. These comments are not addressed in this rule. All comments the Department received are presented in a ''Response to Comments'' document, which has been placed in the docket for this rulemaking.

III. Summary of Significant Changes to the Final Rule

The Department made a number of changes to the proposed rule that are reflected in this final rule. Many of these revisions pertain to clarification of terms and definitions based on comments received, or changes to reflect new statutory definitions promulgated in the National Defense Authorization Act for 2004 and codified at 10 U.S.C. 101.

The most significant change to the proposed rule pertains to the module that evaluates the potential health hazards associated with MC. The Department modified this module in response to several comments. This module now has seven potential outcomes (*i.e.*, A through G) rather than the three potential outcomes described in the proposed rule (*i.e.*, high, medium, and low). A detailed explanation of this modification is provided in a following section of this preamble.

The Department has also revised the proposed rule to clarify that current land owners may participate in application of the rule at Formerly Used Defense Sites (FUDS). Another change was to clarify that the quality assurance panel that reviews each priority will consist of only Department personnel.

IV. Response to Comments

This section contains the Department's responses to the comments received on the proposed rule, organized by the structure of the proposed and final rules.

A. Section 179.2. Applicability and Scope

Several commenters stated that the proposed rule should be published as Departmental guidance and not as a federal regulation. The Department, however, interpreted the language in the National Defense Authorization Act for 2002 as a term of art invoking the requirement for public comment provided in the Administrative Procedures Act. The Department is proceeding with publishing the final rule as a federal regulation.

One commenter stated that sites containing chemical warfare materiel (CWM) should be included as potential MRSs. The Department observes that the proposed rule makes clear that, if CWM is present at a defense site [as defined in 10 U.S.C. 2710(e)] in the form of UXO, DMM, or MC, that site would be an MRS and would be included in the inventory, and that all MRSs in the inventory are addressed under the rule. The Department made no change to the rule to address this comment.

Another comment stated that the Department had not clearly explained the scope of the exclusion for ''combat operations'' under 10 U.S.C. 2710(d)(2). This exclusion exempts from the requirement for inclusion in the inventory and application of the rule all locations where ''the presence of military munitions'' resulted ''from combat operations.'' The Department has not modified the rule.

A commenter requested that the Department change the Department's Control classification in the Status of Property data elements (proposed rule, Appendix A, Tables 5 and 15) to include land or water bodies owned, leased, or otherwise possessed by state military departments. The Department declined to make this change, as the Department does not have jurisdiction over properties owned, leased, or otherwise possessed by state military departments. Such locations are under state jurisdiction and would not be included in the 10 U.S.C. 2710(a) inventory.

B. Section 179.3. Definitions

This section of the preamble addresses comments on the definitions in section 179.3 of the proposed rule.

The Department has modified definitions from the proposed rule or included certain new definitions to make this regulation consistent with terms and definitions promulgated by the National Defense Authorization Act for Fiscal Year 2004. These terms and definitions are codified at 10 U.S.C. 101. Affected terms are military munitions, operational range, range activities, and UXO.

The Department has also added the term ''munitions and explosives of concern (MEC)'' to the final rule for consistency with new Department policy. MEC, which is intended to distinguish specific categories of military munitions that may pose unique explosives safety risks, means UXO, as defined in 10 U.S.C. 101(e)(5); discarded military munitions, as defined in 10 U.S.C. 2710(e)(2); or munitions constituents (*e.g.*, TNT, RDX), as defined in 10 U.S.C. 2710(e)(3), present in high enough concentrations to pose an explosive hazard. As used in the rule, this term does not create any new category of materials covered under the proposed rule, nor does it exclude any category of materials covered under the proposed rule, and is adopted herein simply for consistency with terminology used elsewhere within the Department.

In response to a comment, the term ''chemical warfare agents'' has been changed to ''chemical agents.'' The definition of ''chemical warfare agents'' has also been changed to read: ''Chemical agent means a chemical compound (to include experimental compounds) that, through its chemical properties produces lethal or other damaging effects on human beings, is intended for use in military operations to kill, seriously injure, or incapacitate persons through its physiological effects. Excluded are research, development, testing and evaluation (RDTE) solutions; riot control agents; chemical defoliants and herbicides; smoke and other obscuration materials; flame and incendiary materials; and industrial chemicals. This definition is adopted based on 50 U.S.C. 1521(j)(1) in which the term ''chemical agents and munitions'' means ''* * * an agent or munition that, through its chemical properties, produces lethal or other damaging effects on human beings, except that such term does not include riot control agents, chemical herbicides, smoke, and other obscuration materials.'' This change makes the terminology used in the final rule consistent with the existing statutory definition of ''chemical agent and munition'' in 50 U.S.C. 1521(j)(1). The Department observes that chemical agents under 50 U.S.C. 1521(j)(1) include the V- and G-series nerve agents; H-series (*i.e.*, ''mustard'' agents) and L-series (*i.e.*, lewisite) blister agents; and certain industrial chemicals, including hydrogen cyanide (AC), cyanogen chloride (CK), or carbonyl dichloride (called phosgene or CG), when contained in a military munition; and does not include riot control agents (*e.g.*, w-chloroacetophenone [CN] and o-chlorobenzylidenemalononitrile [CS] tear gas); chemical defoliants and herbicides; smoke and other obscuration materials; flame and incendiary materials; and industrial chemicals that

are not configured as a military munition.

The definition of ''chemical warfare materiel (CWM)'' has changed to reflect the adoption of the term ''chemical agent'' discussed previously in this rule.

One commenter stated that although the definition of ''military range'' includes buffer zones with restricted access and exclusionary areas, exclusionary zones at some former target bombing areas are not well defined. While the Department realizes this may be the case at some former military ranges, it believes site conditions and personnel experience will help ensure such areas are included and provide for reasonable application of the rule.

A commenter requested a change to the definition of ''MRS,'' maintaining that portions of a munitions response area (MRA) may not be part of an MRS and, therefore, would not be evaluated using this rule. The Department would like to clarify that, depending on site-specific factors, an MRA may be designated a single MRS or may be subdivided for the purposes of evaluation into multiple MRSs. In each and every case, however, once all the MRSs comprising an MRA have been evaluated (whether the MRA consists of a single MRS or multiple MRSs), the total acreage encompassed by the MRA will have been evaluated using this rule. Through this disciplined and documented approach, the protocol will ensure that an MRA's entire acreage will be addressed.

For example, in investigating a 1,000-acre MRA, the Department may identify five discrete locations (*e.g.*, MRS 1 through 5) that constitute 1,000 acres that require evaluation. Formal decision documents will be prepared for all five MRSs that document the Department's evaluations for the entire 1000 acres. This will ensure that the entire MRA acreage will be evaluated using the protocol.

One commenter requested adding to the end of the definition of ''MRA'': ''* * * therefore, all property within a munitions response area is known to require a munitions response.'' The Department observes that the definition of ''MRA'' already states, ''An MRA is comprised of one or more munitions response sites'' and the definition of an ''MRS'' is ''* * * a discrete location within an MRA that is known to require a munitions response.'' Because an MRA must comprise at least one MRS, the Department does not believe the definition requires modification as suggested by the commenter.

In response to another comment as to whether or not the acreage of an MRA includes water bodies, the Department observes that the acreage of an MRA may extend beyond the terrestrial boundary and include water bodies, such as lakes, ponds, streams, and coastal areas.

One commenter requested adding CWM, in addition to UXO, DMM, and MC, to the definitions of several terms, including MRA and MRS, and at several locations in the tables (Appendix A) of the proposed rule. The Department points out that the definition of ''military munitions'' already includes CWM; therefore, all other terms that build on the military munitions definition, specifically UXO and DMM, already include CWM.

C. Section 179.4. Policy

One commenter noted many positive attributes to the proposed rule. These included affirmative statements concerning the Department's active solicitation of participation by and inclusion of the states, the tribes, and stakeholders; identifying the need for a quality assurance panel to promote consistency in the application of the rule; straightforward recognition that the same level of information will not be available for all sites, and that for some sites, more information will be required in order to realistically apply the rule; and weighting factors, for the most part, are well explained and easy to understand. These comments did not require changing the proposed rule.

One commenter stated that the team approach to prioritization was too broad and implies that several people from multiple agencies, community groups, or tribes will need to be involved in the application of the rule to a specific MRS. The Department continues to believe that it is important to receive input and feedback from such sources in assigning a relative priority for response activities to each MRS and has not amended the proposed rule to address this comment.

The Department received a comment recommending that a state regulatory agency be designated to play a major role in the munitions response process, and if a state agency is unable to perform in this capacity, the U.S. Environmental Protection Agency (U.S. EPA) should do so. In such situations, involvement of U.S. EPA personnel is a matter for U.S. EPA to decide and not the Department; however, the Department notes that it will use a team approach for prioritization and encourages these agencies to participate.

The Department received a comment soliciting clarification on whether stakeholders will have input on the ''no longer required'' determination. An MRS will have the ''no longer required'' determination assigned only after the Response Complete (RC) or Remedy-in-Place (RIP) milestone is achieved. Stakeholders are afforded opportunities to participate and provide input throughout the munitions response process, to include prior to and following these milestones; however, stakeholders do not have a role in determining when an MRS has met the requirements for achieving these milestones.

D. Section 179.5. Responsibilities

A comment was received regarding the term ''administrative control'' and whether this term referred to specific Component's ownership responsibilities. The Department would like to clarify that the phrase ''under their administrative control'' reflects the delegation of responsibilities for munitions responses within the Department. This responsibility does not require the Department to have a current real property interest at a particular MRS.

The Department received several comments pertaining to prioritization at FUDS sites. One commenter asked for clarification of the phrase ''under the administrative control of,'' specifically pertaining to how the rule will apply at a FUDS. Under 10 U.S.C. 2701, the Department is required to ''carry out a program of environmental restoration * * * at each facility or site which was under the jurisdiction of the Secretary * * * at the time of actions leading to contamination.'' Therefore, under this requirement, the Department will apply the rule to an MRS at a FUDS if that MRS is included in the 10 U.S.C. 2710(a) inventory. FUDS, however, are not considered under the Department's control for the purposes of the Status of Property data elements in Appendix A, Tables 5 and 15.

Another commenter noted that for FUDS, the property owner should be involved with applying the rule to any MRS at the FUDS. The Department agrees and has modified section 179.5 to state: ''Ensure that EPA, other federal agencies (as appropriate or required), state regulatory agencies, tribal governments, local restoration advisory boards or technical review committees, local community stakeholders, and the current property owner (if the MRS is outside Departmental control) are offered opportunities to participate throughout the process of application of the rule and in making sequencing recommendations.''

Several commenters stated concerns pertaining to MRSs that have already been evaluated using the Risk

Assessment Code (RAC). The Department wishes to clarify that all MRSs in the 10 U.S.C. 2710(a) inventory will be evaluated using the rule and the most current information available, irrespective of whether that MRS has been evaluated under the RAC framework.

One commenter inquired whether a low prioritization score means ''no further action.'' The Department would like to clarify this is not the case. Prioritization scores are the first tool when defining the need for a munitions response.

One commenter asked the Department to add a definition of ''evaluation pending'' to the rule and publish procedures and time frames that apply to evaluation pending sites. The Department's response is that evaluation pending status is given to an MRS only when there is insufficient information to complete the evaluation using the rule. As soon as sufficient data are available, the MRS will be evaluated. Although the Department is not specifying time frames for addressing the MRS in evaluation pending status as part of this regulation, the Department will be developing specific goals to drive program progress.

A commenter asked for clarification as to when the rule will be applied at sites where the environmental restoration process is considered complete. The Department responds that, as stated in the proposed rule, an MRS no longer requires a priority when the Department has achieved the RC or RIP milestones. This means that a Component or another entity has conducted a munitions response, all objectives set out in the decision document for the MRS have been achieved, and no further action, except for long-term management and/or five-year reviews, is required.

There were many comments pertaining to the quality assurance panel that will review prioritization decisions, especially inquiries about the panel's composition and authority. The Department wishes to clarify that the panel will comprise Component representatives trained in application of the rule who were not involved in the initial scoring of a specific MRS being reviewed. Stakeholders participate in application of the rule at an MRS, but will not be part of the quality assurance panel. The panel is an internal management and oversight function to ensure consistency of the rule's application. Components are, however, required to provide regulators and stakeholders the opportunity to comment on the quality assurance panel's rationale for any changes to the priority originally assigned.

One commenter proposed that the circumstances under which the rule shall be reapplied include when a quality assurance panel recommends a priority change. In response, the Department states that the panel will not direct a Component to reapply the rule; rather, the panel's decision, when adopted, will supersede the original priority assigned. If the panel recommends a change that results in a different priority, the Component will report, in the inventory data submitted to the ODUSD(I&E), the rationale for this change. The Component will also provide this rationale to the appropriate regulatory agencies and involved stakeholders for comment before finalizing the change.

Another commenter expressed support for the quality assurance panel in ensuring uniform application of the rule, but voiced concern this panel may not be effective if they must review all decisions before the prioritization can be finalized. According to the comment, initially it may be more productive to require that the panel review a percentage of the priority decisions to ensure they can review enough data to decide either to support or to change the priority assigned. The Department's response is that absent a review of each prioritization decision, it cannot be stated with authority that all decisions are in fact representative of site conditions and that the rule has been applied in a consistent manner. For this reason, at least initially, the Department is unwilling to consider a sampling-based approach to the work of the quality assurance panel.

One commenter stated that the rule's emphasis on Management Action Plans (MAPs) may place a strain on already limited state resources, especially in those states that do not already have a MAP. The Department responds that MAPs have been a requirement for all sites addressed under the Defense Environmental Restoration Program (DERP) for many years. If a specific site is not addressed in a MAP, that matter should be referred to the appropriate Component's Deputy Assistant Secretary with responsibility for environmental matters. Should such a referral not result in action, the matter should then be referred to the ODUSD(I&E).

Another commenter questioned how the MAPs for several MRSs would be integrated with the statewide MAP being developed in the FUDS program. The Department would like to clarify that the statewide MAP in the FUDS program collectively addresses all FUDS within a state, and that a MAP for each individual FUDS is also required.

Several commenters noted that conditions at an MRS are subject to change and such changes should be reflected in the priority. The Department agrees and has designed the rule to be reapplied if any specific factor considered in the application of the rule changes and if that change has the potential to affect the priority assigned.

There were several comments pertaining to sites where investigations were previously conducted. In response, the Department affirms that an appropriate munitions response is required for each MRS, and that an MRS reaches the ''no longer required'' evaluation only when the Department has conducted a munitions response, all objectives set out in the decision document for the MRS have been achieved, and no further action, except for long-term management and/or five-year reviews, is required.

One commenter questioned the Department's reasons for rescoring sites based on a munitions response, arguing that the result will be to lower scores at the MRS without making progress toward completing all required munitions response activities. The commenter feels that partial munitions responses and continual rescoring is an inefficient approach to the program as a whole. The commenter suggests that once an MRS has received a score suitable to obtain funding, the score should not be lowered based on a munitions response that does not comprehensively and completely address the hazards present at the MRS. The Department disagrees, and notes that an annual reevaluation of the priority assigned to each MRS is statutorily mandated under 10 U.S.C. 2710(c)(1).

In response to a comment received on the certified letter the Department will send to states, territories, federal agencies, and tribal and local governments requesting their involvement in prioritization, the Department will send the letter to any known designee specified by the organization, or in the absence of such a designation, to the head of the organization.

E. Section 179.6. Procedures

This section addresses comments received on section 179.6 of the proposed rule and on the classification tables in Appendix A.

One commenter recommended that the Department revise the rule so that all data elements are consistent using a scale of zero to five; the Explosive Hazard Evaluation (EHE) module,

Chemical Warfare Materiel Hazard Evaluation (CHE) module, and Relative Risk Site Evaluation (RRSE) module be combined into one module; and the priority assigned to a site not be influenced by the type or source of the hazard that may be present at the site. The Department has not adopted such a change. Reducing the scale from seven to five, eliminating the modules, and not addressing the type and source of the hazard will not ensure that the priority given to an MRS adequately reflects the hazard posed by conditions at the MRS. The Department's objectives for the rule are: (1) ensuring that the priority sufficiently reflects actual conditions and potential hazards at the MRS, and (2) that the tool used be straightforward and easy to use. The current construct achieves those objectives.

One commenter requested clarification as to the correct procedure when multiple classifications apply at a given MRS. The commenter questioned whether the scores are cumulative within the module or if only the highest value is used. The Department wishes to clarify that the one highest value within each data element is used. For example, if at a specific MRS both (1) hand grenades containing an explosive filler, which would be categorized as sensitive under Appendix A, Table, and would score 30, and (2) DMM, containing a high-explosive filler, that have not been damaged by burning or detonation, which would be categorized as high explosive (unused) under Appendix A, Table 1, and would score 15 are present, the score (30 points) for the hand grenades containing an explosive filler would be selected.

Numerous comments received address both the EHE and CHE modules, particularly pertaining to the accessibility and receptor factors of these modules. Where this is the case, the comment and response appear under the EHE module responses for simplicity, but pertain to both sections.

1. Section 179.6(a). Explosive Hazard Evaluation Module

The Department received numerous comments on the Munitions Type data element (Appendix A, Table 1) and modified the rule to address many of the comments. For example, the Department modified two classifications within this data element to reflect the inherent difference between primary and secondary explosives. Explosives are classified as primary or secondary based on their susceptibility to initiation. Primary explosives, such as lead azide, are highly susceptible to initiation. Secondary explosives (*e.g.*, TNT, RDX, HMX), which constitute the bulk of the explosives likely to be present at an MRS, are formulated to be far less susceptible to initiation. To address these differences, the Department added to the sensitive classification: ''Bulk primary explosives, or mixtures of these with environmental media such that the mixture poses an explosive hazard.'' The Department also revised the Bulk high explosives, pyrotechnics or propellant classification to exclude primary explosives: ''Bulk secondary explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.''

Also pertaining to the Munitions Type data element, another commenter noted that bulk high explosives mixed with environmental media can be reactive as well as explosive, and the hazard threshold of explosive is too high and should be lowered. The commenter suggested adding ''or reactive'' after ''that result in the mixture being explosive'' in the description of ''bulk high explosives'' and definitions for the terms ''reactive'' and ''explosive soil.'' The Department chose not to make these changes because the commenter did define ''reactive'' in this context, and the focus of the EHE module is explosive hazards.

The Department also added an additional classification to the Munitions Type data element to reflect the lesser risk posed by pyrotechnics that are unused or undamaged. The Pyrotechnic (used or damaged) classification is assigned a score of 20 points, while the Pyrotechnic (not used or damaged) classification is assigned a score of 10 points.

The Department modified the text of the Propellant classification to be consistent with the other classifications, adding ''* * * that have been damaged by burning or detonation'' and ''* * * that are deteriorated to the point of instability'' to the criteria for propellants that are DMM. The Department also corrected the Practice classification pertaining to the criteria for DMM to read: ''* * * that have not been damaged by burning or detonation'' and ''* * * that have not deteriorated to the point of instability.'' The Department also provided greater detail in the definition of a ''practice munition.''

One commenter stated that all practice munitions should be classified together and any MRS with practice munitions should receive a score of 15. The commenter's position is that many practice munitions with sensitive fuzes have miniscule amounts of explosives, while other practice munitions without sensitive fuzes have a much larger explosive or pyrotechnic spotting charge (*e.g.*, practice bombs). Because practice bombs, which receive a score of 5, account for some of the most common and dangerous UXO and cause many serious injuries, the commenter feels that practice munitions without sensitive fuzes that have explosive or pyrotechnic spotting charges are not classified correctly. The Department agrees with the commenter that practice munitions with explosive or pyrotechnic charges do pose an explosive hazard. When developing the rule, the Department defined practice munitions as those munitions that contain inert filler. Practice munitions with explosive or pyrotechnic charges are classified separately under the same data element and are given a value.

One commenter identified an inconsistency pertaining to the Munitions Type data element in that the definition of ''small arms ammunition'' category used the term ''evidence'' but did not specify whether this included ''historical evidence'' and ''physical evidence,'' as is the case for ''evidence of no munitions.'' The Department has revised the small arms ammunitions category within the Munitions Type data element to state: ''All used munitions or DMM that are categorized as small arms ammunition. [Physical evidence or historical evidence that no other types of munitions (*e.g.*, grenades, sub-caliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.]''

Several commenters questioned the level of investigation required for assessing whether physical or historical evidence indicates that no UXO or DMM are present and suggested that specific investigation requirements should be developed for different sites. The Department has defined both historical evidence and physical evidence in the rule. The personnel applying the rule at an MRS will determine the appropriate level of evidence. The Department will not provide additional detail in the final rule, but may address this situation in implementing guidance or training materials.

One commenter requested clarification on the applicability of the proposed rule to open burning/open detonation (OB/OD) units. The commenter expressed concern that the rule indicates that OB/OD sites are excluded because they were used or permitted for disposal of military munitions. The Department would like to clarify that OB/OD units are subject

to prioritization under the rule only when the unit meets the requirements for inclusion in the 10 U.S.C. 2710(a) inventory.

One commenter suggested specifically including quality assurance test ranges within the EHE module Source of Hazard data element (Appendix A, Table 2) as they are not currently identified. To the extent that a quality assurance test range is a location that is known or suspected of containing UXO, DMM, or MC and is included in the inventory required under 10 U.S.C. 2710(a), the rule would be applied to that location. To the extent that such a quality assurance test range meets the criteria of Appendix A, Table 2 (*i.e.*, it meets the test for being a ''former range''), it is already included.

One commenter did not understand why a former munitions treatment area or unit would receive a lower score than a former military range given the unknown hazard posed by munitions that have been treated by OB/OD. The Department's response is that the higher value assigned to former military ranges reflects the fact that UXO are fuzed munitions that have been through their firing and arming cycle. In contrast, munitions treated in an OB/OD unit, while potentially damaged, are not normally fuzed and would most likely not complete their arming sequence. For this reason, UXO at a former military range is considered to pose a greater hazard than DMM at an OB/OD site.

In response to a comment, the Department modified the Former industrial operating facilities classification within the Source of Munitions data element to include former munitions maintenance facilities.

A commenter requested the definition of ''evidence of no munitions'' within the Munitions Type, Source of Hazard, and Location of Munitions (Appendix A, Tables 1, 2, and 3) data elements be changed to indicate that evidence shows that no UXO or DMM were ''ever''resent. The Department declines to make this change as the Department does not want to exclude sites from this classification where evidence indicates that munitions were at one time present but have since been removed, for example, as part of normal Department operation of a military range while the range was in use. This situation is different from UXO or DMM that are removed as part of a munitions response, as described in the next paragraph.

Another commenter asked about UXO that is on the surface and has since been removed, and UXO that is emergent from year to year, such as through frost heave. If munitions were found on the surface of an MRS, the MRS would be classified as Confirmed Surface. If investigation confirms that there are only subsurface munitions present, and natural phenomena (*e.g.*, frost heave or tidal action) occur on the MRS, the second-highest category—Confirmed subsurface, active—should be selected.

In response to a comment, the Department clarified the definition of ''on the surface'' to mean above the soil layer. UXO found in the tundra of Alaska, for example, is considered ''on the surface'' for the purposes of the rule, as the tundra is above the soil layer.

Several commenters stated that within the Information on the Location of Munitions and the Information on the Location of CWM data elements (Appendix A, Tables 3 and 13), no water depth is specified for the Subsurface, physical constraint category. The Department, however, would like to note that in these tables, a water depth of 120 feet was cited as a physical constraint.

Several commenters asked the relevance for selecting 120 feet as the depth for constituting a subsurface physical constraint. The Department selected this depth because of the limited time (less than 15 minutes) normally allowed to scuba divers at this depth, the considerable effort needed to dive to and below this depth, and the dangers associated with such deep dives to basic scuba divers.

Also pertaining to Appendix A, Tables 3 and 13, a commenter requested that the Department use caution when evaluating activities that are ''likely to occur'' because land use and recreational activities can change in ways that no one can predict. The commenter also noted that similar caution is needed when evaluating physical constraints because some constraints are barriers only if they are both kept in place and maintained. The Department agrees with the commenter that conditions may change over time. To address changes that may occur over time, the rule requires reevaluation and rescoring if site conditions change.

Pertaining to the Ease of Access data elements (Appendix A, Tables 4 and 14), one commenter stated that the proposed rule was unclear if deep-water areas without any monitoring would be scored as a complete or incomplete barrier. The Department's response is that if a barrier such as deep water is present, it is evaluated as to its effectiveness in preventing access to all parts of the MRS. In the specific case described in the comment, deep-water areas not subject to surveillance would be scored as Barrier to MRS access is complete, but not monitored.

One commenter stated that it is inequitable that the highest score under the Ease of Access data element (Appendix A, Tables 4 and 14) is a ''10,'' indicating all areas of the MRS are accessible, whereas the Information on Location of Munitions and Information on Location of CWM data elements (Appendix A, Tables 3 and 13) have a maximum score of 20, and a score of 10 represents only the suspected presence of UXO or DMM. The Department believes the current construct is appropriate because the Information on Location of Munitions and Information on Location of CWM data elements address access to the munition or CWM, while the Ease of Access data elements address access to the MRS.

Some commenters noted that some terms, such as ''barrier,'' need further clarification to ensure all users apply the term consistently. For example, people may assess differently whether a security patrol is a partial barrier to the MRS or not a barrier at all. Additionally, perceptions of a barrier may vary, as ''deep or fast-moving water'' may be a challenge instead of a barrier to some people. The Department recognizes these commenters' points but believes the definition is sufficient for the purposes of prioritization. Final determination as to what features, either natural or man-made, are barriers should be based on site-specific knowledge and the judgment of the personnel applying the rule to a specific MRS. Additionally, the Component's quality assurance panels will ensure consistency in the final rule's application.

One commenter stated that some data elements, specifically within the accessibility and receptor factors, within the various modules and among modules, are redundant and should be consolidated. The Department disagrees. Each data element provides important information on its own, bringing data from different perspectives together to best reflect actual site conditions.

Several commenters expressed concern that the receptor factors of the EHE and CHE modules do not capture transient populations. The Department points out that two of the three data elements that address human receptors attempt to address population, regardless of whether it is permanent or transient. The Population Density data elements (Appendix A, Tables 6 and 16) focus on permanent population as based on U.S. Census Bureau data within a city, town, or county. The Population Near Hazard data elements (Appendix A, Tables 7 and 17) are based on any

inhabited structures, whether they are permanent or temporary, that are routinely occupied for any portion of a day. The Type of Activities/Structures data elements (Appendix A, Tables 8 and 18) are also intended to address both permanent and transient populations. The Department is confident that, combined, these data elements sufficiently address both permanent and transient populations.

A commenter questioned the relevance of the Population Density data element in scoring the EHE module because, per the comment, (1) this number is dependent upon and controlled by the Ease of Access data element, and (2) by including the Population Density element, the EHE module score unjustifiably and unnecessarily prioritizes higher those MRSs that are in more densely populated areas, even when potential access to the MRS is precluded by barriers. The Department disagrees because the Population Density data element considers both the on-site and off-site populations surrounding an MRS. While access is a prerequisite for an on-site population, the effects of an event (*e.g.*, an explosion) at an MRS may affect populations that are not on site. This is one of the reasons that several of the elements in the receptor factor include a swath extending up to two miles from the perimeter of the MRS. The same commenter also believed the Types of Activities/Structures data elements (Appendix A, Tables 8 and 18) can be reasonably measured via the Population Near Hazard data elements (Appendix A, Tables 7 and 17), noting that including the Types of Activities/Structures data elements only complicates the process and favors MRSs in higher population areas. The Department again disagrees. The Department included the Types of Activities/Structures data elements to account for the types of activities occurring on a site, and the potential for those activities to bring a receptor into contact with UXO or DMM. It was not developed to give undue weight to high-population areas.

One commenter did not agree that the two-mile criterion applied to evaluating the Population Near Hazard data element is reasonable or necessary for any MRS not having the potential to create a chemical agent hazard that could affect inhabitants within two miles of the boundary. Instead, distance criteria that more reasonably consider the risks from the actual or suspected types of explosive hazards should be used. The Department disagrees because the two-mile radius considers not only the size of the population that may come onto the MRS, but also the effects that an explosion on the MRS may have to areas off the MRS (*e.g.*, blast overpressure, fragment throw). While this distance may be less than two miles, the two-mile distance was selected as a conservative measure.

One commenter stated that the Population Near Hazard data elements should bear greater weight than the Population Density data elements because the greatest hazard is to the population closest to the MRS. The Department, however, notes that these data elements evaluate different aspects of population. The Population Density data elements are used to assess the number of persons that could possibly access the MRS, while the Population Near Hazard data elements focus on the population (through number of structures) within a two-mile range that could be impacted by an unintentional explosion or CA release. The data elements are complementary.

Several commenters disagreed with the Department's use of inhabited structures to indicate population in the Population Near Hazard and Types of Activities/Structures data elements as, for example, ''people may engage in all sorts of activities despite the absence of structures in the vicinity, and many of these activities would put them at considerably greater risk from military munitions than populations that are, relatively speaking, protected within structures.'' The Department notes the concern, but believes the rule sufficiently accounts for these populations. The rule relies on several indicators to assess potentially exposed populations. The Types of Activities/Structures data elements address activities conducted on the MRS, and the number of permanent or temporary structures present. Parks and recreational areas, where hikers, campers, and tourists may be present, are specifically included in the Types of Activities/Structures elements.

In response to one commenter's statement that UXO may be encountered through nonintrusive activities such as boating and fishing, the Department believes that such activities are accounted for in the Types of Activities/Structures data elements.

Several commenters noted that Types of Activities/Structures data elements seem structured to give the greatest weight to activities and structures involving the most people, and that warehousing, industrial, agricultural, and forestry activities are weighted less. Some commenters are concerned because these areas experience high-density populations and activities that penetrate the ground surface during working hours. The Department recognizes the commenters' concerns but notes that, even though agricultural and forestry activities penetrate the ground surface, the exposed population is typically smaller than commercial, residential, or recreational areas. The Department is balancing activity intrusiveness with the potential population that could be exposed to a hazard. The rule does, however, require reevaluation if site conditions change.

One commenter questioned how the scoring values among modules and within modules were selected. The commenter specifically noted that the numerical weighting assigned within and among data elements seemed arbitrary and unnecessarily complicated. Further, there is no rationale for applying a score of 30 (worst case score) to certain data elements and a value of only 5 (worst case score) to other data elements within the same module. The commenter cites the Population Near Hazard data element as an example. Within this data element, there are six classifications established based on the number of inhabited structures within a two-mile distance of an MRS. In this data element, 1–5 inhabited structures receives a score of only 1, while 26 or more inhabited structures receives a score of 5. The commenter believes that the score should be the same, regardless of whether a single residence or 26 residences were on or near the MRS. The Department disagrees with the commenter that all situations should be scored the same because it impairs differentiation and thus prioritization, which is the purpose of this rule. The rule-making development effort involved a series of meetings over a year and a half, including substantial consultation with states, tribes, and other federal agencies. The Department also tested the developing model during this time to determine if the model outcomes were reasonable given what was known about the trial MRSs. The data elements and scores as presented in the proposed rule provided the most rational results and distribution among the sites.

Many commenters believe that the definition of ''ecological resources'' (Appendix A, Tables 9 and 19) in the rule is too limited. The Department does not mean to imply that less sensitive ecological resources are not important. For the purposes of assigning a relative priority to each MRS, however, the Department believes that limiting this definition to the most sensitive habitats is appropriate so that these areas are elevated in priority.

Similar to the comments for ecological resources, a commenter noted that the definition of ''cultural resources'' used in the EHE and CHE modules is too narrow and the list of statutes should not be limited. The Department believes this definition is appropriate for the purposes of assigning a relative priority to each MRS.

One commenter stated that there may be only a few MRSs that score high enough to be included in the highest tier of the EHE module, and therefore, more sites will be distributed among the lower tiers. Based on the testing described in the proposed rule, the Department expects the universe of sites to be adequately distributed among the possible scores. The highest hazard sites are not expected to be the most numerous, nor are the lowest hazard sites expected to be the most numerous. The Department believes this construct is appropriate.

2. Section 179.6(b). Chemical Warfare Materiel Hazard Evaluation Module

One commenter agreed with the Department that MRSs with known or suspected CWM are important and deserve special attention. The commenter did state, however, that the potential for public exposure should be an important consideration when ranking such MRSs. MRSs that have high potential for public exposures and risk should be ranked higher than an MRS with CWM that has minimal opportunity for public exposure. The Department addressed this concern during the development of the rule by including data elements to factor in population density and public exposure. Based on the data used in the rule, an MRS with known or suspected CWM does not always rank higher than a site without CWM.

A commenter suggested that receptors under the CHE module should be weighted higher than those under the EHE module because CWM pose hazards associated with both the explosive impact and the dispersion of the chemical agents. The Department believes that the rule appropriately accounts for the special characteristics of CWM in the CWM Configuration and Sources of CWM data elements (Appendix A, Tables 11 and 12).

One commenter asked if all CWM is considered similar in the severity of its effects and regardless of concentration. The Department's response is that the rule does not consider the differences in the mechanism of action (e.g., neurotransmitter disruption) or the toxicological properties (*e.g.*, Lethal Dose for 50 percent of the exposed population [LD50]). The CWM Configuration and Sources of CWM data elements do address the differences in the hazards posed by CWM (*e.g.*, CWM with an explosive burster scores higher than CWM without a burster).

One commenter felt that classifying CWM mixed with UXO lower than CWM under the CWM Configuration data element does not make sense. The commenter stated that this implies that placing some conventional UXO at an MRS with known or suspected CWM can reduce the hazard at that site. To remedy the conflict, the commenter suggested deleting the category CWM mixed with UXO from Appendix A, Table 11 and treating all MRSs containing CWM UXO or damaged CWM DMM as the highest scoring hazard, irrespective of the presence of conventional munitions that are UXO or DMM. The Department, however, believes that explosively configured CWM, which are designed to achieve optimal dispersion of their chemical agent fill, that are UXO or that are damaged DMM should be assigned a higher score than undamaged CWM/DMM or CWM not configured as a munition that are mixed with conventional munitions that are UXO. The Department left this classification unchanged because the detonation of a conventional munition that both is a UXO and mixed with undamaged CWM/DMM or CWM not configured as a munition is less likely to result in a dispersal of any chemical agent present. The Department believes that the classifications assigned appropriately differentiate between the potential chemical agent hazards presented.

One commenter questioned why production facilities; research, development, testing and evaluation facilities; training facilities; and storage or transfer points were identified as separate categories with different hazard scorings within the Sources of CWM data element (Appendix A, Table 12). According to the commenter, the only important issues are: (1) The type of CWM (*i.e.*, it must be either UXO or DMM); (2) its condition (damaged or undamaged); and (3) the strength of evidence (known or suspected CWM contamination). The commenter recommended deleting all other categories. The Department does not believe that there are only three important issues and that the other categories are extraneous. The Department has identified those separate categories under the CWM Configuration and Sources of CWM data elements to enable it to evaluate all known and relevant data and to assign appropriate priorities.

One commenter stated that the rule does not consider CWM that has been managed via OB/OD activities or via on-site disposal (*e.g.*, burial). The Department disagrees, and observes that while not specifically described as OB/OD or burial sites, these sites have in common that any CWM present is DMM. The CWM Configuration data element (Appendix A, Table 11) specifically includes CWM that are DMM, and addresses those differently depending on whether or not the CWM has been damaged (irrespective of how that damage occurred). The Sources of CWM data element (Appendix A, Table 12) specifically considers DMM that are on the surface or in the subsurface, irrespective of how the CWM came to be there.

One commenter stated that it is not clear whether CWM mixed with UXO includes or purposely excludes explosively configured CWM. The Department's response is that explosively configured CWM that is either UXO or damaged DMM receives a score of 30 in Table 11 of Appendix A. The CWM mixed with UXO is used for undamaged CWM that are DMM or that are not configured as a munition, and that are commingled with conventional munitions that are UXO. These score 25.

One commenter questioned whether the receptor factor in the CHE module should be the same as for the EHE, given the impact of wind drift on populations if a chemical agent is released. Evaluation of factors such as dispersion by wind current is far more complex than is appropriate for a prioritization tool. Such factors may, however, be important during a munitions response and be important considerations in the evaluation of remedial alternatives. The Department believes that the current receptor construct is sufficient for assigning each MRS a relative priority.

3. Section 179.6(c). Health Hazard Evaluation (HHE) Module

The Department received a number of comments on the Relative Risk Site Evaluation (RRSE) module, which is intended to evaluate the health hazards associated with MC and any incidental nonmunitions-related contaminants at an MRS. The Department has revised and renamed this module in response to the most significant comments received on the proposed rule. Several commenters noted that although the EHE and CHE module results seemed well balanced in terms of the distribution of outcomes, the RRSE module appeared to score too many sites as ''high,'' inappropriately skewing the overall priority assigned to the MRS.

Specifically, it was observed that having only three outcomes (*i.e.*, high, medium, and low) as provided in the RRSE module can result in this one module being the dominating factor in the overall priority assignment. In response to this significant comment, the Department analyzed the construct of the module and revised it so that the outcome in the rule has seven possible answers, increasing the ability to differentiate among MRSs. Accordingly, the Department believes that the revised module better reflects the relative evaluation of explosive, CWM, and MC hazards potentially present at the site. The Department has also changed the name of the module to the Health Hazard Evaluation (HHE) Module to differentiate it from the three-outcome RRSE used in the Department's Installation Restoration program (IRP). The Department will apply the HHE only to MRSs subject to this rule. The HHE module is intended to evaluate health hazards associated with MC at an MRS, with only incidental nonmunitions-related contaminants addressed under the MMRP.

The RRSE will continue to be applied to sites in the IRP category of the DERP.

Within the revised framework, the data and the process by which the data are evaluated are the same as within the RRSE; however, the distinction between the previous and revised frameworks lies in the greater number of outcomes (*i.e.*, seven versus three). Only MRSs with the maximum results for the three factors (*i.e.*, Contaminant Hazard Factor (CHF), Receptor Factor, and Migration Pathway Factor) are assigned the highest priority (*i.e.*, Category A). In other words, only those MRSs with significant MC-related health hazards, an identified receptor, and an evident migration pathway are assigned to Category A for the HHE module.

Tables 1, 2, and 3 below illustrate the derivation of the seven categories of the HHE. Table 1, which reproduces Table 21 of Appendix A, provides the three potential outcomes for each of the factors in the HHE. Table 2, which reproduces Table 22 of Appendix A, illustrates the different possible combinations of the results. The frequency in this table denotes the number of times each combination is used. Table 3, which reproduces Table 23 of Appendix A, spreads the possible combinations across seven categories, permitting only the most and least hazardous combinations in the highest and lowest categories. The other combinations are spread across the five remaining categories in a bell curve based on frequency of the combination.

TABLE 1.—HHE MODULE RATING

Contaminant hazard factor		Receptor factor		Migration pathway factor	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

TABLE 2.—HHE MODULE RATING

Contaminant hazard factor	Receptor factor	Migration pathway		
		Evident	Potential	Confined
Significant	Identified	HHH	HHM	HHL
	Potential	HHM	HMM	HML
	Limited	HHL	HML	HLL
Moderate	Identified	HHM	HMM	HML
	Potential	HMM	MMM	MML
	Limited	HML	MML	MLL
Minimal	Identified	HHL	HML	HLL
	Potential	HML	MML	MLL
	Limited	HLL	MLL	LLL

TABLE 3.—HHE MODULE

Combination	Frequency	Category
HHH	1	A
HHM	3	B
HHL	3	C
HMM	3	
HML	6	D
MMM	1	
HLL	3	E
MML	3	
MLL	3	F
LLL	1	G

A commenter asked why the ecological receptors for surface water and sediment in the Receptor factor are limited to critical habitats ''and other similar environments.'' The Department's response is that it chose to focus on locations of critical habitat as a means of delineating among ecological receptors. Almost all areas are habitat for some species, and considering all habitats equally provides no differentiating criteria. In response to the same commenter, the Department wishes to clarify that consumption of fish in contaminated waters is accounted for in the HHE.

One commenter questioned the exclusion of an ecological endpoint during the evaluation of surface soils and requested that the Department consider groundwater as a minor receptor factor. The Department's response is that ecological receptors are not considered for evaluation of the surface soil since ecological standards are generally not available for the CHF calculation.

Some comments were received requesting that the Department change the comparison value used for carcinogens from a 1×10^{-4} to a 1×10^{-6} value, which would make it consistent with some states' cleanup goals. This rule, however, is not using the 1×10^{-4} value for cleanup; it is being used to assign a relative priority for action. The Department believes that 1×10^{-4} is an appropriate value for prioritization. Further, changing the range will not change the relative ranking of any individual site, as all sites would shift equally if a different endpoint were used.

One commenter stated that the Receptor Factor should not be limited to surface soil as receptors have the potential for exposure to subsurface soil during intrusive activities or after development where subsurface soils have been brought to the surface. The

Department responds that where subsurface soil is coming to the surface, or is exposed in a manner in which people can contact it (*e.g.,* in an excavation), it is treated as surface soil.

Another commenter stated the module appears to underestimate the risks posed by landfills. The Department points out the releases from landfills usually do not include UXO, DMM, or MC. It is more likely that a landfill would be addressed under the IRP category of the DERP and, as such, would not be evaluated under this rule.

One commenter stated there is little detail describing the terms ''identified,'' ''potential,'' and ''limited'' receptors. Until guidance specific to the HHE is developed, the Department suggests reviewing the Relative Risk Site Evaluation Primer (available at *http://www.dtic.mil/envirodod*) for detailed information on the use of this factor.

A commenter remarked that the Receptor Factor for groundwater should consider individuals exposed inadvertently, such as construction workers conducting invasive activities, in addition to water supply exposure. The HHE was primarily developed to consider long-term chronic exposures, not short-term exposures, through water consumption because such exposures are the dominant case associated with groundwater contamination. Further, as part of prioritization, it would be difficult to determine if workers are being exposed in this way. Finally, this rule is not intended as a risk assessment nor will it take the place of a risk assessment, where unusual exposure scenarios can be properly considered.

A few commenters were concerned as to whether or not CHF values are established for all constituents, and if not, how the Department would establish these values. The Department will initially adopt the current contaminant tables in the Relative Risk Site Evaluation Primer as a basis for the HHE. These values are updated every few years. The Department will also continue to work with U.S. EPA in its efforts to promulgate CHF values for MC and for other constituents.

Several comments pertained to state involvement and concerns about data quality and consistency. The Department intends on developing guidance and conducting training to ensure consistency in implementation of the rule. Additionally, states will be involved in applying the rule, including the HHE module.

4. Section 179.6(d). Determining the MRS Priority

The Department received several comments regarding how the module for MC is integrated into the overall priority matrix because the EHE and CHE modules have seven categories and the RRSE category has three. Some commenters believe that because there are too few RRSE categories, sites with high RRSE scores drive the priority unnecessarily too high. In response to this and other comments, the Department revised the RRSE module (now the HHE module) to provide a number of categories consistent with the other modules in the rule.

One commenter remarked on the pros and cons of driving module scores into tiers versus discrete scores and on the Department's intentions. The Department's response is that the Department's intent was to assign relative priorities to each MRS, not to develop a one-N listing of priorities. If the latter had been the intent, the number of possible outcomes would have become unwieldy.

One commenter maintained that the module with the lowest numerical priority value should not determine the MRS priority. The commenter's view is that this approach is intrinsically flawed because it fails to consider the cumulative risk posed by the two modules having a lesser priority ranking, even though those risks may be significant, and when combined, may be greater than that posed by the third module. The commenter suggested that all module priority scores be considered cumulatively in determining the priority for establishing which MRS presents the greatest overall hazard. The Department acknowledges the commenter's concern that there is a cumulative aspect to the hazards evaluated by each module. During the development of the rule, the Department considered using a cumulative total to assign the priority but was unable to define the mathematical relationship between the three modules in a manner that appeared rational or acceptable to the states, tribes, and others consulted during the development. Therefore, the Department's approach is to assign the priority based on the highest hazard posed by the conditions at the site.

F. Section 179.7. Sequencing

Two commenters stated that although the factors to be considered in making sequencing decisions include the ''reasonably anticipated future land use,'' land use assumptions, even reasonable ones, may change and need to be reconsidered. The Department's response is that the rule is used to assign to each MRS a relative priority, given the associated risks. To the extent any specific factors considered in application of the rule change, and that change affects the priority assigned to an MRS, the annual reexamination of assigned priorities should identify and consider the change. As a rule, the Department will address those sites with the highest risk first. Sequencing decisions are, however, often driven by other factors. Although sequencing decisions may change as relative priorities change, once a sequencing decision is made and execution of the munitions response has begun, it is unlikely that a change in relative priority would affect the sequencing decision.

One commenter noted that the proposed rule required the Department to report the results of sequencing; however, there is no mention of how the Department will make available all the results of the ranking. In response, the Department will compile the sequencing results and make them available to the public.

V. Administrative Requirements

A. Regulatory Impact Analysis Pursuant to Executive Order 12866

Executive Order 12866 (58 FR 51735 [October 4, 1993]) requires each agency taking regulatory action to determine whether that action is ''significant.'' The agency must submit any regulatory actions that qualify as ''significant'' to the Office of Management and Budget (OMB) for review, assess the costs and benefits anticipated as a result of the proposed action, and otherwise ensure that the action meets the requirements of the Executive Order. The Order defines ''significant regulatory action'' as one that is likely to result in a rule that may (1) have an annual effect on the economy of $100 million or more or adversely effect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

The Department has determined that the rule is not a significant rule under Executive Order 12866 because it is not likely to result in a rule that will meet any of the four prerequisites.

(1) The rule will not have an annual effect on the economy of $100 million or more or adversely affect in a material

way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities.

The primary effect on the economy will be the necessity for state and/or local governments to conduct oversight of the environmental restoration activities. The Department previously determined that the rule does not place a burden in excess of $100 million each year on state, local, or tribal governments. The changes from the proposed rule do not significantly change the analysis conducted in support of the proposed rule, which showed that the effects on the economy as a whole, any particular sector of the economy, productivity, competition, or jobs are not significant. In addition, because the one impact that was identified, costs for state oversight are reimbursable through the Defense and State Memorandum of Agreement (DSMOA) program, the overall impact to any individual state is minimal.

Similarly, the previous determination that the proposed rule does not have a direct adverse effect on the environment, public health, and safety remains unchanged by the final rule. Any adverse effects were either a result of the actions that caused the UXO, DMM, or MC to be present at the MRS (e.g., the site's use as a military range, treatment of waste military munitions at the site) , which predate the application of the rule, or are the result of the munitions response activities that are implemented after the application of the rule. In the latter case, munitions response activities are performed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), a process that fully considers the overall impacts to human health and the environment posed by UXO, DMM, or MC and the response to such.

For these reasons, the Department has determined that the rule will not adversely affect, in a material way, the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities.

(2) The rule will not create a serious inconsistency or otherwise interfere with an action taken or planned by another agency.

Implementation of the rule will not create a serious inconsistency or otherwise interfere with another agency's action because the Department has lead authority for administering the DERP under 10 U.S.C. 2701(a)(1). The DERP statute delineates the responsibilities of the Department and authority of U.S. EPA to some extent. The Department is required by 10 U.S.C. 2701(a)(3) to consult with the U.S. EPA in its administration of the environmental restoration program. Further, Section 2701(c)(2) of the statute gives the Department the responsibility of conducting environmental restoration activities on all properties owned or leased by it, except those for which U.S. EPA has entered into a settlement with a potentially responsible party. The rule's ranking system will not interfere with the Hazard Ranking System (HRS) maintained by the U.S. EPA because each serves its own purpose. U.S. EPA uses the HRS to place uncontrolled waste sites on the National Priorities List (NPL). U.S. EPA does not use the HRS to determine the priority in funding U.S. EPA remedial response actions. The Department will use the rule to assign a relative priority to each MRS based on the risks posed at each MRS, relative to the risks posed at other MRSs, and may use the rule as a basis for determining which MRS will receive funding. The Department's use of the rule should not interfere with U.S. EPA's use of the HRS. The Department action may interfere with U.S. EPA action in a situation where U.S. EPA decides to pursue response action at an MRS that the Department has designated as a low priority. Where this occurs, the Department will cooperate, to the extent possible, with U.S. EPA and rely on existing interagency processes to reach agreement on MRS priorities and response actions. Based on the above reasoning, the Department has determined that there is minimal potential for inconsistencies or interference with action by any other agency.

(3) The rule will not materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof.

The rule will not materially alter the budgetary impact of entitlements, grants, user fees, or loan programs, or the rights and obligations of recipients thereof because no entitlements, grants, user fees, or loan programs are invoked through prioritization of each MRS for response activities.

(4) The rule will not raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Finally, the rule does not raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order. Congress has already established the requirement for environmental restoration of MRSs and for the Department's development of a method to assign each MRS a relative priority. The rule is merely a method for the Department to determine a relative priority of an MRS for response action. The Department has identified no novel legal or policy issues that this rule will create on either an MRS-specific basis or overall. Nor has the Department identified any novel legal or policy issues arising out of the President's priorities or principles set forth in the Regulatory Impact Analysis.

B. Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.,* as amended by the Small Business Regulatory Enforcement Fairness Act [SBREFA] of 1996), requires that an agency conduct a regulatory flexibility analysis when publishing a notice of rulemaking for any proposed or final rule. The regulatory flexibility analysis determines the impact of the rule on small entities (*i.e.*, small businesses, small organizations, and small governmental jurisdictions). SBREFA amended the Regulatory Flexibility Act to require federal agencies to state the factual basis for certifying that a rule will not have a significant economic impact on a substantial number of small entities.

The Department hereby certifies that the rule will not have a significant economic impact on a substantial number of small entities. The nature of the rule provides the factual basis for a determination that no regulatory flexibility analysis is required. The rule merely provides a procedure by which the Department may assign a relative priority to each MRS for response actions. No costs are directly imposed on small entities nor is any action directly required of small entities through this rule. Because the Department bears the financial responsibility for remediating MRSs, and the source of its funding is Congress, implementation of the rule will not directly affect small entities in a financial manner. For the foregoing reasons, the Department believes that the rule, if promulgated, would not have a significant economic impact on a substantial number of small entities.

C. Unfunded Mandates

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, requires federal agencies to assess the effects of their regulatory actions on state, local, and tribal

governments and the private sector. Section 202 of the UMRA requires that, prior to promulgating proposed and final rules with ''federal mandates'' that may result in expenditures by state, local, and tribal governments, in the aggregate, or by the private sector, of $100 million or more in any one year, the agency must prepare a written statement, including a cost-benefit analysis of the rule. Under Section 205 of the UMRA, the Department must also identify and consider a reasonable number of regulatory alternatives to the rule and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule. Certain exceptions to Section 205 exist. For example, when the requirements of Section 205 are inconsistent with applicable law, Section 205 does not apply. In addition, an agency may adopt an alternative other than the least costly, most cost-effective, or least burdensome in those cases where the agency publishes with the final rule an explanation of why such alternative was not adopted. Section 203 of the UMRA requires that the agency develop a small government agency plan before establishing any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments. The small government agency plan must include procedures for notifying potentially affected small governments, providing officials of affected small governments with the opportunity for meaningful and timely input in the development of regulatory proposals with significant federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

The Department has determined that the rule does not contain a federal mandate that may result in expenditures of $100 million or more for state, local, and tribal governments in the aggregate, or by the private sector in any one year. The term ''federal mandate'' means any provision in statute or regulation or any federal court ruling that imposes ''an enforceable duty'' upon state, local, or tribal governments, and includes any condition of federal assistance or a duty arising from participation in a voluntary federal program that imposes such a duty. The rule does not contain a federal mandate because it imposes no enforceable duty upon state, tribal, or local governments. The Department is responsible for funding munitions responses and imposes no costs on other entities by prioritizing MRSs using the rule. The Department recognizes that the state, local, or tribal government may expend funds to conduct oversight of the response activities. The rule, however, does not require such oversight. To the degree such oversight is required, it is required by preexisting law on which the rule has no effect.

D. Paperwork Reduction Act

The Paperwork Reduction Act (PRA), 44 U.S.C. 3501 *et seq.*, prohibits a federal agency from conducting or sponsoring a collection of information that requires OMB approval, unless such approval has been obtained and the collection request displays a currently valid OMB control number. Nor is any person required to respond to an information collection request that has not complied with the PRA. The term ''collection of information'' includes collection of information from ten or more persons. The Department has determined that the PRA does not apply to this rule because, although the Department will collect information on the MRS, it does not mandate that any person supply information. All information collected from persons will be voluntary, for example, through an interview. Therefore, the PRA does not apply to the rule.

E. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law 104–113, Section 12(d) (15 U.S.C. 272 note), directs federal agencies to use technical standards developed by voluntary consensus standards bodies in its regulatory activities, except in those cases in which using such standards would be inconsistent with applicable law or otherwise impractical. ''Technical standards'' means performance-based or design-specific technical specifications and related management systems practices. Voluntary consensus means that the technical standards are developed or adopted by voluntary consensus standards organizations. In those cases in which a federal agency does not use voluntary consensus standards that are available and applicable, the agency must provide OMB with an explanation.

The rule does not involve performance-based or design-specific technical specifications or related management systems practices. The values for relative risk used in the HHE module, to the extent they qualify as technical standards, were formed through consensus. The rule is therefore in compliance with the NTTAA.

F. Environmental Justice Requirements Under Executive Order 12898

Under Executive Order 12898, ''Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,'' a federal agency must, where practicable and appropriate, collect, maintain, and analyze information assessing and comparing environmental and human health risks borne by populations identified by race, national origin, or income. To the extent practical and appropriate, federal agencies must then use this information to determine whether their activities have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

The Department believes that implementation of the rule will address environmental justice concerns in several ways. First, the rule will address environmental justice by ensuring that prioritization is based primarily on risk to the human health and environment of all populations. The Department recognizes that prioritization of MRSs for response action could result in a low-priority designation for some MRSs located in low-income or minority neighborhoods. Under the risk-based approach, such prioritization could only be viewed as environmental injustice if low-income and minority populations were disproportionately located near low-risk MRSs. However, should this be the case, the final rule would allow the Department to consider this fact in its sequencing decisions. Second, the Department has reserved a step in the rule for consideration of environmental justice concerns, having supplemented the risk-based prioritization decision with consideration of whether low-income or minority populations are near the MRS in question. Third, because the rule will provide the Department with an established method for choosing which MRSs to address first, it will ensure uniformity among decisions and eliminate the potential for intentional discrimination against low-income and minority populations. Finally, the Department's engagement with various stakeholders, most notably tribal governments, in developing the rule has helped to build consideration of environmental justice concerns into the rule.

The Department plans to continue to study the environmental justice effects once the rule is implemented. Until that time, no data exist regarding whether low-income and minority populations live near high-risk MRSs as opposed to low-risk MRSs. As such, there is

currently no way of determining whether generally focusing response efforts first at those MRSs that pose a relatively higher risk will in any way adversely affect these or any particular segment of the population. The Department decided to include environmental justice considerations in the body of the proposed rule as a precautionary measure, but will examine the effect of the rule on low-income and minority populations, once the Department has implemented it and has compiled data from which to draw.

At this time, the Department believes that no action will directly result from the rule that will have a disproportionately high and adverse human health and environmental effect on any segment of the population. The Department will examine, however, the effects of implementation to ensure that no disproportionately high and adverse human health or environmental effect occurs.

G. Federalism Considerations Under Executive Order 13132

Executive Order 13132, entitled ''Federalism'' (64 FR 43255, August 10, 1999), establishes certain requirements for federal agencies issuing regulations, legislative comments, proposed legislation, or other policy statements or actions that have ''federal implications.'' Under the Executive Order, any of these agency documents or actions have ''federal implications'' when they have ''substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.'' Section 6 of the Executive Order prohibits any agency from issuing a regulation that has federal implications, imposes substantial direct compliance costs on state and local governments, and is not required by statute. Such a regulation may be issued only if the federal government provides the funds necessary to pay the direct compliance costs incurred by state and local governments, or the agency consults with state and local officials early in the process of developing the proposed regulation. Further, a federal agency may issue a regulation that has federalism implications and preempts state law only if the agency consults with state and local officials early in the process of developing the proposed regulation.

The rule does not have federalism implications because it will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. The statute authorizing the Department's environmental restoration program, 10 U.S.C. 2701, clearly defines the role and responsibilities of the Department with respect to state and local governments. The role and primary responsibility of the Department is to implement an appropriate environmental restoration program at MRSs. The Department funds environmental restoration activities and does not directly affect the states in any manner. The only potential dispute regarding distribution of power may arise where the state attempts to require the Department to respond to an MRS under a state hazardous waste law, and the Department has not ranked the MRS as a high priority or allocated funding for environmental restoration of the MRS. Such a situation, however, would be dealt with per established legal principles regarding the relationship of states to the federal government. The rule does not alter this relationship. Additionally, it would not be appropriate for the rule to attempt to assign roles to the Department or any state because such assignment of roles is outside the scope of the statutory mandate. The rule does not impose direct compliance costs on state or local governments because the Department funds environmental restoration activities.

Finally, development of a method for prioritizing action at MRSs was specifically required by statute. Therefore, the requirements of the Executive Order, Section 6, do not apply to the rule.

List of Subjects in 32 CFR Part 179

Arms and munitions, Environmental protection, Government property, Military personnel.

■ Accordingly, 32 CFR part 179 is added to Chapter 1, Subchapter H to read as follows:

PART 179—MUNITIONS RESPONSE SITE PRIORITIZATION PROTOCOL (MRSPP)

Sec.

Authority: 10 U.S.C. 2710 *et seq.*

§ 179.1 Purpose.

The Department of Defense (the Department) is adopting this Munitions Response Site Prioritization Protocol (MRSPP) (hereinafter referred to as the ''rule'') under the authority of 10 U.S.C. 2710(b). Provisions of 10 U.S.C. 2710(b) require that the Department assign to each defense site in the inventory required by 10 U.S.C. 2710(a) a relative priority for response activities based on the overall conditions at each location and taking into consideration various factors related to safety and environmental hazards.

§ 179.2 Applicability and scope.

(a) This part applies to the Office of the Secretary of Defense, the Military Departments, the Defense Agencies and the Department Field Activities, and any other Department organizational entity or instrumentality established to perform a government function (hereafter referred to collectively as the ''Components'').

(b) The rule in this part shall be applied at all locations:

(1) That are, or were, owned by, leased to, or otherwise possessed or used by the Department, and

(2) That are known to, or suspected of, containing unexploded ordnance (UXO), discarded military munitions (DMM), or munitions constituents (MC), and

(3) That are included in the inventory established pursuant to 10 U.S.C. 2710(a).

(c) The rule in this part shall not be applied at the locations not included in the inventory required under 10 U.S.C. 2710(a). The locations not included in the inventory are:

(1) Locations that are not, or were not, owned by, leased to, or otherwise possessed or used by the Department,

(2) Locations neither known to contain, or suspected of containing, UXO, DMM, or MC,

(3) Locations outside the United States,

(4) Locations where the presence of military munitions results from combat operations,

(5) Currently operating military munitions storage and manufacturing facilities,

(6) Locations that are used for, or were permitted for, the treatment or disposal of military munitions, and

(7) Operational ranges.

§ 173.3 Definitions.

This part includes definitions for many terms that clarify its scope and applicability. Many of the terms relevant to this part are already defined, either in 10 U.S.C. 101, 10 U.S.C.

2710(e), or the Code of Federal Regulations. Where this is the case, the statutory and regulatory definitions are repeated here strictly for ease of reference. Citations to the U.S. Code or the Code of Federal Regulations are provided with the definition, as applicable. Unless used elsewhere in the U.S. Code or the Code of Federal Regulations, these terms are defined only for purposes of this part.

Barrier means a natural obstacle or obstacles (*e.g.*, difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (*e.g.*, fencing), and combinations of natural and man-made obstacles.

Chemical agent (CA) means a chemical compound (to include experimental compounds) that, through its chemical properties produces lethal or other damaging effects on human beings, is intended for use in military operations to kill, seriously injure, or incapacitate persons through its physiological effects. Excluded are research, development, testing and evaluation (RDTE) solutions; riot control agents; chemical defoliants and herbicides; smoke and other obscuration materials; flame and incendiary materials; and industrial chemicals. (This definition is based on the definition of ''chemical agent and munition'' in 50 U.S.C. 1521(j)(1).)

Chemical Agent (CA) Hazard is a condition where danger exists because CA is present in a concentration high enough to present potential unacceptable effects (*e.g.*, death, injury, damage) to people, operational capability, or the environment.

Chemical Warfare Materiel (CWM) means generally configured as a munition containing a chemical compound that is intended to kill, seriously injure, or incapacitate a person through its physiological effects. CWM includes V- and G-series nerve agents or H-series (mustard) and L-series (lewisite) blister agents in other-than-munition configurations; and certain industrial chemicals (*e.g.*, hydrogen cyanide (AC), cyanogen chloride (CK), or carbonyl dichloride (called phosgene or CG)) configured as a military munition. Due to their hazards, prevalence, and military-unique application, chemical agent identification sets (CAIS) are also considered CWM. CWM does not include riot control devices; chemical defoliants and herbicides; industrial chemicals (*e.g.*, AC, CK, or CG) not configured as a munition; smoke and other obscuration-producing items; flame and incendiary-producing items; or soil, water, debris, or other media contaminated with low concentrations of chemical agents where no CA hazards exist. For the purposes of this Protocol, CWM encompasses four subcategories of specific materials:

(1) *CWM, explosively configured* are all munitions that contain a CA fill and any explosive component. Examples are M55 rockets with CA, the M23 VX mine, and the M360 105-mm GB artillery cartridge.

(2) *CWM, nonexplosively configured* are all munitions that contain a CA fill, but that do not contain any explosive components. Examples are any chemical munition that does not contain explosive components and VX or mustard agent spray canisters.

(3) *CWM, bulk container* are all non-munitions-configured containers of CA (e.g., a ton container) and CAIS K941, toxic gas set M–1 and K942, toxic gas set M–2/E11.

(4) *CAIS* are military training aids containing small quantities of various CA and other chemicals. All forms of CAIS are scored the same in this rule, except CAIS K941, toxic gas set M–1; and CAIS K942, toxic gas set M–2/E11, which are considered forms of CWM, bulk container, due to the relatively large quantities of agent contained in those types of sets.

Components means the Office of the Secretary of Defense, the Military Departments, the Defense Agencies, the Department Field Activities, and any other Department organizational entity or instrumentality established to perform a government function.

Defense site means locations that are or were owned by, leased to, or otherwise possessed or used by the Department. The term does not include any operational range, operating storage or manufacturing facility, or facility that is used for or was permitted for the treatment or disposal of military munitions. (10 U.S.C. 2710(e)(1))

Discarded military munitions (DMM) means 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 U.S.C. 2710(e)(2))

Explosive hazard means 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.

Military munitions means all ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the Department of Defense, the Coast Guard, the Department of Energy, and the National Guard. The term includes confined gaseous, liquid, and solid propellants; explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, 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, and demolition charges; and devices and components of any item thereof. The term does not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices, and nuclear components, other than nonnuclear components of nuclear devices that are managed under the nuclear weapons program of the Department of Energy after all required sanitization operations under the Atomic Energy Act of 1954 (42 U.S.C. 2011 *et seq.*) have been completed. (10 U.S.C. 101(e)(4))

Military range means designated land and water areas set aside, managed, and used to research, develop, test, and evaluate military munitions, other ordnance, or weapon systems, or to train military personnel in their use and handling. Ranges include firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, and buffer zones with restricted access and exclusionary areas. (40 CFR 266.201)

Munitions and explosives of concern distinguishes specific categories of military munitions that may pose unique explosives safety risks, such as UXO, as defined in 10 U.S.C. 101(e)(5); discarded military munitions, as defined in 10 U.S.C. 2710(e)(2); or munitions constituents (*e.g.,* TNT, RDX), as defined in 10 U.S.C. 2710(e)(3), present in high enough concentrations to pose an explosive hazard.

Munitions constituents means any materials originating from UXO, discarded military munitions, or other military munitions, including explosive and nonexplosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions. (10 U.S.C. 2710(e)(3))

Munitions response means response actions, including investigation, removal actions, and remedial actions, to address the explosives safety, human

health, or environmental risks presented by UXO, discarded military munitions (DMM), or munitions constituents (MC), or to support a determination that no removal or remedial action is required.

Munitions response area (MRA) means any area on a defense site that is known or suspected to contain UXO, DMM, or MC. Examples are former ranges and munitions burial areas. An MRA comprises one or more munitions response sites.

Munitions response site (MRS) means a discrete location within an MRA that is known to require a munitions response.

Operational range means a range that is under the jurisdiction, custody, or control of the Secretary of Defense and that is used for range activities, or although not currently being used for range activities, that is still considered by the Secretary to be a range and has not been put to a new use that is incompatible with range activities. (10 U.S.C. 101(e)(3))

Range means a designated land or water area that is set aside, managed, and used for range activities of the Department of Defense. The term includes firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, electronic scoring sites, buffer zones with restricted access, and exclusionary areas. The term also includes airspace areas designated for military use in accordance with regulations and procedures prescribed by the Administrator of the Federal Aviation Administration. (10 U.S.C. 101(e)(1)(A) and (B))

Range activities means research, development, testing, and evaluation of military munitions, other ordnance, and weapons systems; and the training of members of the armed forces in the use and handling of military munitions, other ordnance, and weapons systems. (10 U.S.C. 101(3)(2))

Unexploded ordnance (UXO) means military munitions that:

(1) Have been primed, fuzed, armed, or otherwise prepared for action;

(2) Have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and

(3) Remain unexploded, whether by malfunction, design, or any other cause. (10 U.S.C. 101(e)(5))

United States means, in a geographic sense, the states, territories, and possessions and associated navigable waters, contiguous zones, and ocean waters of which the natural resources are under the exclusive management authority of the United States. (10 U.S.C. 2710(e)(10))

§ 179.4 Policy.

(a) In assigning a relative priority for response activities, the Department generally considers those MRSs posing the greatest hazard as being the highest priority for action. The priority assigned should be based on the overall conditions at each MRS, taking into consideration various factors relating to safety and environmental hazard potential.

(b) In addition to the priority assigned to an MRS, other considerations (*e.g.,* availability of specific equipment, intended reuse, stakeholder interest) can affect the sequence in which munitions response actions at a specific MRS are funded.

(c) It is Department policy to ensure that U.S. EPA, other federal agencies (as appropriate or required), state regulatory agencies, tribal governments, local restoration advisory boards or technical review committees, and local stakeholders are offered opportunities to participate in the application of the rule in this part and making sequencing recommendations.

§ 179.5 Responsibilities.

Each Component shall:

(a) Apply the rule in this part to each MRS under its administrative control when sufficient data are available to populate all the data elements within any or all of the three hazard evaluation modules that comprise the rule. Upon further delineation and characterization of an MRA into more than one MRS, Components shall reapply the rule to all MRSs within the MRA. In such cases where data are not sufficient to populate one or two of the hazard evaluation modules (*e.g.,* there are no constituent sampling data for the Health Hazard Evaluation [HHE] module), Components will assign a priority based on the hazard evaluation modules evaluated and reapply the rule once sufficient data are available to apply the remaining hazard evaluation modules.

(b) Ensure that the total acreage of each MRA is evaluated using this rule (i.e., ensure the all MRSs within the MRA are evaluated).

(c) Ensure that EPA, other federal agencies (as appropriate or required), state regulatory agencies, tribal governments, local restoration advisory boards or technical review committees, local community stakeholders, and the current landowner (if the land is outside Department control) are offered opportunities as early as possible and throughout the process to participate in the application of the rule and making sequencing recommendations.

(1) To ensure EPA, other federal agency, state regulatory agencies, tribal governments, and local government officials are aware of the opportunity to participate in the application of the rule, the Component organization responsible for implementing a munitions response at the MRS shall notify the heads of these organizations (or their designated point of contact), as appropriate, seeking their involvement prior to beginning prioritization. Records of the notification will be placed in the Administrative Record and Information Repository for the MRS.

(2) Prior to beginning prioritization, the Component organization responsible for implementing a munitions response at the MRS shall publish an announcement in local community publications requesting information pertinent to prioritization or sequencing decisions to ensure the local community is aware of the opportunity to participate in the application of the rule.

(d) Establish a quality assurance panel of Component personnel to review, initially, all MRS prioritization decisions. Once the Department determines that its Components are applying the rule in a consistent manner and the rule's application leads to decisions that are representative of site conditions, the Department may establish a sampling-based approach for its Components to use for such reviews. This panel reviewing the priority assigned to an MRS shall not include any participant involved in applying the rule to that MRS. If the panel recommends a change that results in a different priority, the Component shall report, in the inventory data submitted to the Office of the Deputy Under Secretary of Defense (Installations & Environment) (ODUSD[I&E]), the rationale for this change. The Component shall also provide this rationale to the appropriate regulatory agencies and involved stakeholders for comment before finalizing the change.

(e) Following the panel review, submit the results of applying the rule along with the other inventory data that 10 U.S.C. 2710(c) requires be made publicly available, to the ODUSD(I&E). The ODUSD(I&E) shall publish this information in the report on environmental restoration activities for that fiscal year. If sequencing decisions result in action at an MRS with a lower MRS priority ahead of an MRS with a higher MRS priority, the Component shall provide specific justification to the ODUSD(I&E).

(f) Document in a Management Action Plan (MAP) or its equivalent all aspects

of the munitions responses required at all MRSs for which that MAP is applicable. Department guidance requires that MAP be developed and maintained at an installation (or Formerly Used Defense Site [FUDS] property) level and address each site at that installation or FUDS. For the FUDS program, a statewide MAP may also be developed.

(g) Develop sequencing decisions at installations and FUDS with input from appropriate regulators and stakeholders (*e.g.,* community members of an installation's restoration advisory board or technical review committee), and document this development in the MAP. Final sequencing may be impacted by Component program management considerations. If the sequencing of any MRS is changed from the sequencing reflected in the current MAP, the Component shall provide information to the appropriate regulators and stakeholders documenting the reasons for the sequencing change, and shall request their review and comment on that decision.

(h) Ensure that information provided by regulators and stakeholders that may influence the priority assigned to an MRS or sequencing decision concerning an MRS is included in the Administrative Record and the Information Repository.

(i) Review each MRS priority at least annually and update the priority as necessary to reflect new information. Reapplication of the rule is required under any of the following circumstances:

(1) Upon completion of a response action that changes site conditions in a manner that could affect the evaluation under this rule.

(2) To update or validate a previous evaluation at an MRS when new information is available.

(3) To update or validate the priority assigned where that priority has been previously assigned based on evaluation of only one or two of the three hazard evaluation modules.

(4) Upon further delineation and characterization of an MRA into MRSs.

(5) To categorize any MRS previously classified as ''evaluation pending.''

§ 179.6 Procedures.

The rule in this part comprises the following three hazard evaluation modules.

(a) Explosive Hazard Evaluation (EHE) module.

(1) The EHE module provides a single, consistent, Department-wide approach for the evaluation of explosive hazards. This module is used when there is a known or suspected presence of an explosive hazard. The EHE module is composed of three factors, each of which has two to four data elements that are intended to assess the specific conditions at an MRS. These factors are:

(i) *Explosive hazard,* which has the data elements *Munitions Type* and *Source of Hazard* and constitutes 40 percent of the EHE module score. (See Appendix A to this part, Tables 1 and 2.)

(ii) *Accessibility,* which has the data elements *Location of Munitions, Ease of Access,* and *Status of Property* and constitutes 40 percent of the EHE module score. (See Appendix A, Tables 3, 4, and 5.)

(iii) Receptors, which has the data elements *Population Density, Population Near Hazard, Types of Activities/Structures,* and *Ecological and/or Cultural Resources* and constitutes 20 percent of the EHE module score. (See Appendix A, Tables 6, 7, 8, and 9.)

(2) Based on MRS-specific information, each data element is assigned a numeric score, and the sum of these score is the EHE module score. The EHE module score results in an MRS being placed into one of the following ratings. (See Appendix A, Table 10.)

(i) *EHE Rating A (Highest)* is assigned to MRSs with an EHE module score from 92 to 100.

(ii) *EHE Rating B* is assigned to MRSs with an EHE module score from 82 to 91.

(iii) *EHE Rating C* is assigned to MRSs with an EHE module score from 71 to 81.

(iv) *EHE Rating D* is assigned to MRSs with an EHE module score from 60 to 70.

(v) *EHE Rating E* is assigned to MRSs with an EHE module score from 48 to 59.

(vi) *EHE Rating F* is assigned to MRSs with an EHE module score from 38 to 47.

(vii) *EHE Rating G (Lowest)* is assigned to MRSs with an EHE module score less than 38.

(3) There are also three other possible outcomes for the EHE module:

(i) *Evaluation pending.* This category is used when there are known or suspected UXO or DMM, but sufficient information is not available to populate the nine data elements of the EHE module.

(ii) *No longer required.* This category is reserved for MRSs that no longer require an assigned priority because the Department has conducted a response, all objectives set out in the decision document for the MRS have been achieved, and no further action, except for long-term management and recurring reviews, is required.

(iii) *No known or suspected explosive hazard.* This category is reserved for MRSs that do not require evaluation under the EHE module.

(4) The EHE module rating shall be considered with the CHE and HHE module ratings to determine the MRS priority.

(5) MRSs lacking information for determining an EHE module rating shall be programmed for additional study and evaluated as soon as sufficient data are available. Until an EHE module rating is assessed, MRSs shall be rated as ''evaluation pending'' for the EHE module.

(b) Chemical Warfare Materiel Hazard Evaluation (CHE) module. (1) The CHE module provides an evaluation of the chemical hazards associated with the physiological effects of CWM. The CHE module is used only when CWM are known or suspected of being present at an MRS. Like the EHE module, the CHE module has three factors, each of which has two to four data elements that are intended to assess the conditions at an MRS.

(i) *CWM hazard,* which has the data elements *CWM Configuration* and *Sources of CWM* and constitutes 40 percent of the CHE score. (See Appendix A to this part, Tables 11 and 12.)

(ii) *Accessibility,* which focuses on the potential for receptors to encounter the CWM known or suspected to be present on an MRS. This factor consists of three data elements, *Location of CWM, Ease of Access,* and *Status of Property,* and constitutes 40 percent of the CHE score. (See Appendix A, Tables 13, 14, and 15.)

(iii) *Receptor,* which focuses on the human and ecological populations that may be impacted by the presence of CWM. It has the data elements *Population Density, Population Near Hazard, Types of Activities/Structures,* and *Ecological and/or Cultural Resources* and constitutes 20 percent of the CHE score. (See Appendix A, Tables 16, 17, 18, and 19.)

(2) Similar to the EHE module, each data element is assigned a numeric score, and the sum of these scores (*i.e.*, the CHE module score) is used to determine the CHE rating. The CHE module score results in an MRS being placed into one of the following ratings. (See Appendix A, Table 20.)

(i) *CHE Rating A (Highest)* is assigned to MRSs with a CHE score from 92 to 100.

(ii) *CHE Rating B* is assigned to MRSs with a CHE score from 82 to 91.

(iii) *CHE Rating C* is assigned to MRSs with a CHE score from 71 to 81.

(iv) *CHE Rating D* is assigned to MRSs with a CHE score from 60 to 70.

(v) *CHE Rating E* is assigned to MRSs with a CHE score from 48 to 59.

(vi) *CHE Rating F* is assigned to MRSs with a CHE score from 38 to 47.

(vii) *CHE Rating G (Lowest)* is assigned to MRSs with a CHE score less than 38.

(3) There are also three other potential outcomes for the CHE module:

(i) *Evaluation pending.* This category is used when there are known or suspected CWM, but sufficient information is not available to populate the nine data elements of the CHE module.

(ii) *No longer required.* This category is reserved for MRSs that no longer require an assigned priority because the Department has conducted a response, all objectives set out in the decision document for the MRS have been achieved, and no further action, except for long-term management and recurring reviews, is required.

(iii) *No known or suspected CWM hazard.* This category is reserved for MRSs that do not require evaluation under the CHE module.

(4) The CHE rating shall be considered with the EHE module and HHE module ratings to determine the MRS priority.

(5) MRSs lacking information for assessing a CHE module rating shall be programmed for additional study and evaluated as soon as sufficient data are available. Until a CHE module rating is assigned, the MRS shall be rated as ''evaluation pending'' for the CHE module.

(c) Health Hazard Evaluation (HHE) module.

(1) The HHE provides a consistent Department-wide approach for evaluating the relative risk to human health and the environment posed by MC. The HHE builds on the RRSE framework that is used in the Installation Restoration Program (IRP) and has been modified to address the unique requirements of MRSs. The HHE module shall be used for evaluating the potential hazards posed by MC and other chemical contaminants. The HHE module is intended to evaluate MC at sites. Any incidental nonmunitions-related contaminants may be addressed incidental to a munitions response under the MMRP.

(2) The module has three factors:

(i) Contamination Hazard Factor (CHF), which indicates MC, and any nonmunitions-related incidental contaminants present; this factor contributes a level of High (H), Middle (M), or Low (L) based on Significant, Moderate, or Minimal contaminants present, respectively. (See Appendix A to this part, Table 21.)

(ii) Receptor Factor (RF), which indicates the receptors; this factor contributes a level of H, M, or L based on Identified, Potential, or Limited receptors, respectively. (See Appendix A, Table 21.)

(iii) Migration Pathway Factor (MPF), which indicates environmental migration pathways, and contributes a level of H, M, or L based on Evident, Potential or Confined pathways, respectively. (See Appendix A, Table 21.)

(3) The H, M, and L levels for the CHF, RF, and MPF are combined in a matrix to obtain composite three-letter combination levels that integrate considerations of all three factors. (See Appendix A, Table 22.)

(4) The three-letter combination levels are organized by frequency, and the resulting frequencies result in seven HHE ratings. (See Appendix A, Table 23.)

(i) HHE Rating A (Highest) is assigned to MRSs with an HHE combination level of high for all three factors.

(ii) HHE Rating B is assigned to MRSs with a combination level of high for CHF and RF and medium for MPF (HHM).

(iii) HHE Rating C is assigned to MRSs with a combination level of high for the CHF and RF and low for MPF (HHL), or high for CHF and medium for the RF and MPF (HMM).

(iv) HHE Rating D is assigned to MRSs with a combination level of high for the CHF, medium for the RF, and low for the MPF (HML), or medium for all three factors (MMM).

(v) HHE Rating E is assigned to MRSs with a combination level of high for the CHF and low for the RF and MPF (HLL), or medium for the CHF and RF and low for the MPF (MML).

(vi) HHE Rating F is assigned to MRSs with a combination level of medium for the CHF and low for the RF and MPF (MLL).

(vii) HHE Rating G (Lowest) is assigned to MRSs with a combination level of low for all three factors (LLL).

(5) The HHE three-letter combinations are replaced by the seven HHE ratings. (See Appendix A, Table 24.)

(6) There are also three other potential outcomes for the HHE module:

(i) *Evaluation pending.* This category is used when there are known or suspected MC, and any incidental nonmunitions-related contaminants present, but sufficient information is not available to determine the HHE module rating.

(ii) *No longer required.* This category is reserved for MRSs that no longer require an assigned MRS priority because the Department has conducted a response, all objectives set out in the decision document for the MRS have been achieved, and no further action, except for long-term management and recurring reviews, is required.

(iii) *No known or suspected munitions constituent hazard.* This rating is reserved for MRSs that do not require evaluation under the HHE module.

(7) The HHE module rating shall be considered with the EHE and CHE module ratings to determine the MRS priority.

(8) MRSs lacking information sufficient for assessing an HHE module rating shall be programmed for additional study and evaluated as soon as sufficient data are available. Until an HHR module rating is assigned, the MRS shall be classified as ''evaluation pending'' for the HHE module.

(d) Determining the MRS priority. (1) An MRS priority is determined based on integrating the ratings from the EHE, CHE, and HHE modules. Until all three hazard evaluation modules have been evaluated, the MRS priority shall be based on the results of the modules completed.

(2) Each MRS is assigned to one of eight MRS priorities based on the ratings of the three hazard evaluation modules, where Priority 1 indicates the highest potential hazard and Priority 8 the lowest potential hazard. Under the rule in this part, only MRSs with CWM can be assigned to Priority 1 and no MRS with CWM can be assigned to Priority 8. (See Appendix A to this part, Table 25.)

(3) An ''evaluation pending'' rating is used to indicate that an MRS requires further evaluation. This designation is only used when none of the three modules has a numerical rating (*i.e.*, 1 through 8) and at least one module is rated ''evaluation pending.'' The Department shall develop program metrics focused on reducing the number of MRSs with a status of ''evaluating pending'' for any of the three modules. (See Appendix A, Table 25.)

(4) A ''no longer required'' rating is used to indicate that an MRS no longer requires prioritization. The MRS will receive this rating when none of the three modules has a numerical (*i.e.*, 1 through 8) or an ''evaluation pending'' designation, and at least one of the modules is rated ''no longer required.''

(5) A rating of ''no known or suspected hazard'' is used to indicate that an MRS has no known or expected hazard. This designation is used only when the hazard evaluation modules are

rated as ''no known or suspected explosive hazard,'' ''no known or suspected CWM hazard,'' and ''no known or suspected MC hazard.'' (See Appendix A, Table 25.)

§ 179.7 Sequencing.

(a) *Sequencing considerations.* The sequencing of MRSs for action shall be based primarily on the MRS priority determined through applying the rule in this part. Generally, an MRS that presents a greater relative risk to human health, safety, or the environment will be addressed before an MRS that presents a lesser relative risk. Other factors, however, may warrant consideration when determining the sequencing for specific MRSs. In evaluating other factors in sequencing decisions, the Department will consider a broad range of issues. These other, or risk-plus factors, do not influence or change the MRS priority, but may influence the sequencing for action. Examples of factors that the Department may consider are:

(1) Concerns expressed by regulators or stakeholders.

(2) Cultural and social factors.

(3) Economic factors, including economic considerations pertaining to environmental justice issues, economies of scale, evaluation of total life cycle costs, and estimated valuations of long-term liabilities.

(4) Findings of health, safety, or ecological risk assessments or evaluations based on MRS-specific data.

(5) Reasonably anticipated future land use, especially when planning response actions, conducting evaluations of response alternatives, or establishing specific response action objectives.

(6) A community's reuse requirements at Base Realignment and Closure (BRAC) installations.

(7) Specialized considerations of tribal trust lands (held in trust by the United States for the benefit of any tribe or individual). The United States holds the legal title to the land and the tribe holds the beneficial interest.

(8) Implementation and execution considerations (*e.g.*, funding availability; the availability of the necessary equipment and people to implement a particular action; examination of alternatives to responses that entail significant capital investments, a lengthy period of operation, or costly maintenance; alternatives to removal or treatment of contamination when existing technology cannot achieve established standards [*e.g.*, maximum contaminant levels]).

(9) Mission-driven requirements.

(10) The availability of appropriate technology (*e.g.*, technology to detect, discriminate, recover, and destroy UXO).

(11) Implementing standing commitments, including those in formal agreements with regulatory agencies, requirements for continuation of remedial action operations until response objectives are met, other long-term management activities, and program administration.

(12) Established program goals and initiatives.

(13) Short-term and long-term ecological effects and environmental impacts in general, including injuries to natural resources.

(b) *Procedures and documentation for sequencing decisions.* (1) Each installation or FUDS is required to develop and maintain a Management Action Plan (MAP) or its equivalent. Sequencing decisions, which will be documented in the MAP at military installations and FUDS, shall be developed with input from appropriate regulators and stakeholders (*e.g.*, community members of an installation's restoration advisory board or technical review committee). If the sequencing of an MRS is changed from the sequencing reflected in the current MAP, information documenting the reasons for the sequencing change will be provided for inclusion in the MAP. Notice of the change in the sequencing shall be provided to those regulators and stakeholders that provided input to the sequencing process.

(2) In addition to the information on prioritization, the Components shall ensure that information provided by regulators and stakeholders that may influence the sequencing of an MRS is included in the Administrative Record and the Information Repository.

(3) Components shall report the results of sequencing to ODUSD(I&E) (or successor organizations). ODUSD(I&E) shall compile the sequencing results reported by each Component and publish the sequencing in the report on environmental restoration activities for that fiscal year. If sequencing decisions result in action at an MRS with a lower MRS priority ahead of an MRS with a higher priority, specific justification shall be provided to the ODUSD(I&E).

Appendix A to Part 179—Tables of the Munitions Response Site Prioritization Protocol

The tables in this Appendix are solely for use in implementing 32 CFR part 179.

BILLING CODE 5001–06–P

Table 1
Classifications Within the EHE Module *Munitions Type* Data Element

Classification	Description	Score
Sensitive	• All UXO that are considered likely to function upon any interaction with exposed persons (e.g., submunitions, 40mm high-explosive [HE] grenades, white phosphorus [WP] munitions, high-explosive antitank [HEAT] munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions). • All hand grenades containing energetic filler. • Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	30
High explosive (used or damaged)	• All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." • All DMM containing a high-explosive filler that have: - Been damaged by burning or detonation - Deteriorated to the point of instability.	25
Pyrotechnic (used or damaged)	• All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). • All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: - Been damaged by burning or detonation - Deteriorated to the point of instability.	20
High explosive (unused)	• All DMM containing a high explosive filler that: - Have not been damaged by burning or detonation - Are not deteriorated to the point of instability.	15
Propellant	• All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., rocket motor). • All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., rocket motor) that are: - Damaged by burning or detonation - Deteriorated to the point of instability.	15
Bulk secondary high explosives, pyrotechnics, or propellant	• All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., rocket motor), that are deteriorated. • Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10

Table 1
Classifications Within the EHE Module *Munitions Type* Data Element

Classification	Description	Score
Pyrotechnic (not used or damaged)	• All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: – Have not been damaged by burning or detonation – Are not deteriorated to the point of instability.	10
Practice	• All UXO that are practice munitions that are not associated with a sensitive fuze. • All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: – Been damaged by burning or detonation – Deteriorated to the point of instability.	5
Riot control	• All UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	• All used munitions or DMM that are categorized as small arms ammunition. [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.]	2
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former military range") means the MRS is a location that was (1) closed by a formal decision made by the Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means the investigation: (1) found written documents or records, (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means: (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or munitions debris (e.g., fragments, penetrators, projectiles, shell casings, links, fins); (2) the results of field or laboratory sampling and analysis procedures; or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition, without projectiles that contain explosives (other than tracers), that is .50 caliber or smaller, or for shotguns.

Table 2
Classifications Within the EHE Module *Source of Hazard* Data Element

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms ammunition was used. [There must be evidence that no other types of munitions (e.g., grenades) were used or are present to place an MRS into this category.]	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Former* (as in "former military range") means the MRS is a location that was (1) closed by a formal decision made by the Component with administrative control over the location, or (2) put to a use incompatible with the presence of UXO, DMM, or MC.
- *Historical evidence* means the investigation: (1) found written documents or records, (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means: (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or munitions debris (e.g., fragments, penetrators, projectiles, shell casings, links, fins); (2) the results of field or laboratory sampling and analysis procedures; or (3) the results of geophysical investigations.
- *Practice munitions* means munitions that contain an inert filler (e.g., wax, sand, concrete), a spotting charge (i.e., a small charge of red phosphorus, photoflash powder, or black powder used to indicate the point of impact), and a fuze.
- The term *small arms ammunition* means ammunition, without projectiles that contain explosives (other than tracers), that is .50 caliber or below, or for shotguns.

Table 3
Classifications Within the EHE Module *Information on the Location of Munitions* Data Element

Classification	Description	Score
Confirmed surface	• Physical evidence indicates that there are UXO or DMM on the surface of the MRS. • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence (e.g., munitions debris, such as fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2

Table 3
Classifications Within the EHE Module *Information on the Location of Munitions* Data Element

Classification	Description	Score
Small arms (regardless of location)	• The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability. [There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to place an MRS into this category.]	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0

Notes:

- *Historical evidence* means the investigation: (1) found written documents or records, (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means: (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or munitions debris (e.g., fragments, penetrators, projectiles, shell casings, links, fins); (2) the results of field or laboratory sampling and analysis procedures; or (3) the results of geophysical investigations.
- *In the subsurface* means the munition (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the munition (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).
- The term *small arms ammunition* means ammunition, without projectiles that contain explosives (other than tracers), that is .50 caliber or smaller, or for shotguns.

Table 4
Classifications Within the EHE Module *Ease of Access* Data Element

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0

Notes:

• *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast-moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.

Table 5
Classifications Within the EHE *Status of Property* Data Element

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department must control access to the MRS 24 hours per day, every day of the calendar year.	0

Table 6
Classifications Within the EHE Module *Population Density* Data Element

Classification	Definition	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100 to 500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1

Notes:

- If an MRS is in more than one county, the Component will use the largest population value among those counties. If the MRS is within or borders a city or town, the population density for that city or town, instead of the county population density, is used.

Table 7
Classifications Within the EHE Module *Population Near Hazard* Data Element

Classification	Description	Score
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than military munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 8
Classifications Within the EHE Module *Types of Activities/Structures* Data Element

Classification	Description	Score
Residential, educational, commercial, or subsistence	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 9
Classifications Within the EHE Module *Ecological and/or Cultural Resources* Data Element

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that (1) a threatened or endangered species (designated under the Endangered Species Act [ESA]) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, traditional, spiritual, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. As examples: American Indians or Alaska Natives deem an MRS to be of religious significance; there are areas used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 10
Determining the EHE Rating from the EHE Module Score

Overall EHE Module Score	EHE Rating
The MRS has an overall EHE module score from 92 to 100.	EHE Rating A
The MRS has an overall EHE module score from 82 to 91.	EHE Rating B
The MRS has an overall EHE module score from 71 to 81.	EHE Rating C
The MRS has an overall EHE module score from 60 to 70.	EHE Rating D
The MRS has an overall EHE module score from 48 to 59.	EHE Rating E
The MRS has an overall EHE module score from 38 to 47.	EHE Rating F
The MRS has an overall EHE module score less than 38.	EHE Rating G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected Explosive Hazard

Table 11
Classifications Within the CHE Module *CWM Configuration* Data Element

Classification	Description	Score
CWM, explosive configuration, either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: • Explosively configured CWM that are UXO (i.e., CWM/UXO). • Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are DMM (undamaged)	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: • Nonexplosively configured CWM/DMM. • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0

Notes:

- The term *CWM/UXO* means CWM that are UXO.
- The notation *CWM/DMM* means CWM that are DMM, to include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11.
- The term CAIS/DMM means CAIS, other than CAIS K941 and K942.
- *Historical evidence* means the investigation: (1) found written documents or records, (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means: (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or munitions debris (e.g., fragments, penetrators, projectiles, shell casings, links, fins); (2) the results of field or laboratory sampling and analysis procedures; or (3) the results of geophysical investigations.

Table 12
Classifications Within the CHE Module *Sources of CWM* Data Element

Classification	Description	Score
Live-fire involving CWM	• The MRS is a former military range that supported live-fire of explosively configured CWM and the CWM/UXO are known or suspected of being present on the surface or in the subsurface. • The MRS is a former military range that supported live-fire with conventional munitions, and CWM/DMM are on the surface or in the subsurface commingled with conventional munitions that are UXO.	10
Damaged CWM/DMM surface or subsurface	• There are damaged CWM/DMM on the surface or in the subsurface at the MRS.	10
Undamaged CWM/DMM surface	• There are undamaged CWM/DMM on the surface at the MRS.	10
CAIS/DMM surface	• There are CAIS/DMM on the surface.	10
Undamaged CWM/DMM, subsurface	• There are undamaged CWM/DMM in the subsurface at the MRS.	5
CAIS/DMM subsurface	• There are CAIS/DMM in the subsurface at the MRS.	5
Former CA or CWM Production Facilities	• The MRS is a facility that formerly engaged in production of CA or CWM, and CWM/DMM is suspected of being present on the surface or in the subsurface.	3
Former Research, Development, Testing, and Evaluation (RDT&E) facility using CWM	• The MRS is at a facility that formerly was involved in non-live-fire RDT&E activities (including static testing) involving CWM, and there are CWM/DMM suspected of being present on the surface or in the subsurface.	3
Former Training Facility using CWM or CAIS	• The MRS is a location that formerly was involved in training activities involving CWM and/or CAIS (e.g., training in recognition of CWA, decontamination training) and CWM/DMM or CAIS/DMM are suspected of being present on the surface or in the subsurface.	2
Former Storage or Transfer points of CWM	• The MRS is a former storage facility or transfer point (e.g., intermodal transfer) for CWM.	1
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0

Notes:

- The term *CWM /UXO* means CWM that are UXO.
- The notation *CWM/DMM* means CWM that are DMM, to include CAIS K941, toxic gas set M-1; and K942, toxic gas set M-2/E11.
- The term CAIS/DMM means CAIS, other than CAIS K941 and K942.
- *Historical evidence* means the investigation: (1) found written documents or records, (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means: (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or munitions debris (e.g., fragments, penetrators, projectiles, shell casings, links, fins); (2) the results of field or laboratory sampling and analysis procedures; or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 13
Classifications Within the CHE Module *Information on the Location of CWM* Data Element

Classification	Description	Score
Confirmed surface	• Physical evidence indicates that there are CWM on the surface of the MRS. • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are CWM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose CWM. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose CWM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause CWM to be exposed. • Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause CWM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence, other than the documented presence of CWM, indicating that CWM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that CWM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating that CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM.	2

Table 13
Classifications Within the CHE Module *Information on the Location of CWM* Data Element

Classification	Description	Score
Evidence of no CWM	• Following investigation of the MRS, there is physical evidence that there is no CWM present or there is historical evidence indicating that no CWM are present.	0

Notes:

- *Historical evidence* means the investigation: (1) found written documents or records, (2) documented interviews of persons with knowledge of site conditions, or (3) found and verified other forms of information.
- *Physical evidence* means: (1) recorded observations from on-site investigations, such as finding intact UXO or DMM, or munitions debris (e.g., fragments, penetrators, projectiles, shell casings, links, fins); (2) the results of field or laboratory sampling and analysis procedures; or (3) the results of geophysical investigations.
- *In the subsurface* means the CWM (i.e., a DMM or UXO) is (1) entirely beneath the ground surface, or (2) fully submerged in a water body.
- *On the surface* means the CWM (i.e., a DMM or UXO) is (1) entirely or partially exposed above the ground surface (i.e., above the soil layer), or (2) entirely or partially exposed above the surface of a water body (e.g., as a result of tidal activity).

Table 14
Classifications Within the CHE Module *Ease of Access* Data Element

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete, but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0

Notes:

- *Barrier* means a natural obstacle or obstacles (e.g., difficult terrain, dense vegetation, deep or fast moving water), a man-made obstacle or obstacles (e.g., fencing), or a combination of natural and man-made obstacles.

Table 15
Classifications Within the CHE Module *Status of Property* Data Element

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by the Department. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	5
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department, and the Department plans to transfer that land or water body to control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by the Department. With respect to property that is leased or otherwise possessed, the Department controls access to the property 24 hours per day, every day of the calendar year.	0

Table 16
Classifications Within the CHE Module *Population Density* Data Element

Classification	Definition	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100 to 500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	1

Notes:

• If an MRS is in more than one county, the Component will use the largest population value among those counties. If the MRS is within or borders a city or town, the population density for that city or town, instead of the county population density, is used.

Table 17 Classifications Within the CHE Module *Population Near Hazard* Data Element		
Classification	Description	Score
26 or more structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5
16 to 25	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
Notes: • The term *inhabited structures* means permanent or temporary structures, other than military munitions-related structures, that are routinely occupied by one or more persons for any portion of a day.		

Table 18
Classifications Within the CHE Module *Types of Activities/Structures* Data Element

Classification	Description	Score
Residential, educational, commercial, or subsistence	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5
Parks and recreational areas	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	4
Agricultural, forestry	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary, or within the MRS's boundary, that are associated with industrial activities or warehousing.	2
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1

Notes:

- The term *inhabited structures* means permanent or temporary structures, other than Department-related structures, that are routinely occupied by one or more persons for any portion of a day.

Table 19
Classifications Within the CHE Module *Ecological and/or Cultural Resources* Data Element

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0

Notes:

- *Ecological resources* means that: (1) a threatened or endangered species (designated under the Endangered Species Act [ESA]) is present on the MRS; or (2) the MRS is designated under the ESA as critical habitat for a threatened or endangered species; or (3) there are identified sensitive ecosystems such as wetlands or breeding grounds present on the MRS.
- *Cultural resources* means there are recognized cultural, spiritual, traditional, religious, or historical features (e.g., structures, artifacts, symbolism) on the MRS. Requirements for determining if a particular feature is a cultural resource are found in *the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archeological Resources Protection Act, Executive Order 13007*, and *the American Indian Religious Freedom Act*. As examples: American Indians or Alaska Natives deem an MRS to be of spiritual significance; there are areas that are used by American Indians or Alaska Natives for subsistence activities (e.g., hunting, fishing).

Table 20
Determining the CHE Rating from the CHE Module Score

Overall CHE Module Score	CHE Rating
The MRS has an overall CHE module score from 92 to 100.	CHE Rating A
The MRS has an overall CHE module score from 82 to 91.	CHE Rating B
The MRS has an overall CHE module score from 71 to 81.	CHE Rating C
The MRS has an overall CHE module score from 60 to 70.	CHE Rating D
The MRS has an overall CHE module score from 48 to 59.	CHE Rating E
The MRS has an overall CHE module score from 38 to 47.	CHE Rating F
The MRS has an overall CHE module score less than 38.	CHE Rating G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard

Table 21
HHE Factor Levels

Contaminant Hazard Factor		Receptor Factor		Migration Pathway Factor	
Significant	High (H)	Identified	High (H)	Evident	High (H)
Moderate	Middle (M)	Potential	Middle (M)	Potential	Middle (M)
Minimal	Low (L)	Limited	Low (L)	Confined	Low (L)

Table 22
HHE Three-letter Combination Levels

Contaminant Hazard Factor	Receptor Factor	Migration Pathway		
		Evident	Potential	Confined
Significant	Identified	HHH	HHM	HHL
	Potential	HHM	HMM	HML
	Limited	HHL	HML	HLL
Moderate	Identified	HHM	HMM	HML
	Potential	HMM	MMM	MML
	Limited	HML	MML	MLL
Minimal	Identified	HHL	HML	HLL
	Potential	HML	MML	MLL
	Limited	HLL	MLL	LLL

Table 23
HHE Module Ratings

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	
HML	D
MMM	
HLL	E
MML	
MLL	F
LLL	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

Table 24
HHE Module Rating

Contaminant Hazard Factor	Receptor Factor	Migration Pathway		
		Evident	Potential	Confined
Significant	Identified	A	B	C
	Potential	B	C	D
	Limited	C	D	E
Moderate	Identified	B	C	D
	Potential	C	D	E
	Limited	D	E	F
Minimal	Identified	C	D	E
	Potential	D	E	F
	Limited	E	F	G

Table 25
MRS Priority Based on Highest Hazard Evaluation Module Rating

EHE Module Rating	Priority	CHE Module Rating	Priority	HHE Module Rating	Priority
Hazard Evaluation A (Highest)	2	Hazard Evaluation A (Highest)	1	Hazard Evaluation A (Highest)	2
Hazard Evaluation B	3	Hazard Evaluation B	2	Hazard Evaluation B	3
Hazard Evaluation C	4	Hazard Evaluation C	3	Hazard Evaluation C	4
Hazard Evaluation D	5	Hazard Evaluation D	4	Hazard Evaluation D	5
Hazard Evaluation E	6	Hazard Evaluation E	5	Hazard Evaluation E	6
Hazard Evaluation F	7	Hazard Evaluation F	6	Hazard Evaluation F	7
Hazard Evaluation G (Lowest)	8	Hazard Evaluation G (Lowest)	7	Hazard Evaluation G (Lowest) Low	8
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		No Known or Suspected CWM Hazard		No Known or Suspected MC Hazard	

Dated: September 27, 2005.

L.M. Bynum,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 05–19696 Filed 10–4–05; 8:45 am]

BILLING CODE 5001–06–C

Table A

MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from Service and DoD databases. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the **MRS Summary**, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental nonmunitions-related contaminants (e.g., benzene, trichloroethylene) found at the MRS, and any potentially exposed human and ecological receptors. If possible, include a map of the MRS.

Munitions Response Site Name:	Michie Stadium (WSTPT-022-R-01)
Component:	US Army
Installation/Property Name:	U.S. Army Garrison West Point
Location (City, County, State):	West Point, Orange County, NY
Site Name/Project Name (Project No.):	Michie Stadium/West Point - MMRP (W912DR-09-D-006, DO 001)
Date Information Entered/Updated:	9/16/2011
Point of Contact (Name/Phone):	Jeff Sanborn, US Army Garrison West Point, Directorate of Public Works –Environmental Management Division (845-938-5041)

Project Phase ("X" only one):									
	PA		**SI**	**X**	**RI**		**FS**		**RD**
	RA-C		**RIP**		**RA-O**		**RC**		**LTM**

Media Evaluated ("X" all that apply):				
	Groundwater		**Sediment (human receptor)**
	Surface soil		**Surface water (ecological receptor)**
	Sediment (ecological receptor)		**Surface water (human receptor)**

MRS Summary: MRS Michie Stadium is an active sports stadium and athletic complex.

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM, or MC known or suspected to be present. When possible, identify munitions, CWM, and MC by type:

During stadium improvement and construction projects, completed in approximately 2001 and 2003, a total of 14 Stokes mortar rounds were identified and disposed by an Army EOD unit at West Point. Michie Stadium underwent a seismic upgrade in 2001 that involved the addition of pilings to the west stands for increased stability. During this project, five, 3-inch MKI Stokes mortar rounds were found. Beginning in September 2003, Randall Hall was constructed between the west stands of Michie Stadium and the Kimsey Athletic Center. Nine additional 3-inch Stokes mortar rounds were found during the construction of Randall Hall.

Description of Pathways for Human and Ecological Receptors:

The MEC exposure pathway for human receptors is direct contact through handling (e.g., picking up the item) or unintentional disturbance (e.g., hitting item during construction activities). During the SI field activities, no MC was encountered at levels above EPA Region 9 Preliminary Remediation Goals; therefore, the pathway for human and ecological receptors to contact MC was determined to be incomplete.

Description of Receptors (Human and Ecological):

Current receptors include visitors, installation personnel and residents, recreational personnel (athletes), maintenance workers, and contractor personnel who have passed through initial post security at the entrance gate. The Michie Stadium MRS is extensively developed with athletic facilities and impervious surfaces. A small area along the northern edge of the MRS includes wooded, hilly terrain. Potential ecological receptors (e.g., mammals, birds, and insects) are presented in the RI Report CSM for West Point.

Table 1
EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Annotate the score(s) that correspond with **all** munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions* , *small arms ammunition* , *physical evidence* , and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Possible Score	Score
Sensitive	♦ UXO that are considered most likely to function upon any interaction with exposed persons (e.g., submunitions, 40mm high-explosive [HE] grenades, white phosphorous [WP] munitions, high-explosive antitank [HEAT] munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions). ♦ Hand grenades containing energetic filler. ♦ Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	30	
High explosive (used or damaged)	♦ UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." ♦ DMM containing a high-explosive filler that have: ■ Been damaged by burning or detonation ■ Deteriorated to the point of instability.	25	25
Pyrotechnic (used or damaged)	♦ UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). ♦ DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: ■ Been damaged by burning or detonation ■ Deteriorated to the point of instability.	20	
High explosive (unused)	♦ DMM containing a high-explosive filler that have not been damaged by burning or detonation, or are not deteriorated to the point of instability.	15	
Propellant	♦ UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). ♦ DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ■ Damaged by burning or detonation ■ Deteriorated to the point of instability.	15	
Bulk secondary high explosives, pyrotechnics, or propellant	♦ DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). ♦ DMM that are bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10	
Pyrotechnic (used or damaged)	♦ DMM containing a pyrotechnic filler (i.e. red phosphorous), other than white phosphorous filler, that have not been damaged by burning or detonation, or are not deteriorated to the point of instability.	10	
Practice	♦ UXO that are practice munitions that are not associated with a sensitive fuze. ♦ DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ■ Been damaged by burning or detonation ■ Deteriorated to the point of instability.	5	
Riot control	♦ UXO or DMM containing a riot control agent filler (e.g., tear gas).	3	
Small arms	♦ Used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions [e.g., grenades, subcaliber training rockets, demolition charges] were used or are present on the MRS is required for selection of this category.].	2	
Evidence of no munitions	♦ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).		**25**

DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

NOTES: 3-inch MKI Stokes mortar round.

Table 2

EHE Module: Source of Hazard Data Element Table

DIRECTIONS: Below are 11 classifications describing sources of explosive hazards. Annotate the score(s) that correspond with **all** sources of explosive hazards known or suspected to be present at the MRS.

Note: The terms *former range* , *practice munitions* , *small arms range* , *physical evidence* , and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Possible Score	Score
Former range	♦ The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas and associated buffer and safety zones.	10	
Former munitions treatment (i.e. OB/OD) unit	♦ The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8	
Former practice munitions range	♦ The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6	
Former maneuver area	♦ The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5	
Former burial pit or other disposal area	♦ The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5	5
Former industrial operating facilities	♦ The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4	
Former firing points	♦ The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4	
Former missile or air defense artillery emplacements	♦ The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2	
Former storage or transfer points	♦ The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2	
Former small arms range	♦ The MRS is a former military range where only small arms ammunition was used (There must be evidence that no other types of munitions [e.g., grenades] were used or are present to place an MRS into this category.)	1	
Evidence of no munitions	♦ Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0	0
SOURCE OF HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).		**5**

DIRECTIONS: Document any MRS-specific data used in selecting the **Source of Hazard** classifications in the space provided.

NOTES: Michie Stadium MRS is extensively developed with athletic facilities, parking lots, and roads. A small area along the northern edge of the MRS includes wooded, hilly terrain. The DMM recovered were not fired. The UXO item recovered was fired, but there is no indication that this item impacted at this MRS. The item was most likely brought in by fill during construction activities.

Table 3
EHE Module: Location of Munitions Data Element Table

DIRECTIONS: Below are eight classifications of munitions locations and their descriptions. Annotate the score(s) that correspond with **all** locations where munitions are located or suspected of being found at the MRS.

Note: The terms *confirmed, surface* , *subsurface, small arms ammunition, physical evidence* , and *historical evidence* are defined in Appendix C of the Primer .

Classification	Description	Possible Score	Score
Confirmed surface	♦ Physical evidence indicates that there are UXO or DMM on the surface of the MRS. ♦ Historical evidence (i.e., a confirmed incident report such as an explosive ordnance disposal [EOD], police, or fire department report that an incident or accident that involved UXO or DMM occurred) indicates there are UXO or DMM on the surface of the MRS.	25	
Confirmed subsurface, active	♦ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS; and, the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. ♦ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS; and, the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	20	20
Confirmed subsurface, stable	♦ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS; and, the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. ♦ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS; and, the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	15	
Suspected (physical evidence)	♦ There is physical evidence (e.g., munitions debris such as fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10	
Suspected (historical evidence)	♦ There is historical evidence indicating that UXO or DMM may be present at the MRS.	5	
Subsurface, physical constraint	♦ There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2	
Small arms (regardless of location)	♦ The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability. (There must be evidence that no other types of munitions [e.g., grenades] were used or are present at the MRS to place an MRS into this category.)	1	
Evidence of no munitions	♦ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0	
LOCATION OF MUNITIONS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 25).		**20**

DIRECTIONS: Document any MRS-specific data used in selecting the ***Location of Munitions*** classifications in the space provided.

NOTES: 14 Stokes mortar rounds were found during excavation at the site during previous investigations. Naturally occurring phenomena could cause UXO to be exposed within the MRS.

Table 4
EHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to the MRS. Annotate the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Possible Score	Score
No barrier	♦ There is no barrier preventing access to any part of the MRS (i.e. all parts of the MRS are accessible).	10	10
Barrier to MRS access is incomplete	♦ There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8	
Barrier to MRS access is complete but not monitored	♦ There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5	
Barrier to MRS access is complete and monitored	♦ There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0	
EASE OF ACCESS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).		**10**

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ease of Access*** classification in the space provided.

NOTES: This MRS is an athletics stadium, which is currently used for numerous events. Once inside the main gates, access within the MRS is unrestricted.

Table 5
EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Annotate the score that corresponds with the status of property at the MRS.

Classification	Description	Possible Score	Score
Non-DoD control	♦ The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and, land or water bodies managed by other federal agencies.	5	
	♦ The MRS is at a location that is owned by DoD, but that DoD has leased to another entity and for which DoD does not control access 24 hours per day.		
Scheduled for transfer from DoD control	♦ The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the Protocol is applied.	3	
DoD control	♦ The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.	0	0
STATUS OF PROPERTY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).		**0**

DIRECTIONS: Document any MRS-specific data used in selecting the ***Status of Property*** classification in the space provided.

NOTES: This is an active military base with security measures.

Michie Stadium MRS (WSTPT-022-R-01)

Table 6

EHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications of population density and their descriptions. Determine the population density per square mile that most closely corresponds with the population of the MRS, including the area within a two-mile radius of the MRS's perimeter. Annotate the most appropriate score.

Note: Use the U.S. Census Bureau tract data available to capture the **highest** population density within a two-mile radius of the perimeter of the MRS.

Classification	Description	Possible Score	Score
> 500 persons per square mile	♦ There are more than 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	5	
100 - 500 persons per square mile	♦ There are 100 to 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	3	3
< 100 persons per square mile	♦ There are fewer than 100 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	1	
POPULATION DENSITY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).		**3**

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Density*** classification in the space provided.

NOTES: The 2000 Census reports a population of 7,138, and a population density per square mile of 293.4.
http://factfinder.census.gov/servlet/GCTTable?_bm=y&-context=gct&-ds_name=DEC_2000_SF1_U&-CONTEXT=gct&-mt_name=DEC_2000_SF1_U_GCTPH1_ST7&-tree_id=4001&-redoLog=true&-_caller=geoselect&-geo_id=04000US36&-format=ST-7|ST-7S&-_lang=en
This corresponds to more than 250 people per square mile, but less than 500.

Michie Stadium MRS (WSTPT-022-R-01)

Table 7
EHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the potential population near the hazard. Determine the number of inhabited structures within two miles of the MRS boundary and annotate the score that corresponds with the number of inhabited structures.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Possible Score	Score
26 or more inhabited structures	♦ There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	5	5
16 to 25 inhabited structures	♦ There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4	
11 to 15 inhabited structures	♦ There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3	
6 to 10 inhabited structures	♦ There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2	
1 to 5 inhabited structures	♦ There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1	
0 inhabited structures	♦ There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0	
POPULATION NEAR HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).		**5**

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Near Hazard*** classification in the space provided.

NOTES: The 2000 Census reports housing units of 1,044.
http://factfinder.census.gov/servlet/GCTTable?_bm=y&-context=gct&-ds_name=DEC_2000_SF1_U&-CONTEXT=gct&-mt_name=DEC_2000_SF1_U_GCTPH1_ST7&-tree_id=4001&-redoLog=true&-_caller=geoselect&-geo_id=04000US36&-format=ST-7|ST-7S&-_lang=en

Table 8

EHE Module: Types of Activities/Structures Data Element Table

DIRECTIONS: Below are five classifications of activities and/or inhabited structures and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and annotate the score(s) that correspond with **all** the activities/structure classifications at the MRS.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Possible Score	Score
Residential, educational, commercial, or subsistence	♦ Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	5	5
Parks and recreational areas	♦ Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	4	4
Agricultural, forestry	♦ Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3	3
Industrial or warehousing	♦ Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	2	2
No known or recurring activities	♦ There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1	
TYPES OF ACTIVITIES/STRUCTURES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).		**5**

DIRECTIONS: Document any MRS-specific data used in selecting the ***Types of Activities/Structures*** classifications in the space provided.

NOTES: Refer to RI Report Sections 1.4.1 and 1.4.11 for additional information regarding Project Location, Site Description, and Current and Projected Land Use.

Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and annotate the score that corresponds with the ecological and/or cultural resources present on the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Possible Score	Score
Ecological and cultural resources present	Although there are no ecological resources present on the MRS, there are known to be in the surrounding area, but there are cultural resources present on the MRS.	5	
Ecological resources present	Although there are no ecological resources present on the MRS, there are known to be in the surrounding area.	3	
Cultural resources present	There are cultural resources present on the MRS.	3	3
No ecological or cultural resources present	There are no ecological resources or cultural resources present on the MRS.	0	
ECOLOGICAL AND/OR CULTURAL RESOURCES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).		**3**

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ecological and/or Cultural Resources*** classification in the space provided.

NOTES: None of the potential ecological receptors listed for the MRS were observed on-site during RI activities. Habitat for potential ecological receptors is limited within the Michie Stadium MRS, as a majority of the MRS is developed and contains buildings, structures, impermeable ground surfaces such as concrete and asphalt roads, parking areas, walkways, and the playing field within Michie Stadium. Michie Stadium is a cultural resource.

Table 10

Determining the EHE Module Rating

DIRECTIONS:

1. From Tables 01 - 09, record the data element scores in the **Score** boxes to the right.

2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.

3. Add the three **Value** boxes and record this number in the **EHE Module Total** box below.

4. Circle the appropriate range for the **EHE Module Total** below.

5. Circle the **EHE Module Rating** that corresponds to the range selected and record this value in the **EHE Module Rating** box found at the bottom of this table.

NOTE: An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
Explosive Hazard Factor Data Elements			
Munitions Type	Table 1	25	30
Source of Hazard	Table 2	5	
Accessibility Factor Data Elements			
Location of Munitions	Table 3	20	30
Ease of Access	Table 4	10	
Status of Property	Table 5	0	
Receptor Factor Data Elements			
Population Density	Table 6	3	16
Population Near Hazard	Table 7	5	
Types of Activities/Structures	Table 8	5	
Ecological and/or Cultural Resources	Table 9	3	
EHE MODULE TOTAL			**76**

EHE Module Total	EHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected Explosive Hazard
EHE MODULE RATING	**C**

Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Annotate the score(s) that correspond to **all** CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO* , *CWM/DMM* , *physical evidence* , and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Possible Score	Score
CWM, that are either UXO, or explosively configured, damaged DMM	The CWM known or suspected of being present at the MRS are: ♦ CWM that are UXO (i.e. CWM/UXO) ♦ Explosively configured CWM that are DMM (i.e. CWM/DMM) that have been damaged.	30	
CWM mixed with UXO	♦ The CWM known or suspected of being present at the MRS are undamaged CWM/DMM or CWM not configured as a munition that are commingled with conventional munitions that are UXO.	25	
CWM, explosive configuration that are undamaged DMM	♦ The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20	
CWM/DMM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS are: ♦ Nonexplosively configured CWM/DMM either damaged or undamaged ♦ Bulk CWM (e.g., ton container).	15	
CAIS K941 and CAIS K942	♦ The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12	
CAIS (chemical agent identification sets)	♦ CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10	
Evidence of no CWM	♦ Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0	0
CWM CONFIGURATION	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).		**0**

DIRECTIONS: Document any MRS-specific data used in selecting the ***CWM Configuration*** classifications in the space provided.

Notes: There is no known or suspected CWM hazard at this MRS.

Tables 12 through 19 are intentionally omitted according to Active-Army Guidance because there is evidence of no CWM at this MRS.			

Table 20

Determining the CHE Module Rating

DIRECTIONS:

1. From Tables 11 - 19, record the data element scores in the **Score** boxes to the right.

2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.

3. Add the three **Value** boxes and record this number in the **CHE Module Total** box below.

	Source	Score	Value
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12	0	
Accessibility Factor Data Elements			
Location of CWM	Table 13	0	0
Ease of Access	Table 14	0	
Status of Property	Table 15	0	
Receptor Factor Data Elements			
Population Density	Table 16	0	0
Population Near Hazard	Table 17	0	
Types of Activities/Structures	Table 18	0	
Ecological and/or Cultural Resources	Table 19	0	
CHE MODULE TOTAL			**0**

4. Circle the appropriate range for the **CHE Module Total** below.

5. Circle the **CHE Module Rating** that corresponds to the range selected and record this value in the **CHE Module Rating** box found at the bottom of this table.

NOTE: An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

CHE Module Total	CHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard
CHE MODULE RATING	**No Known or Suspected CWM Hazard**

Table 21

HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional groundwater contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Contaminant [CAS No.]	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
		Total from Table 27	

CHF Scale	CHF Value	Sum the Ratios	
CHF > 100	H (High)		
100 > CHF >2	M (Medium)	CHF = $\sum$ ([Max Conc of Contaminant] / [Comparison Value for Contaminant])	
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	Directions: Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Annotate the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to geological structures or physical controls).	L

MRS Summary:	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Annotate the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L

RECEPTOR FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Place an "X" in the box to the right if there is no known or suspected Groundwater MC Hazard	

Note: MRS use indicated no potential MC hazard, no sampling was conducted as part of the RI. See Section 4.1.2 of the RI Report text.

Table 22

HHE Module: Surface Water - Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface water contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard with human endpoints present in the surface water, select the box at the bottom of the table.

Contaminant [CAS No.]	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
		Total from Table 27	

CHF Scale	CHF Value	Sum the Ratios
CHF > 100	H (High)	CHF = $\sum$ ([Max Conc of Contaminant] / [Comparison Value for Contaminant])
100 > CHF >2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	Directions: Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Annotate the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MRS Summary:	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Annotate the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Place an "X" in the box to the right if there is no known or suspected Surface Water (Human Endpoint) MC Hazard	

Note: MRS use indicated no potential MC hazard, no sampling was conducted as part of the RI. See Section 4.1.2 of the RI Report text.

Table 23

HHE Module: Sediment - Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional sediment contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant [CAS No.]	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
		Total from Table 27	
		Sum the Ratios	

CHF Scale	CHF Value
CHF > 100	H (High)
100 > CHF >2	M (Medium)
2 > CHF	L (Low)

CHF = $\sum$ ([Max Conc of Contaminant] / [Comparison Value for Contaminant])

CONTAMINANT HAZARD FACTOR	Directions: Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Annotate the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MRS Summary:	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Annotate the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	
RECEPTOR FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Place an "X" in the box to the right if there is no known or suspected Sediment (Human Endpoint) MC Hazard

Note: MRS use indicated no potential MC hazard, no sampling was conducted as part of the RI. See Section 4.1.2 of the RI Report text.

Table 24

HHE Module: Surface Water - Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface water contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use either dissolved or total metals analyses.

Contaminant [CAS No.]	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
		Total from Table 27	
		Sum the Ratios	

CHF Scale	CHF Value
CHF > 100	H (High)
100 > CHF >2	M (Medium)
2 > CHF	L (Low)

CHF = $\sum$ ([Max Conc of Contaminant] / [Comparison Value for Contaminant])

CONTAMINANT HAZARD FACTOR	Directions: Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Annotate the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Annotate the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Place an "X" in the box to the right if there is no known or suspected Surface Water (Ecological Endpoint) MC Hazard

Note: MRS use indicated no potential MC hazard, no sampling was conducted as part of the RI. See Section 4.1.2 of the RI Report text.

Table 25

HHE Module: Sediment - Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** together, including any additional sediment contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant [CAS No.]	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
		Total from Table 27	
		Sum the Ratios	

CHF Scale	CHF Value
CHF > 100	H (High)
100 > CHF >2	M (Medium)
2 > CHF	L (Low)

CHF = $\sum$ ([Max Conc of Contaminant] / [Comparison Value for Contaminant])

CONTAMINANT HAZARD FACTOR	Directions: Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Annotate the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Annotate the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Place an "X" in the box to the right if there is no known or suspected Sediment (Ecological Endpoint) MC Hazard

Note: MRS use indicated no potential MC hazard, no sampling was conducted as part of the RI. See Section 4.1.2 of the RI Report text.

Table 26

HHE Module: Surface Soil - Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface soil contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant [CAS No.]	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
		Total from Table 27	
		Sum the Ratios	

CHF Scale	CHF Value
CHF > 100	**H (High)**
100 > CHF >2	**M (Medium)**
2 > CHF	**L (Low)**

CHF = $\sum$ ([Max Conc of Contaminant] / [Comparison Value for Contaminant])

CONTAMINANT HAZARD FACTOR	Directions: Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Annotate the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e. tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Annotate the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	L
RECEPTOR FACTOR	Directions: Record **the single highest value** from above in the box to the right (maximum value = H).	

Place an "X" in the box to the right if there is no known or suspected Surface Soil MC Hazard	

Note: MRS use indicated no potential MC hazard, no sampling was conducted as part of the RI. See Section 4.1.2 of the RI Report text.

Table 27

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Only use this table if there are more than five contaminants in any given medium present at the MRS. This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B of the Primer) in the table below. Calculate and record the **ratio** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

Note: Do not to add ratios from different media.

Media	Contaminant [CAS No.]	Maximum Concentration	Units	Comparison Value	Units	Ratios
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
Surface soil			mg/kg		mg/kg	
				SUBTOTAL FOR SURFACE SOIL		**0.00**
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
Sediment			mg/kg		mg/kg	
				SUBTOTAL FOR SEDIMENT		**0**
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
Surface water			µg/L		µg/L	
				SUBTOTAL FOR SURFACE WATER		**0**

NOTES:

				SUBTOTAL FOR GROUNDWATER		**0**

Table 28

Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard**, **Migration Pathway**, and **Receptor Factors** for the media (from Tables 21 - 26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter-Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the HHE ratings provided below, determine each medium's rating (A - G) and record the letter in the corresponding **Media Rating** box below.

Medium (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value	Three-Letter Combination (Hs-Ms-Ls)	Media Rating (A - G)
Table 21 - Groundwater	N/A	N/A	N/A	N/A	N/A
Table 22 - Surface Water (Human Endpoint)	N/A	N/A	N/A	N/A	N/A
Table 23 - Sediment (Human Endpoint)	N/A	N/A	N/A	N/A	N/A
Table 24 - Surface Water (Ecological Endpoint)	N/A	N/A	N/A	N/A	N/A
Table 25 - Sediment (Ecological Endpoint)	N/A	N/A	N/A	N/A	N/A
Table 26 - Surface Soil	N/A	N/A	N/A	N/A	N/A

HHE MODULE RATING	**No Known or Suspected MC Hazard**

DIRECTIONS (Continued):

4. Select the single highest **Media Rating** (A is the highest; G is the lowest) and enter the letter in the **HHE Module Rating** box below.

HHE Ratings (for reference only)	
HHH	A
HHM	B
HHL	C
HMM	
HML	D
MMM	
HLL	E
MML	
MLL	F
LLL	G

NOTE: An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

Alternative Module Ratings	
	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

Table 29

MRS Priority

DIRECTIONS: In the chart below, enter the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Enter the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this relative priority in the **MRS Priority or Alternative MRS Rating** at the bottom of the table.

NOTE: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	2	B	2	A	2
B	3	C	3	B	3
C	4	D	4	C	4
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			G	8
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		No Known or Suspected CWM Hazard		No Known or Suspected MC Hazard	

Reference Table 10:		Reference Table 20:		Reference Table 28:	
EHE Module Rating	**Priority**	**CHE Module Rating**	**Priority**	**HHE Module Rating**	**Priority**
C	4	No Known or Suspected CWM Hazard	No Known or Suspected CWM Hazard	No Known or Suspected MC Hazard	No Known or Suspected MC Hazard

MRS Priority or Alternative MRS Rating	4