Proposed Plan for the Military Munitions Response Program

Siege Battery – Constitution Island (WSTPT-015-R-02), Target Hill (WSTPT-017-R-01), Artillery Firing Range South (WSTPT-001-R-03), North Athletic Field (WSTPT-011-R-01)
U.S. Army Garrison West Point

West Point, New York — July 2019

INTRODUCTION

Bold terms are included in the Glossary of Terms.

The U.S. Department of the Army (Army) identified the following **preferred alternatives** at these four **munitions response sites** (MRSs):

- Artillery Firing Range South MRS: *Risk Management*
- North Athletic Field MRS: *Risk Management*
- Siege Battery – Constitution Island MRS: *Partial Surface/Subsurface Munitions and Explosives of Concern Removal with Risk Management*
- Target Hill MRS: *Risk Management*

The four MRSs are located at the U.S. Army Garrison West Point (West Point) as shown on **Figure 1**. The preferred alternatives are designed to protect human health and the environment from the explosive hazards posed by **munitions and explosives of concern** (MEC) potentially located at each of the four MRSs.

Congress established the **Military Munitions Response Program** (MMRP) in 2001 to evaluate areas used in the past for military training. These areas are known as MRSs. If information indicates that munitions may have been used during training at these MRSs, environmental studies are conducted at the MRSs under the MMRP. The study results are used to determine if MEC and/or **munitions constituents** are present, and if MEC and munitions constituents could potentially harm human health and the environment. If there is potential harm, then some type of action may be needed to reduce or eliminate the harm. The decision of what action to take is proposed to the public for review and comment in a **Proposed Plan** like this one. The Army is the lead agency for West Point under the **Comprehensive Environmental Response, Compensation, and Liability Act** (CERCLA), also known as "Superfund." The U.S. Environmental Protection Agency (USEPA) and the New York State Department of Environmental Conservation (NYSDEC) are the supporting regulatory agencies.

This Proposed Plan involves the public in the remedy selection process by providing background information regarding West Point and each of the four MRSs. It presents why the preferred alternatives were selected and summarizes other remedial alternatives considered. This Proposed Plan is being issued as part of the public participation responsibilities under Section 300.430(f)(2) of the **National Oil and Hazardous Substances Pollution Contingency Plan** (NCP) and Section 117(a) of CERCLA. The Army is conducting a public comment period (see box) for this Proposed Plan to encourage public participation in the selection of a **final remedy** for each of the four MRSs. Although West Point is not on the CERCLA **National Priorities List**, under the **Defense Environmental Restoration Program**, MRSs follow the CERCLA process.

MARK YOUR CALENDAR!

The Army will hold a public comment period prior to final remedy selection. During the comment period, your questions or comments on the Proposed Plan and the preferred alternative can be submitted to the Army as noted below:

Public Comment Period
July 29, 2019 – August 28, 2019

You can comment, in writing, by mail to:

Mr. Jeff Sanborn
U.S. Army Garrison West Point
ATTN: IMML-PWE
667A Ruger Road
West Point, NY 10996-1592
jeffrey.l.sanborn.civ@mail.mil

Comments must be postmarked or e-mailed by midnight of August 28, 2019.

Public Meeting
August 15, 2019, 6:30 p.m.

A public meeting, to explain the Proposed Plan, will be held for the public.

Project Information Repositories

The **project information repositories** contain copies of technical reports and other information available in the Administrative Record prepared for the four MRSs. The three project information repositories are located at the Highlands Falls Library, 298 Main Street, Highland Falls, NY 10928, the Julia L. Butterfield Memorial Library, 10 Morris Avenue, Cold Spring, NY 10516, and the Alice Curtis Desmond and Hamilton Fish Library 472 Route 403, Garrison, NY 10524.

This Proposed Plan summarizes information presented in **Remedial Investigations**, **Feasibility Studies**, and other documents located in the three **project information repositories**. The project information repositories (see box for locations) contain copies of documents included in the **Administrative Record** (see Glossary of Terms for location).

The Army will select a final remedy for each of the four MRSs after reviewing and considering all information received during the public comment period. Based on new information or public comments, the Army may change the preferred alternatives identified in this Proposed Plan. Therefore, the public is encouraged to review and comment on all of the remedial alternatives presented in this Proposed Plan. Information about how to submit comments may be found in the "Community Participation" section of this Proposed Plan.

After the public comment period, the Army will prepare a **Decision Document** describing the final remedy for each of the four MRSs. All significant comments received during the public comment period will be considered and responded to in the **Responsiveness Summary** of the Decision Document.

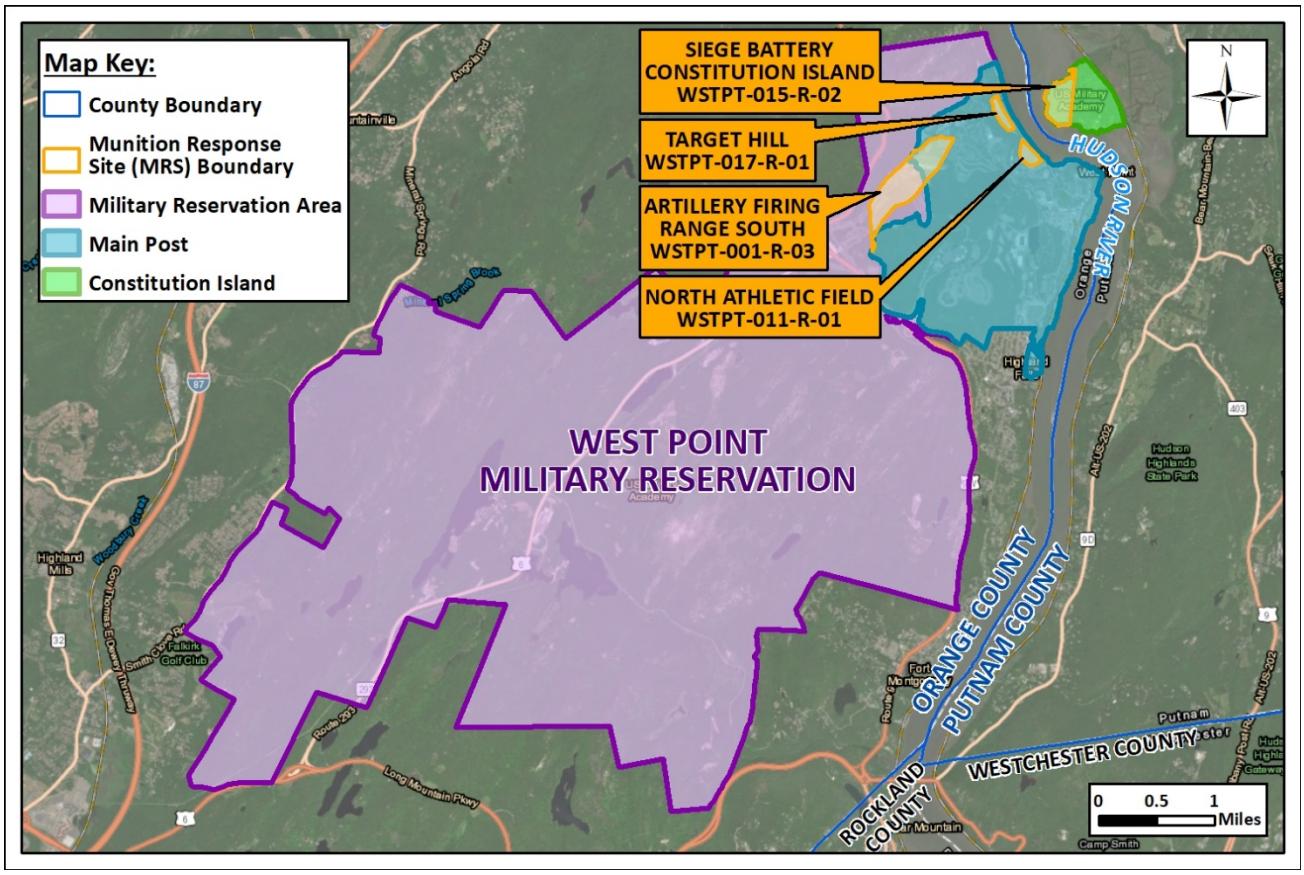

FIGURE 1: WEST POINT AND THE LOCATION OF THE FOUR MRSS

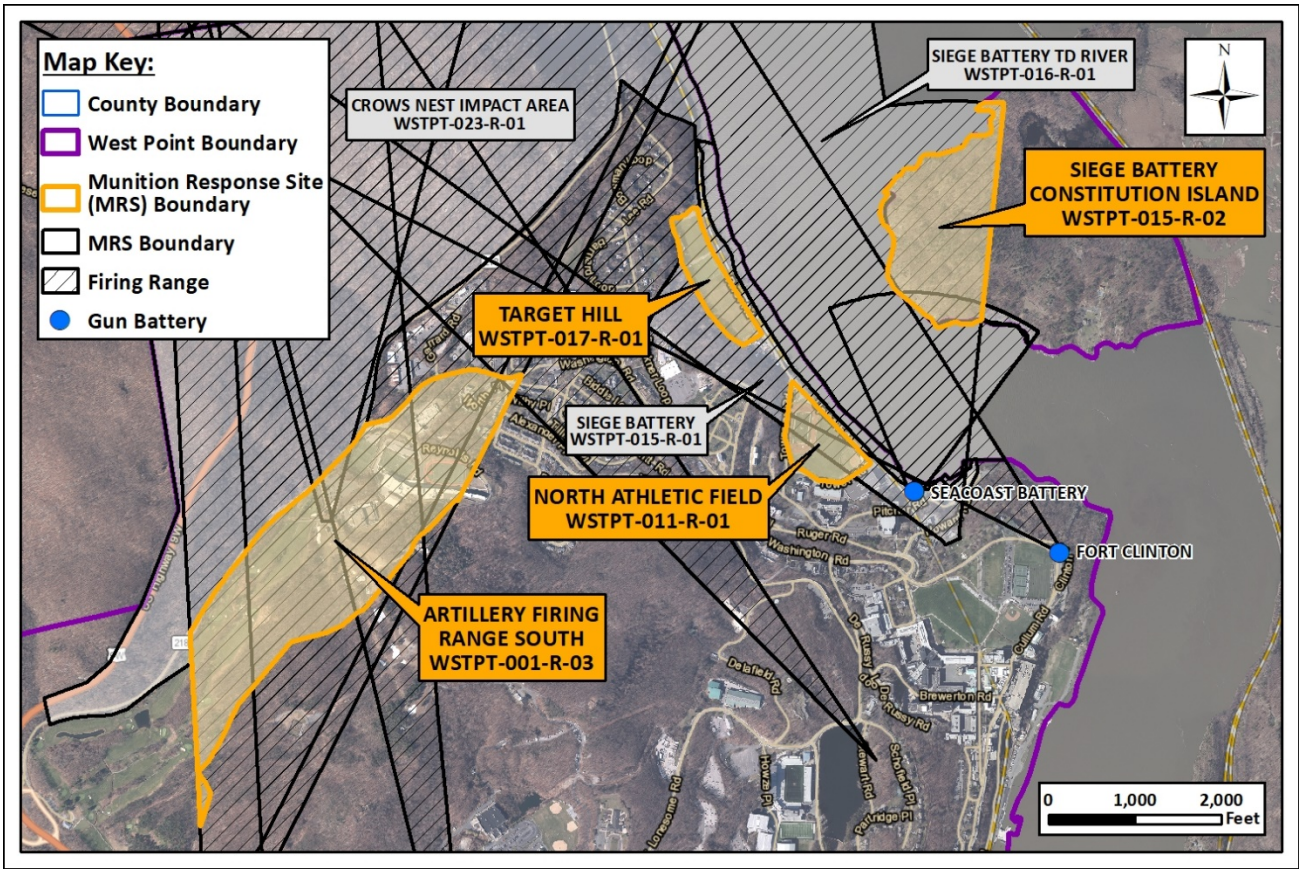

FIGURE 2: THE FOUR MRSS AND ADJACENT MRSS

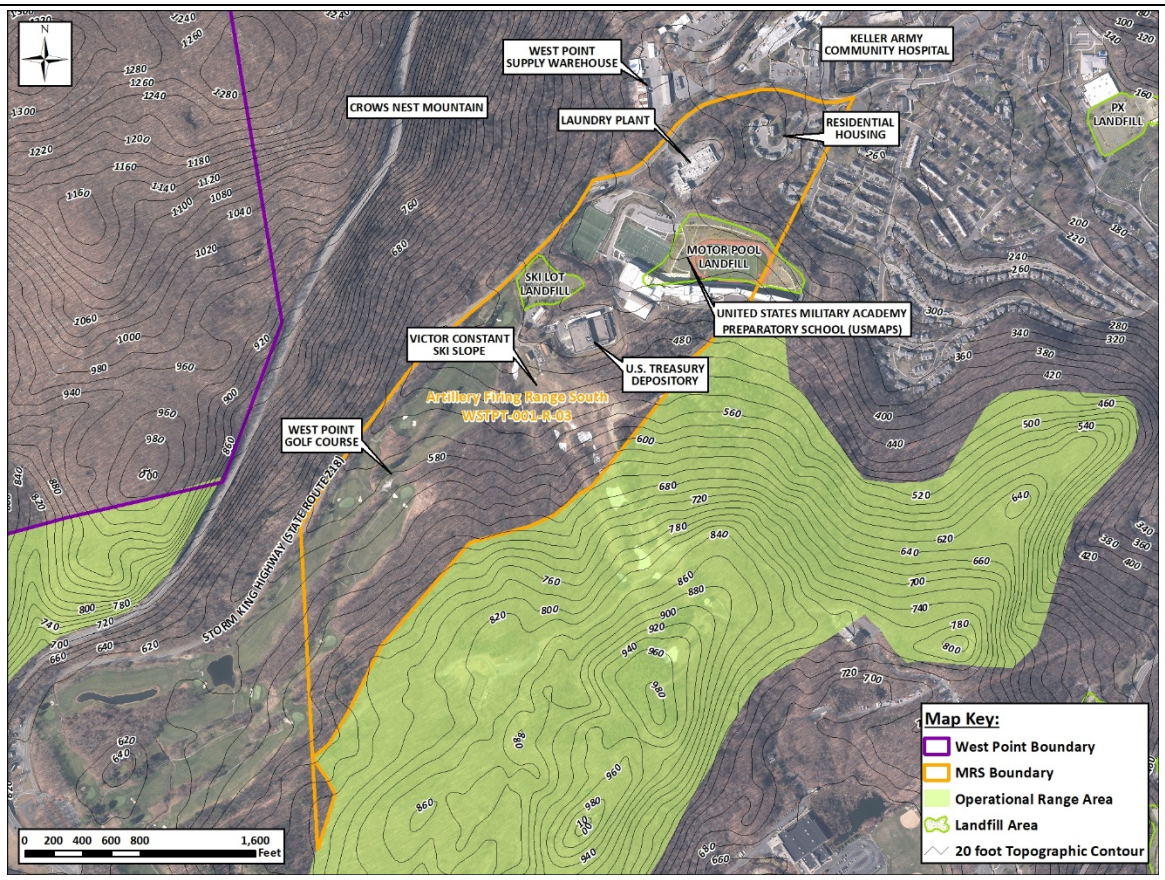

FIGURE 3: THE SITE LAYOUT OF THE ARTILLERY FIRING RANGE SOUTH MRS

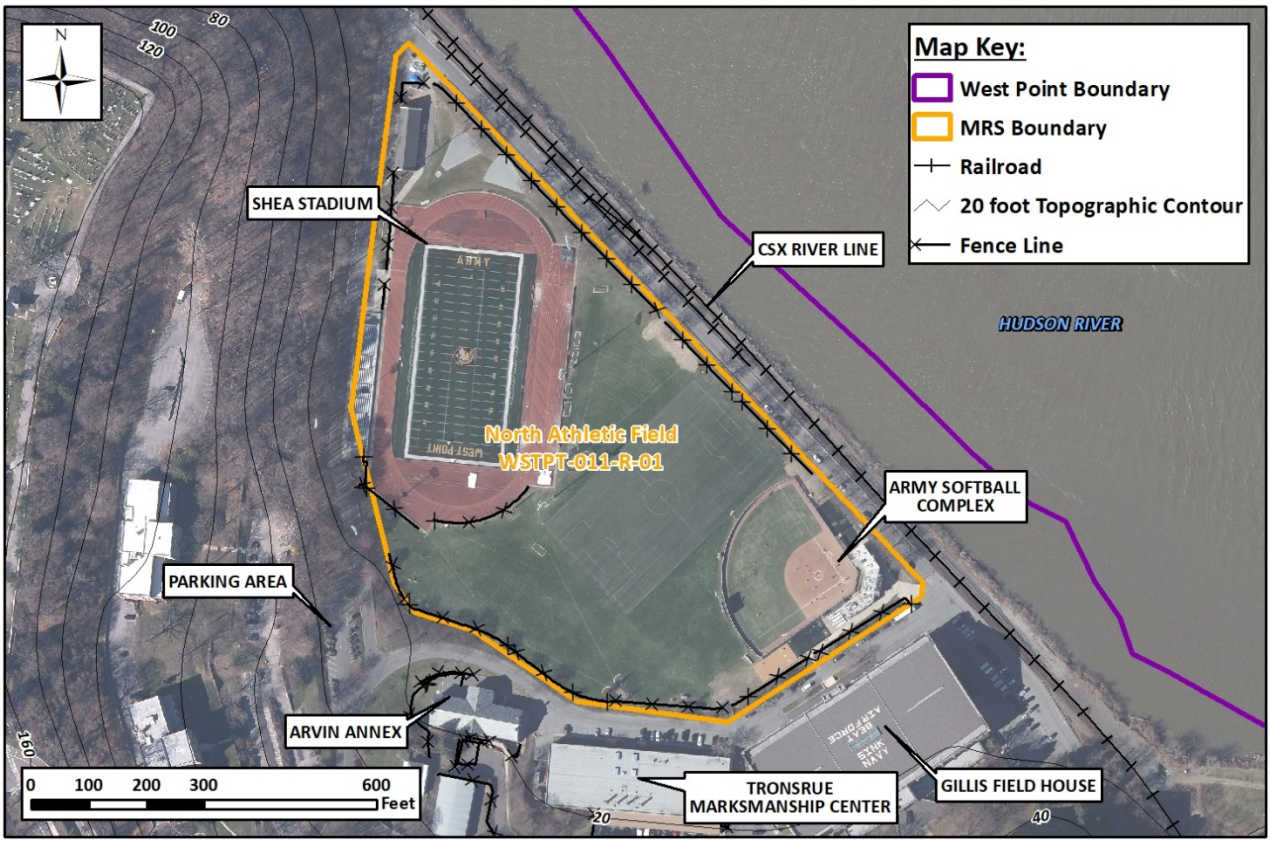

FIGURE 4: THE SITE LAYOUT OF THE NORTH ATHLETIC FIELD MRS

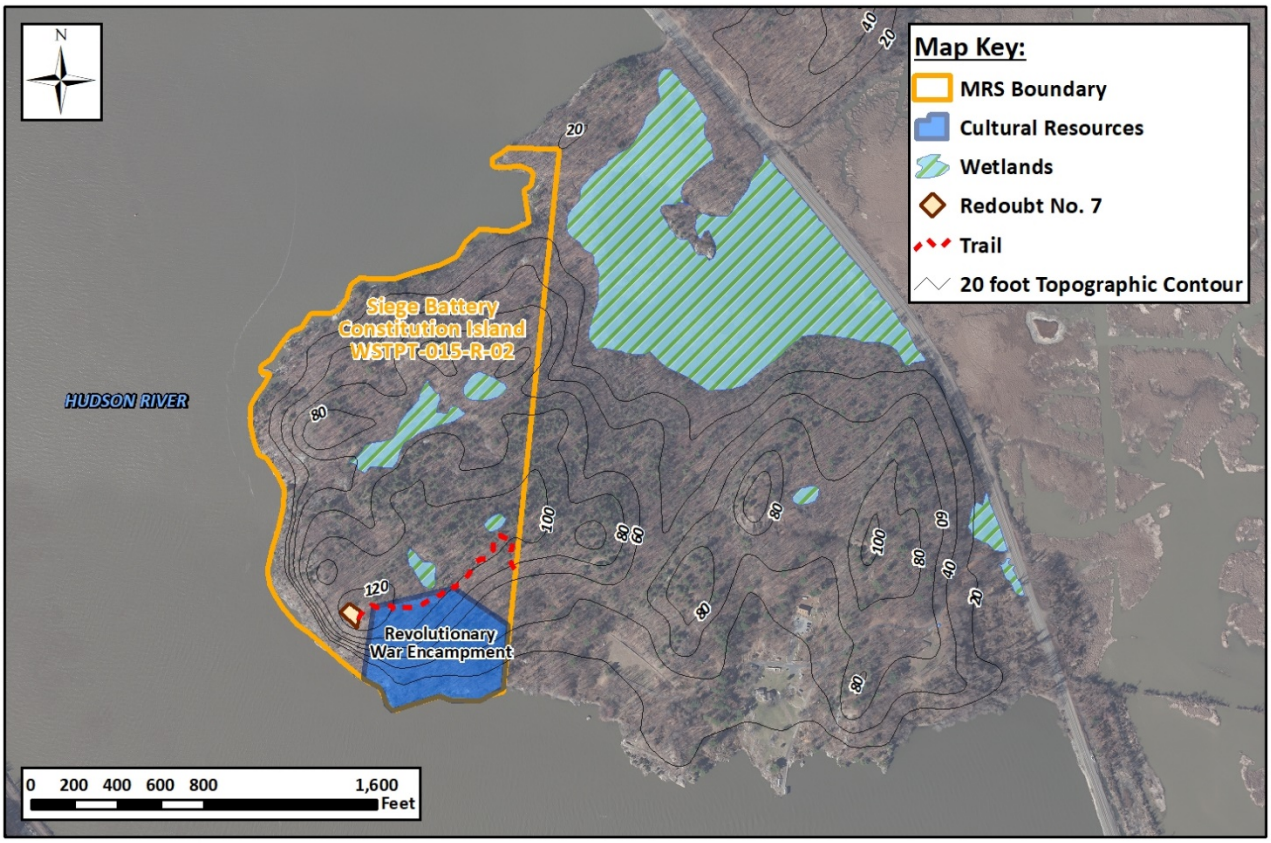

FIGURE 5: THE SITE LAYOUT OF THE SIEGE BATTERY – CONSTITUTION ISLAND MRS

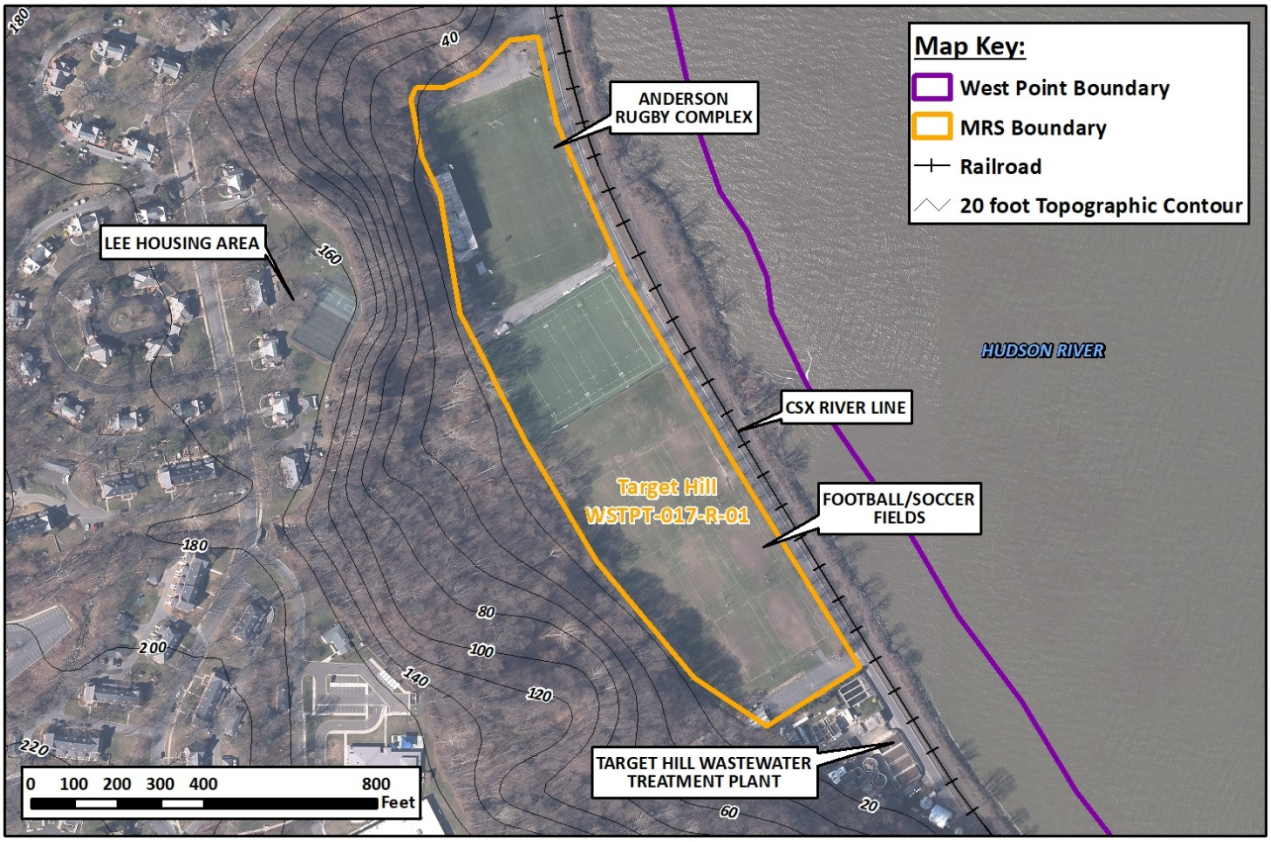

FIGURE 6: THE SITE LAYOUT OF THE TARGET HILL MRS

SITE BACKGROUND

West Point is located in Orange and Putnam Counties, New York on 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 and is composed of three areas: the Main Post, Constitution Island, and the Military Reservation (**Figure 1**). The Main Post includes the majority of the academic, residential, and support facilities. Constitution Island is undeveloped, heavily forested, and designated as a special natural area by West Point. The Military Reservation is largely undeveloped and contains operational training facilities, including **firing ranges** and bivouac areas used during the summer to house and train cadets. The Artillery Firing Range South MRS, the North Athletic Field MRS, and the Target Hill MRS are on the Main Post. The Siege Battery – Constitution Island MRS is on Constitution Island. None of the four MRSs are on the Military Reservation.

ARTILLERY FIRING RANGE SOUTH MRS

The Army created the Artillery Firing Range South MRS out of 123.4 acres of a larger MRS, the Artillery Firing Range MRS, at the end of the Army's Remedial Investigation. The 123.4-acre Artillery Firing Range South MRS is located in the northwestern portion of the Main Post (**Figure 2**). The Artillery Firing Range South MRS is located next to an impact area, now known as the Crow's Nest Mountain. Several historical firing ranges cross the Artillery Firing Range South MRS. These firing ranges are the pie-shaped, hatched areas shown on **Figure 2**. The Army used the historical firing ranges from as early as 1906 until the late-1930s for practice firing at the Crow's Nest Impact Area MRS. The weapons and munitions used at the historical firing ranges included 75-millimeter guns and 2.95-inch Vickers-Maxim Mountain Howitzers. The weapons and munitions used may also have included 6-inch high capacity guns and 15- and 16-inch mortars. The Artillery Firing Range South MRS may contain munitions associated with those historical firing ranges (**Figure 2**).

The Army is currently conducting environmental studies at the Crow's Nest Impact Area MRS. When the Army finishes its studies, the Army will prepare a separate Proposed Plan for the Crow's Nest Impact Area MRS, and it will be made available for public review and comment.

In 2006 and 2011, the Army conducted environmental studies to determine if MEC and munitions constituents were present at the Artillery Firing Range MRS, including the Artillery Firing Range South MRS. In 2006, the Army conducted a **Site Inspection** at the Artillery Firing Range MRS. The Army performed a **visual survey** and a **geophysical survey** and collected sediment and soil samples. During the visual survey, the Army encountered **munitions debris** on the ground, but did not encounter any MEC. The geophysical survey detected some **anomalies** below ground that might be MEC, but the Army did not do any digging at that time to see what these anomalies were. Sample results from the laboratory were compared to concentrations established by the USEPA and found not to be at levels that might cause harm. The Army recommended in the Site Inspection Report that a Remedial Investigation be conducted at the Artillery Firing Range MRS to continue searching for MEC because the visual survey found munitions debris on the ground and the geophysical survey found some anomalies below ground that might be MEC. In 2011, the Army conducted a Remedial Investigation at the Artillery Firing Range MRS, including the Artillery Firing Range South MRS. The Army performed a **handheld metal detector investigation**, a **geophysical investigation**, and soil sampling as part of the Remedial Investigation. Based on the Army's findings in the Remedial Investigation, the Army subdivided the Artillery Firing Range MRS into three MRSs: the Artillery Firing Range MRS (WSTPT-001-R-01), the Artillery Firing Range North MRS (WSTPT-001-R-02), and the Artillery Firing Range South MRS (WSTPT-001-R-03). The Army's findings in the Remedial Investigation conducted at the Artillery Firing Range MRS specific to the Artillery Firing Range South MRS were:

- Munitions debris were found on the ground and below ground;
- MEC were not found; and
- Munitions constituents were not found at the **firing point** that was sampled.
- The Army also recommended that a Feasibility Study be prepared to evaluate future actions for the Artillery Firing Range South MRS because munitions debris was found on the ground and below ground and MEC was found during the construction of the U.S. Military Preparatory School between October 2009 and November 2010.

NORTH ATHLETIC FIELD MRS

The 14-acre North Athletic Field MRS is located west of the Hudson River within the central portion of the Main Post (**Figure 2**). The North Athletic Field MRS is located next to the Siege Battery MRS and the Siege Battery–TD River MRS and below the Siege Battery and Fort Clinton firing ranges. The North Athletic Field MRS may contain munitions associated with those firing ranges and neighboring MRSs (**Figure 2**). The North Athletic Field MRS may also contain munitions that were fired at Target Hill because the North Athletic Field was constructed with fill material removed from Target Hill. Between the early-1800s and the late-1930s, large-caliber, high-explosive, and practice munitions were fired at Target Hill. The North Athletic Field MRS may also contain rifle ammunition because maps from 1903 to 1935 identify a former rifle range and target butts within the MRS.

In 2006 and 2011, the Army conducted environmental studies to determine if MEC and munitions constituents were present at the North Athletic Field MRS. In 2006, the Army conducted a Site Inspection at the North Athletic Field MRS. The Army performed a visual survey and a geophysical survey and collected one soil sample. The Army did not find munitions debris or MEC on the ground surface during the visual survey. During the geophysical survey, the Army detected some anomalies below ground that might be MEC, but the Army did not do any digging at that time to see what these anomalies were. Sample results from the laboratory were compared to concentrations established by the USEPA and found not to be at levels that might cause harm. The Army recommended in the Site Inspection Report that a Remedial Investigation be conducted at the North Athletic Field MRS to continue searching for MEC because the Army found some anomalies below ground that might be MEC. In 2011, the Army conducted a Remedial Investigation at the North Athletic Field MRS. The Army performed a geophysical investigation as part of the Remedial Investigation. During the geophysical investigation, the Army found munitions debris and one MEC item below ground. The Army recommended that a Feasibility Study be prepared to evaluate future actions for the North Athletic Field MRS because munitions debris were found below ground and two MEC items were found below ground – one MEC item was found during bleacher renovations at Shea Stadium in June 1999, and one MEC item was found during the Remedial Investigation.

SIEGE BATTERY – CONSTITUTION ISLAND MRS

The Siege Battery – Constitution Island MRS was created out of 52 acres of a larger MRS, the Siege Battery MRS, at the end of the Army's Remedial Investigation. The 52-acre Siege Battery – Constitution Island MRS is located on Constitution Island (**Figure 2**).

From the late-1700s through the mid-1900s, gun **batteries** (Seacoast Battery and Siege Battery) on the western shore of the Hudson River fired munitions, including large-caliber, high-explosive, and practice rounds and mortars at targets in the Hudson River and at the bluffs on Constitution Island. The batteries' firing ranges are the pie-shaped, hatched areas shown on **Figure 2**. Munitions fired from the batteries may have landed on the Siege Battery – Constitution Island MRS.

In 2006 and 2011, the Army conducted environmental studies to determine if MEC and munitions constituents were present at the Siege Battery MRS, including the Siege Battery – Constitution Island MRS. In 2006, the Army conducted a Site Inspection at the Siege Battery MRS. The Army performed a visual survey and a geophysical survey and collected sediment and soil samples. During the visual survey, the Army found munitions debris and one MEC item on the ground. During the geophysical survey, the Army detected some anomalies below ground that might be MEC, but did not do any digging at that time to see what these anomalies were. Sample results from the laboratory were compared to concentrations established by the USEPA and found not to be at levels that might cause harm. Because the visual survey found one MEC item on the ground, the Army recommended in the Site Inspection that a Remedial Investigation be conducted at the Siege Battery MRS to continue searching for munitions constituents and MEC. In 2011, the Army conducted a Remedial Investigation at the Siege Battery MRS, including the Siege Battery – Constitution Island MRS. The Army performed a handheld metal detector survey and a geophysical survey as part of the Remedial Investigation. Based on the Army's findings in the Remedial Investigation, the Army subdivided the Siege Battery MRS into four MRSs: the Siege Battery MRS (WSTPT-015-R-01), the Siege Battery – Constitution Island MRS (WSTPT-015-R-02), the Artillery Firing Range North MRS (WSTPT-001-R-02), and the Siege Battery – TD River MRS (WSTPT-016-R-01). The Army's findings based on the Remedial Investigation conducted at the Siege Battery MRS specific to the Siege Battery – Constitution Island MRS were:

- Munitions debris were found on the ground and below ground; and
- MEC were not found.

The Army also recommended that a Feasibility Study be prepared to evaluate future actions for the Siege Battery – Constitution Island MRS because munitions debris were found below ground and one MEC item was found on the ground during the Site Inspection.

TARGET HILL MRS

The 14-acre Target Hill MRS is located west of the Hudson River within the northern portion of the Main Post (**Figure 2**). The Target Hill MRS is located next to the Siege Battery MRS and the Artillery Firing Range North MRS and is below the Siege Battery and Fort Clinton firing ranges. The Target Hill MRS may contain munitions associated with those firing ranges and neighboring MRSs (**Figure 2**). The Target Hill MRS may also contain munitions related to its former use as a target area. An area known as "Target Hill" within the Target Hill MRS served as a target area for firing points located at the Cold Spring Foundry and Target Flats. As early as the War of 1812, the Cold Spring Foundry may have used Target Hill as a target area. Its use as a target area for large-caliber, high-explosive, and practice munitions continued until the late-1930s. The Target Hill MRS may also contain rifle ammunition because maps from 1903 identify 1,000-yard target butts within the area. Between 1944 and 1945, Target Hill was leveled, and its soil was used to construct the North Athletic Field.

In 2006 and 2011, the Army conducted environmental studies to determine if MEC and munitions constituents were present at the Target Hill MRS. In 2006, the Army

conducted a Site Inspection at the Target Hill MRS. The Army performed a visual survey and a geophysical survey and collected one soil sample. During the visual survey, the Army did not find munitions debris or MEC. During the geophysical survey, the Army detected some anomalies below ground that might be MEC, but the Army did not do any digging at that time to see what these anomalies were. Sample results from the laboratory were compared to concentrations established by the USEPA and found not to be at levels that might cause harm. In the Site Inspection Report, the Army recommended that a Remedial Investigation be conducted at the Target Hill MRS to continue searching for MEC because the geophysical survey found some below ground anomalies that might be MEC. In 2011, the Army conducted a Remedial Investigation at the Target Hill MRS. The Army performed a geophysical investigation as part of the Remedial Investigation. During the geophysical investigation, the Army found munitions debris below ground. In the Remedial Investigation Report, the Army recommended that a Feasibility Study be prepared to evaluate future actions for the North Athletic Field MRS because munitions debris were found below ground and some uncertainty regarding the presence of MEC remained.

SITE CHARACTERISTICS

The characteristics of each of the four MRSs, including land use and contamination summary, are presented below.

ARTILLERY FIRING RANGE SOUTH MRS

The munitions related items found by the Army at the Artillery Firing Range South MRS included two MEC items: an unfuzed, three-inch Stokes mortar and a circa-1851, eight-inch **projectile**, and munitions debris, including practice and rifle grenades, slap flares, and pieces of unidentifiable munitions. The Army found the MEC items below ground and the munitions debris both on the ground and below ground. The MEC found below ground may also be found on the ground. MEC, a **principal threat waste**, at the Artillery Firing Range South MRS may constitute a principal threat due to the potential for it to pose an explosive hazard if the material is moved, handled, or disturbed.

The Artillery Firing Range South MRS currently consists of three land use zones: Candidate; Community Support; and Recreational, Industrial, Field Training. These zones are defined below:

- Candidate – includes the U.S. Military Academy Preparatory School and its supporting facilities;
- Community – includes housing, commercial, and service support for staff, faculty, non-West Point military personnel, and military retirees; and
- Recreational, Industrial, Field Training – includes recreation areas and open space, building and storage support for industrial operations, and field training areas.

The land use zoning of the Artillery Firing Range South MRS is not anticipated to change in the future.

The Artillery Firing Range South MRS includes the laundry plant, residential housing, the U.S. Military Academy Preparatory School, the U.S. Treasury Depository, the Victor Constant Ski Slope, and the West Point Golf Course. The areas surrounding the Artillery Firing Range South MRS are:

- North – West Point Lumberyard, Keller Army Community Hospital, and residential housing;
- Northeast – residential housing and a portion of the U.S. Military Academy Preparatory School;
- East – operational range;
- Southwest – West Point Golf Course not located within the Artillery Firing Range South MRS; and
- West – Storm King Highway (State Route 218).

The northern portion of the Artillery Firing Range South MRS, which includes the laundry plant, residential housing, the U.S. Military Academy Preparatory School, and the U.S. Treasury Depository is relatively flat. The southern portion of the Artillery Firing Range South MRS, which includes the Victor Constant Ski Slope and the West Point Golf Course is moderately sloped to steeply sloped. The presence of steep terrain and bedrock outcrops makes some of the southern portion of the Artillery Firing Range South MRS difficult to traverse. The elevation of the Artillery Firing Range South MRS ranges from approximately 280 feet to 760 feet above mean sea level. The layout of the Artillery Firing Range South MRS is presented on **Figure 3**.

The Army identified the following **human receptors** that use the Artillery Firing Range South MRS: contractor personnel, installation personnel, maintenance workers, recreational users, site visitors, and West Point residents (adults, cadet candidates, and children). These human receptors may pick-up or move MEC that might be on the ground while walking in the Artillery Firing Range South MRS. Contractor personnel may disturb MEC below ground while renovating the U.S. Treasury Depository. Maintenance workers may disturb MEC below ground while repairing underground utilities. West Point residents (adults and children) may disturb MEC below ground while gardening and landscaping.

NORTH ATHLETIC FIELD MRS

The munitions-related items found by the Army at the North Athletic Field MRS were two MEC items (an eight-inch Coehorn siege mortar and a 76-millimeter M339 armor-piercing tracer) and munitions debris (cannonballs and pieces of unidentifiable munitions). The Army found the MEC items and munitions debris below ground. The MEC found below ground may also be found on the ground. MEC,

a principal threat waste, at the North Athletic Field MRS may constitute a principal threat due to the potential for it to pose an explosive hazard if the material is moved, handled, or disturbed.

The North Athletic Field MRS currently consists of the Cadet Support land use zone. This land use zone includes athletic fields and cadet support facilities. The land use zoning of the North Athletic Field MRS is not anticipated to change in the future.

The North Athletic Field MRS includes Shea Stadium and the Army Softball Complex and is enclosed by a fence. The areas surrounding the North Athletic Field MRS are:

- East – Upton Road, Hudson River, and CSX River Line;
- South – Tower Road, Gillis Field House, Tronsrue Marksmanship Center, and Arvin Annex; and
- West – Townsley Road, small parking area, and woods.

The North Athletic Field MRS is flat and ranges in elevation from approximately five feet to seven feet above mean sea level. The layout of the North Athletic Field MRS is presented on **Figure 4**.

The Army identified the following human receptors that use the North Athletic Field MRS: installation personnel (coaches), maintenance workers, recreational users (athletes), site visitors. These human receptors may pick up or move MEC that might be on the ground while walking in the North Athletic Field MRS. Maintenance workers may disturb MEC below ground while repairing underground utilities or the athletic fields.

SIEGE BATTERY – CONSTITUTION ISLAND MRS

The munitions related items found by the Army at the Siege Battery – Constitution Island MRS included one MEC item: (a three-inch Stokes mortar) and 24 pieces of munitions debris (pieces of unidentifiable munitions). The Army found the MEC item on the ground and the munitions debris below ground. MEC may also be present below ground because munitions debris were found below ground. MEC, a principal threat waste, at the Siege Battery – Constitution Island MRS may constitute a principal threat due to the potential for it to pose an explosive hazard if the material is moved, handled, or disturbed.

The Siege Battery – Constitution Island MRS currently consists of the Recreational, Industrial, Field Training land use zone. This land use zone includes recreation areas and open space, building and storage support for industrial operations, and field training areas. The land use zoning of the Siege Battery – Constitution Island MRS is not anticipated to change in the future. The Siege Battery – Constitution Island MRS occupies approximately one-third of Constitution Island, an area designated by West Point as a special natural area due to the undisturbed nature of the habitat and its aesthetic value. The MRS is used for recreational activities. Several sensitive plant and animal species have been sighted on Constitution Island.

The Siege Battery – Constitution Island MRS consists of undisturbed woodlands and open areas, as well as historically significant sites. The southern 10 acres of the MRS contains a trail and the historical Revolutionary War Encampment and Redoubt No. 7, which provide educational value and are regularly visited by the public. The trail is maintained by the Constitution Island Caretaker. The areas surrounding the Siege Battery – Constitution Island MRS are:

- North, West, and South – Hudson River; and
- East – undeveloped land and areas of cultural significance.

The Siege Battery – Constitution Island MRS contains steep cliffs along its shoreline in the southern portion and ranges in elevation from mean sea level to 100 feet above mean sea level. The layout of the Siege Battery – Constitution Island MRS is presented on **Figure 5**.

The Army identified the following human receptors that use the Siege Battery – Constitution Island MRS: Constitution Island caretaker, contractor personnel, and recreational users. These human receptors may pick-up or move MEC on the ground while walking in the Siege Battery – Constitution Island MRS. Contractor personnel may disturb MEC below ground while maintaining the trail.

TARGET HILL MRS

The munitions related items found by the Army at the Target Hill MRS were munitions debris: a 6.5-inch cannonball (solid shot), an eight-inch mortar (empty), and a 15-inch cannonball (solid shot). The Army found the munitions debris on the ground and below ground. MEC may also be present on the ground and below ground because munitions debris were found on the ground and below ground. MEC, a principal threat waste, at the Target Hill MRS may constitute a principal threat due to the potential for it to pose an explosive hazard if the material is moved, handled, or disturbed.

The Target Hill MRS currently consists of the Cadet Support land use zone. This land use zone includes athletic fields and cadet support facilities. The land use zoning of the Target Hill MRS is not anticipated to change in the future.

The Target Hill MRS includes the Anderson Rugby Complex, a football field, and multiple soccer fields. The areas surrounding the Target Hill MRS are:

- East – River Road, Hudson River, and CSX River Line;
- West – Lee Housing Area;
- South – Target Hill wastewater treatment plant; and
- North – woods.

The Target Hill MRS is flat and ranges in elevation from approximately 12 feet to 17 feet above mean sea level. The layout of the Target Hill MRS is presented on **Figure 6**.

The Army identified the following human receptors that use the Target Hill MRS: contractor personnel, installation personnel (coaches), maintenance workers, recreational users (athletes), and site visitors. These human receptors may pick up or move MEC that might be on the ground while walking in the Target Hill MRS. Contractor personnel and maintenance workers may disturb MEC below ground while repairing underground utilities or the athletic fields.

SCOPE AND ROLE OF REMEDIAL ACTION

The Army identified multiple MRSs at West Point. The four MRSs: Artillery Firing Range South MRS, North Athletic Field MRS, Siege Battery – Constitution Island MRS, and Target Hill MRS are some of the MRSs that the Army identified at West Point. The Army identifies in this Proposed Plan the preferred alternatives for the four MRSs. The Army selected the preferred alternatives identified in this Proposed Plan to protect human health and the environment at the four MRSs. The toxicity, mobility, and volume of the principal threat wastes (e.g., MEC) at the four MRSs will only be reduced by the Army when they are unintentionally discovered.

SUMMARY OF SITE RISKS

As part of the Remedial Investigations for each of the four MRSs, the Army evaluated potential risk to determine current and future effects of contaminants on human health and the environment from munitions constituents and MEC. To evaluate the potential risk posed by munitions constituents to human health and the environment, the Army conducted a **risk screening** according to USEPA guidance. To evaluate the potential risk posed by MEC to human receptors, the Army conducted an MEC Hazard Assessment and determined if a potential **explosives safety hazard** is present using **source**, human receptor, and **interaction** information collected during the Remedial Investigations.

The MEC Hazard Assessment was created by the USEPA and the Department of Defense and is used to determine an MRS's explosive hazard level based on site-specific information typically collected during the investigation phase. A Hazard Level of 1 represents the highest potential explosive condition, while a Hazard Level of 4 represents the lowest potential explosive condition.

ARTILLERY FIRING RANGE SOUTH MRS

Munitions Constituents Risk Screening

A risk screening was conducted by the Army using the soil sampling results from the Remedial Investigation. The Army compared the laboratory results to values established by the USEPA, NYSDEC, and U.S. Army Center for Health Promotion and Preventative Medicine. The comparison was made for both **ecological receptors** and human receptors to determine if munitions constituents pose potential risk to human health or the environment. The risk screening conducted by the Army concluded that munitions constituents do not pose unacceptable risks to human health or the environment.

MEC Hazard Evaluation

A MEC Hazard Assessment was conducted by the Army using information collected during and after the Remedial Investigation. The Army reported in the Remedial Investigation Report that two MEC items were found below ground and munitions debris were found on the ground and below ground. The Army revised the human receptors that use the Artillery Firing Range South MRS after the Remedial Investigation was completed. For current use activities, the Army, using the MEC Hazard Assessment, determined that the Artillery Firing Range South MRS has a Hazard Level of 3, which indicates it has a moderate potential explosive hazard condition.

At the Artillery Firing Range South MRS, the Army identified a source (e.g., MEC), human receptors (e.g., West Point residents (adults, cadet candidates, and children)), and activities (e.g., walking), which indicate that a potential explosives safety hazard is present. Because a potential explosives safety hazard is present, it is the Army's current judgment that the Preferred Alternative identified for the Artillery Firing Range South MRS in this Proposed Plan, or one of the other active measures considered in this Proposed Plan, is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

NORTH ATHLETIC FIELD MRS

Munitions Constituents Risk Screening

A risk screening was not conducted by the Army for the North Athletic Field MRS because it does not contain a historical firing point or areas of concern, and munitions constituents samples were not collected. Therefore, the Army determined that munitions constituents do not pose unacceptable risks to human health or the environment.

MEC Hazard Evaluation

A MEC Hazard Assessment was conducted by the Army using information collected during the Remedial Investigation. The Army reported in the Remedial Investigation Report that two MEC items and munitions debris were found below ground. For current use activities, the Army, using the MEC Hazard Assessment, determined that the North Athletic Field MRS has a Hazard Level of 3, which indicates it has a moderate potential explosive hazard condition.

At the North Athletic Field MRS, the Army identified a source (e.g., MEC), human receptors (e.g., site visitors), and activities (e.g., walking and site maintenance), which

indicate that a potential explosives safety hazard is present. Because an explosives safety hazard may exist, it is the Army's current judgment that the Preferred Alternative identified for the North Athletic Field MRS in this Proposed Plan, or one of the other active measures considered in this Proposed Plan, is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

SIEGE BATTERY – CONSTITUTION ISLAND MRS

Munitions Constituents Risk Screening

A risk screening was not conducted by the Army for the Siege Battery – Constitution Island MRS because it does not contain a historical firing point or areas of concern, and munitions constituents samples were not collected. Therefore, munitions constituents do not pose unacceptable risks to human health or the environment.

MEC Hazard Evaluation

A MEC Hazard Assessment was conducted by the Army using information collected during the Remedial Investigation. The Army reported in the Remedial Investigation Report that one MEC item was found on the ground and munitions debris were found below ground. For current use activities, the Army, using the MEC Hazard Assessment, determined that the Siege Battery – Constitution Island MRS has a Hazard Level of 3, which indicates it has a moderate potential explosive hazard condition.

At the Siege Battery – Constitution Island MRS, the Army identified a source (e.g., MEC), human receptors (e.g., recreational users), and activities (e.g., walking), which indicate that a potential explosives safety hazard is present. Because an explosives safety hazard may exist, it is the Army's current judgment that the Preferred Alternative identified for the Siege Battery – Constitution Island MRS in this Proposed Plan, or one of the other active measures considered in this Proposed Plan, is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

TARGET HILL MRS

Munitions Constituents Risk Screening

A risk screening was not conducted by the Army for the Target Hill MRS because it does not contain a historical firing point or areas of concern, and munitions constituents samples were not collected. Therefore, munitions constituents do not pose unacceptable risks to human health or the environment.

MEC Hazard Evaluation

A MEC Hazard Assessment was not conducted by the Army because MEC was not found at the Target Hill MRS. The Army reported in the Remedial Investigation Report that only munitions debris were found on the ground and below ground.

At the Target Hill MRS, the Army identified a source (e.g., munitions debris), human receptors (e.g., site visitors), and activities (e.g., walking), which indicate that a potential explosives safety hazard is present. Because an explosives safety hazard may exist, it is the Army's current judgment that the Preferred Alternative identified for the Target Hill MRS in this Proposed Plan, or one of the other active measures considered in this Proposed Plan, is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives are MRS-specific goals for protecting human receptors from the explosive hazards posed by MEC. MEC does not pose an explosive hazard to the environment, but these MRS-specific goals were created with the environment in mind to avoid actions that might unnecessarily damage natural resources. The Remedial Action Objectives for each of the four MRSs are presented below.

ARTILLERY FIRING RANGE SOUTH MRS

The Army found two MEC items below ground and munitions debris on the ground and below ground at the Artillery Firing Range South MRS. The discovery of munitions debris and MEC means that a potential explosive hazard may exist. To protect human receptors, the Army created the following Remedial Action Objectives:

- Reduce or eliminate direct contact of contractor personnel, installation personnel, maintenance workers, recreational users, site visitors, and West Point residents (adults, cadet candidates, and children) with the explosive hazards posed by subsurface MEC migrating to or potentially present on the surface; and
- Reduce or eliminate direct contact of contractor personnel, maintenance workers, and West Point residents (adults and children) with the explosive hazards posed by MEC located within subsurface soil.

NORTH ATHLETIC FIELD MRS

The Army found two MEC items below ground and munitions debris below ground at the North Athletic Field MRS. The discovery of munitions debris and MEC means that a potential explosive hazard may exist. To protect human receptors, the Army created the following Remedial Action Objectives:

- Reduce or eliminate direct contact of installation personnel (coaches), maintenance workers, recreational users (athletes), and site visitors with the potential explosive hazards posed by subsurface MEC migrating to or present on the surface; and

- Reduce or eliminate direct contact of maintenance workers with the explosive hazards posed by MEC located within subsurface soil.

SIEGE BATTERY – CONSTITUTION ISLAND MRS

The Army found one MEC item on the ground and munitions debris below ground at the Siege Battery – Constitution Island MRS. The discovery of munitions debris and MEC means that a potential explosive hazard may exist. To protect human receptors, the Army created the following Remedial Action Objectives:

- Reduce or eliminate direct contact of the Constitution Island caretaker, recreational users, and contractor personnel with the potential explosive hazards posed by MEC present on the surface; and
- Reduce or eliminate direct contact of contractor personnel with the potential explosive hazards posed by MEC potentially located within subsurface soil.

TARGET HILL MRS

The Army found munitions debris below ground at the Target Hill MRS. The discovery of munitions debris means that a potential explosive hazard may exist. To protect human receptors, the Army created the following Remedial Action Objectives:

- Reduce or eliminate direct contact of contractor personnel, installation personnel (coaches), maintenance workers, recreational users (athletes), and site visitors with the explosive hazards posed by MEC potentially present on the surface; and

Reduce or eliminate direct contact of contractor personnel and maintenance workers with the explosive hazards posed by MEC potentially located within subsurface soil.

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Applicable or relevant and appropriate requirements (ARARs) are **promulgated**, **statutory**, and **regulatory** requirements that are substantive in nature, and must be met or waived during implementation of a remedial action, as required by the NCP. ARARs are identified based on MRS-specific factors such as contaminants present, location, physical features, and remedial alternatives being considered, and are subdivided into three categories (chemical-specific, action-specific, and location-specific). Remedial alternatives must either attain or formally waive each ARAR identified for each of the four MRSs. As such, ARARs were considered in the development of the remedial alternatives. In addition to the promulgated statutory and regulatory requirements that comprise ARARs, non-promulgated advisories, guidance, or policies known as **To-Be Considered Guidance** were also evaluated for each of the four MRSs.

The potential ARAR that was identified by the Army for remedial action at each of the four MRSs is summarized below:

- Resource Conservation and Recovery Act, Subpart X, Section 264.601 (Environmental Performance Standards) – This federal act requires miscellaneous units used for munitions disposal be located, designed, constructed, operated, maintained, and closed in a manner that ensures protection of human health and the environment.

This ARAR was determined by the Army to be **relevant and appropriate** when conducting a **consolidated shot** or **blow-in-place** to dispose of MEC during a remedial action. A detailed discussion of the potential ARARs evaluated for each of the four MRSs are presented in the applicable Feasibility Study.

SUMMARY OF REMEDIAL ALTERNATIVES

The following is a summary of information that was provided in the Feasibility Studies for each of the four MRSs.

ARTILLERY FIRING RANGE SOUTH MRS

The Army developed three remedial alternatives in the Feasibility Study for the Artillery Firing Range South MRS to reduce or eliminate the potential explosive hazard posed by MEC to human receptors. They are presented below:

- Alternative 1: No Action
- Alternative 2: Risk Management
- Alternative 3: Removal of MEC to Qualify for **Unlimited Use and Unrestricted Exposure**

Of these remedial alternatives, the Army identified Alternative 2 as the preferred alternative.

Alternative 1: No Action

Estimated **Capital Cost**: $0
Estimated Annual O&M Cost: $0
Estimated **Periodic Cost**: $0
Estimated **Present Worth Cost**: $0

This alternative was included for comparison as required by CERCLA and Department of Defense policy. Under this alternative there would be no **munitions response**.

Alternative 2: Risk Management

Estimated Capital Cost: $50,606
Estimated Annual O&M Cost: $50,518
Estimated Periodic Cost: $42,257
Estimated Present Worth Cost: $161,022
Estimated Time to Implement Alternative: 6 months
Estimated Time to Achieve RAOs: 6 months

This alternative includes the use of Land Use Controls across all of the Artillery Firing Range South MRS to reduce the potential explosive hazard posed to human receptors by

MEC. The following Land Use Controls make up Alternative 2:

- Use of the MRS for residential purposes, daycare facilities, hospitals, or schools would not be allowed without prior approval from West Point;
- Emergency calls (911) involving MEC will be recorded on a map so West Point can keep track of where explosive hazards are found;
- Any below ground activity conducted at the MRS would require a **dig permit** and **MEC safety/awareness training**, as well as **on-call construction support**;
- Brochures and fact sheets, like the 3Rs pamphlet attached to the end of this Proposed Plan, would be provided to the public to educate them about the potential explosive hazards associated with MEC. The brochures and fact sheets provide instructions regarding what to do if someone finds MEC or an item that looks like MEC; and
- A system to review the Land Use Controls to ensure that they remain protective.

Alternative 3: Removal of MEC to Qualify for Unlimited Use and Unrestricted Exposure

Estimated Capital Cost: $14,769,540
Estimated Annual O&M Cost: $0
Estimated Periodic Cost: $0
Estimated Present Worth Cost: $14,769,540
Estimated Time to Implement Alternative: 2 years
Estimated Time to Achieve RAOs: 2 years

This alternative would find and remove MEC from all of the Artillery Firing Range South MRS to eliminate the potential explosive hazard posed to human receptors by MEC. The following activities would be conducted to find and remove MEC:

- MEC would not be removed from below buildings, roads, or sidewalks;
- Establishing an **exclusion zone** within and around the Artillery Firing Range South MRS to prevent unauthorized access during clearcutting and MEC removal;
- Clearcutting of vegetation;
- The residential housing, Storm King Highway (State Route 218) and facilities, including the Keller Army Community Hospital, the laundry plant, the U.S. Military Academy Preparatory School, the U.S. Treasury Depository, the Victor Constant Ski Slope, the West Point Golf Course, and the West Point Lumberyard within the exclusion zone would have to be evacuated for up to 10 months during clearcutting and MEC removal;
- On-site storage and mulching of the cleared vegetation. Most of the mulch would be disposed off-site, but some of it would be used by West Point;
- Handheld metal detector and geophysical investigations would be conducted to find MEC;
- On-site destruction of MEC. The explosive hazards posed by MEC to human receptors during on-site MEC destruction would be reduced by using trained workers, a **work plan**, and **engineering controls**; and
- Munitions debris found during the search for MEC and any munitions debris created by on-site destruction of MEC would be taken off-site for recycling.

NORTH ATHLETIC FIELD MRS

The Army developed three remedial alternatives in the Feasibility Study for the North Athletic Field MRS to reduce or eliminate the potential explosive hazard posed by MEC to human receptors. They are presented below:

- Alternative 1: No Action
- Alternative 2: Risk Management
- Alternative 3: Removal of MEC to Qualify for Unlimited Use and Unrestricted Exposure

Of these remedial alternatives, the Army identified Alternative 2 as the preferred alternative.

Alternative 1: No Action

Estimated Capital Cost: $0
Estimated Annual O&M Cost: $0
Estimated Periodic Cost: $0
Estimated Present Worth Cost: $0

This alternative was included for comparison as required by CERCLA and Department of Defense policy. Under this alternative there would be no munitions response.

Alternative 2: Risk Management

Estimated Capital Cost: $50,606
Estimated Annual O&M Cost: $50,518
Estimated Periodic Cost: $42,257
Estimated Present Worth Cost: $126,953
Estimated Time to Implement Alternative: 6 months
Estimated Time to Achieve RAOs: 6 months

This alternative includes the use of Land Use Controls across all of the North Athletic Field MRS to reduce the potential explosive hazard posed to human receptors by MEC. The following Land Use Controls make up Alternative 2:

- Use of the MRS for residential purposes, daycare facilities, hospitals, or schools would not be allowed without prior approval from West Point;
- Emergency calls (911) involving MEC will be recorded on a map so West Point can keep track of where explosive hazards are found;

- Any below ground activity conducted at the MRS would require a dig permit and MEC safety/awareness training as well as on-call construction support;
- Brochures and fact sheets, like the 3Rs pamphlet attached to the end of this Proposed Plan, would be provided to the public to educate them about the potential explosive hazards associated with MEC. The brochures and fact sheets provide instructions regarding what to do if someone finds MEC or an item that looks like MEC; and
- A system to review the Land Use Controls to ensure that they remain protective.

Alternative 3: Removal of MEC to Qualify for Unlimited Use and Unrestricted Exposure

Estimated Capital Cost: $2,247,448
Estimated Annual O&M Cost: $0
Estimated Periodic Cost: $0
Estimated Present Worth Cost: $2,247,448
Estimated Time to Implement Alternative: 2 years
Estimated Time to Achieve RAOs: 2 years

This alternative would find and remove MEC from all of the North Athletic Field MRS to reduce the potential explosive hazard posed to human receptors by MEC. The following activities would be conducted to find and remove MEC:

- MEC would not be removed from below buildings, roads, or sidewalks or from an approximately 4.5-acre area located between Shea Stadium and the Army Softball Complex. The MEC between Shea Stadium and the Army Softball Complex were removed during the Remedial Investigation;
- Establishing an exclusion zone around the North Athletic Field MRS to prevent unauthorized access during MEC removal;
- The facilities, including the Army Softball Complex, the Arvin Annex, the Gillis Field House, Shea Stadium, and the Tronsrue Marksmanship Center within the exclusion zone would have to be closed for up to 6 months during MEC removal;
- Service on the CSX River Line may have to be suspended during MEC removal;
- Handheld metal detector and geophysical investigations would be conducted to find MEC;
- On-site destruction of MEC. The explosive hazards posed by MEC to human receptors during on-site MEC destruction would be reduced by using trained workers, a work plan, and engineering controls; and
- Munitions debris found during the search for MEC and any munitions debris created by on-site destruction of MEC would be taken off-site for recycling.

SIEGE BATTERY – CONSTITUTION ISLAND MRS

The Army developed six remedial alternatives in the Feasibility Study for the Siege Battery – Constitution Island MRS to reduce or eliminate the potential explosive hazard posed by MEC to human receptors. Two of the six developed remedial alternatives were removed from further consideration because their costs were excessive compared to their overall effectiveness, and one of the six developed remedial alternatives was removed because its costs were excessive compared to another remedial alternative that was equally effective and implementable. The remaining three remedial alternatives are presented below:

- Alternative 1: No Action
- Alternative 2: Risk Management
- Alternative 5: Partial Surface/Subsurface MEC Removal and Risk Management

Of these remedial alternatives, the Army identified Alternative 5 as the preferred alternative.

Alternative 1: No Action

Estimated Capital Cost: $0
Estimated Annual O&M Cost: $0
Estimated Periodic Cost: $0
Estimated Present Worth Cost: $0

This alternative was included for comparison as required by CERCLA and Department of Defense policy. Under this alternative there would be no munitions response.

Alternative 2: Risk Management

Estimated Capital Cost: $57,417
Estimated Annual O&M: $49,967
Estimated Periodic Cost: $242,992
Estimated Present Worth Cost: $277,741
Estimated Time to Implement Alternative: 6 months
Estimated Time to Achieve RAOs: 6 months

This alternative includes the use of Land Use Controls across all of the Siege Battery – Constitution Island MRS to reduce the potential explosive hazard posed to human receptors by MEC. The following Land Use Controls make up Alternative 2:

- Use of the MRS for residential purposes, daycare facilities, hospitals, or schools would not be allowed without prior approval from West Point;
- Emergency calls (911) involving MEC will be recorded on a map so West Point can keep track of where explosive hazards are found;
- Any below ground activity conducted at the MRS would require a dig permit and MEC safety/awareness training as well as on-call construction support;
- Brochures and fact sheets, like the 3Rs pamphlet attached to the end of this Proposed Plan, would be provided to the public to educate them about the potential explosive hazards associated with MEC. The

brochures and fact sheets provide instructions regarding what to do if someone finds MEC or an item that looks like MEC; and

- A system to review the Land Use Controls to ensure that they remain protective.

Alternative 5: Partial Surface/Subsurface MEC Removal and Risk Management

Estimated Capital Cost: $841,315
Estimated Annual O&M Cost: $49,967
Estimated Periodic Cost: $242,992
Estimated Present Worth Cost: $1,061,639
Estimated Time to Implement Alternative: 1 year
Estimated Time to Achieve RAOs: 1 year

This alternative would find and remove MEC from high use areas of the Siege Battery – Constitution Island MRS and use Land Use Controls across the rest of the Siege Battery – Constitution Island MRS to reduce the potential explosive hazard posed to human receptors by MEC. The following activities would be conducted to find and remove MEC:

- MEC would be removed from a 10-acre area to a depth of 1-foot below ground in the southern portion of the Siege Battery – Constitution Island MRS except below trees greater than 3 inches in diameter at breast height. The 10-acre area includes a hiking trail, the Revolutionary War Encampment, and Redoubt No. 7;
- Removal of vegetation excluding trees greater than 3 inches in diameter at breast height, with hand tools and mechanical equipment. *(Note: The Feasibility Study called for clear cutting and grubbing of vegetation. Because this would significantly damage the ecosystem and potentially damage cultural resources, the alternative is modified herein to include limited vegetation removal.)*;
- Establishing an exclusion zone around the Siege Battery – Constitution Island MRS to prevent unauthorized access during vegetation and MEC removal;
- On-site storage and mulching of the cleared vegetation. The mulch would be used on Constitution Island by West Point;
- The trail, Revolutionary War Encampment, and Redoubt No. 7 would be closed for recreational use during vegetation and MEC removal;
- Handheld metal detector and geophysical investigations would be conducted to find MEC;
- On-site destruction of MEC. The explosive hazards posed by MEC to human receptors during on-site MEC destruction would be reduced by using trained workers, a work plan, and engineering controls; and
- Munitions debris found during the search for MEC and any munitions debris created by on-site destruction of MEC would be taken off-site for recycling.

The following Land Use Controls make up Alternative 5 and would be applied to the entire 52-acre Siege Battery – Constitution Island MRS. Land Use Controls will be required on the 10 acres designated for MEC removal because MEC may remain in place under trees larger than 3 inches in diameter. Land Use Controls will also be implemented on the remaining 42 acres where MEC removal was not conducted, as follows:

- Use of the MRS for residential purposes, daycare facilities, hospitals, or schools would not be allowed without prior approval from West Point;
- Emergency calls (911) involving MEC will be recorded on a map so West Point can keep track of where explosive hazards are found;
- Any below ground activity conducted at the MRS would require a dig permit and MEC safety/awareness training as well as on-call construction support;
- Brochures and fact sheets, like the 3Rs pamphlet attached to the end of this Proposed Plan, would be provided to the public to educate them about the potential explosive hazards associated with MEC. The brochures and fact sheets provide instructions regarding what to do if someone finds MEC or an item that looks like MEC; and
- A system to review the Land Use Controls to ensure that they remain protective.

TARGET HILL MRS

The Army developed four remedial alternatives in the Feasibility Study for the Target Hill MRS to reduce or eliminate the potential explosive hazard posed by MEC to human receptors. One of the four developed remedial alternatives was removed from further consideration because its costs were excessive compared to its overall effectiveness. The remaining three remedial alternatives are presented below:

- Alternative 1: No Action
- Alternative 2: Risk Management
- Alternative 4: Partial Surface MEC Removal with Risk Management

Of these remedial alternatives, the Army identified Alternative 2 as the preferred alternative.

Alternative 1: No Action

Estimated Capital Cost: $0
Estimated Annual O&M Cost: $0
Estimated Periodic Cost: $0
Estimated Present Worth Cost: $0

This alternative was included for comparison as required by CERCLA and Department of Defense policy. Under this alternative there would be no munitions response.

Alternative 2: Risk Management

Table 1 – CERCLA Nine Criteria Summary

Threshold Criteria

1) **Overall Protection of Human Health and the Environment:** Does the alternative protect human health and the environment from the explosive hazards posed by MEC?
2) **Compliance with Applicable or Relevant and Appropriate Requirements (ARARs):** Does the alternative comply with the identified ARARs?

For an alternative to be selected, it must meet the two Threshold Criteria.

Balancing Criteria

3) **Long-Term Effectiveness and Permanence:** Is the alternative effective and permanent in addressing the explosive hazards at the site?
4) **Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment:** Does the alternative reduce the toxicity, mobility, volume of the explosive hazards?
5) **Short-Term Effectiveness:** What is the risk to the community, workers, and the environment during implementation of the **remedial action**?
6) **Implementability:** How difficult is it to implement the alternative?
7) **Cost:** What are the relative costs associated with the alternative?

The balancing criteria are used to evaluate important differences between the remedial alternatives.

Modifying Criteria

8) **State / Support Agency Acceptance:** Whether the State agrees with the analyses and recommendations, as described in the Remedial Investigation/Feasibility Study and Proposed Plan.
9) **Community Acceptance:** Does the community agree with the analyses and preferred alternative? Comments received on the Proposal Plan are an important indicator of community acceptance.

Modifying criteria will be evaluated in a Decision Document based on any new information and public comments on the Proposed Plan.

Estimated Capital Cost: $57,417
Estimated Annual O&M Cost: $49,967
Estimated Periodic Cost: $28,595
Estimated Present Worth Cost: $121,802
Estimated Time to Implement Alternative: 6 months
Estimated Time to Achieve RAOs: 6 months

This alternative includes the use of Land Use Controls across all of the Target Hill MRS to reduce the potential explosive hazard posed to human receptors by MEC. The following Land Use Controls make up Alternative 2:

- Use of the MRS for residential purposes, daycare facilities, hospitals, or schools would not be allowed without prior approval from West Point;
- Emergency calls (911) involving MEC will be recorded on a map so West Point can keep track of where explosive hazards are found;
- Any below ground activity conducted at the MRS would require a dig permit and MEC safety/awareness training as well as on-call construction support;
- Brochures and fact sheets, like the 3Rs pamphlet attached to the end of this Proposed Plan, would be provided to the public to educate them about the potential explosive hazards associated with MEC. The brochures and fact sheets provide instructions regarding what to do if someone finds MEC or an item that looks like MEC; and
- A system to review the Land Use Controls to ensure that they remain protective.

Alternative 4: Partial Surface MEC Removal with Risk Management

Estimated Capital Cost: $573,079
Estimated Annual O&M Cost: $49,967
Estimated Periodic Cost: $28,595
Estimated Present Worth Cost: $637,464
Estimated Time to Implement Alternative: 1 year
Estimated Time to Achieve RAOs: 1 year

This alternative would find and remove MEC from high use areas of the Target Hill MRS and use Land Use Controls across all of the Target Hill MRS to reduce the potential explosive hazard posed to human receptors by MEC. The following activities would be conducted to find and remove MEC:

- MEC would be removed from the surface of the 7-acre southern portion of the Target Hill MRS that contains a football field and multiple soccer fields;
- Establishing an exclusion zone around the Target Hill MRS to prevent unauthorized access during clearcutting and MEC removal;
- The football field and multiple soccer fields would be closed during MEC removal;
- The Target Hill wastewater treatment plant within the exclusion zone would have to be evacuated during MEC removal;
- Handheld metal detector and geophysical investigations would be conducted to find MEC;
- On-site destruction of MEC. The explosive hazards posed by MEC to human receptors during on-site MEC destruction would be reduced by using trained workers, a work plan, and engineering controls; and Munitions debris found during the search for MEC and any

munitions debris created by on-site destruction of MEC would be taken off-site for recycling.

The following Land Use Controls make up Alternative 5 and would be applied to all of the Target Hill MRS:

- Use of the MRS for residential purposes, daycare facilities, hospitals, or schools would not be allowed without prior approval from West Point;
- Emergency calls (911) involving MEC will be recorded on a map so West Point can keep track of where explosive hazards are found;
- Any below ground activity conducted at the MRS would require a dig permit and MEC safety/awareness training as well as on-call construction support;
- Brochures and fact sheets, like the 3Rs pamphlet attached to the end of this Proposed Plan, would be provided to the public to educate them about the potential explosive hazards associated with MEC. The brochures and fact sheets provide instructions regarding what to do if someone finds MEC or an item that looks like MEC; and
- A system to review the Land Use Controls to ensure that they remain protective.

EVALUATION OF REMEDIAL ALTERNATIVES

The following information was provided by the Army in the Feasibility Studies for each of the four MRSs. To select preferred alternatives, the Army used nine criteria to evaluate the different remedial alternatives that were developed, both individually and against each other for each of the four MRSs. The nine criteria are presented in **Table 1**.

ARTILLERY FIRING RANGE SOUTH MRS

The following summarizes the Army's remedial alternative evaluation:

- Overall Protection of Human Health and Environment: Alternative 2 and Alternative 3 protect human health and the environment. Alternative 2 protects human health and the environment by changing human behavior. Alternative 3 protects human health and the environment by removing MEC. Alternative 1 would not protect human health and the environment because it includes no action;
- Compliance with ARARs: Alternatives 1, 2, and 3 would comply with the ARAR that was identified by the Army for the remedial action at the MRS. Alternative 1 would comply because there would be no action. Alternatives 2 and 3 would comply with the Environmental Performance Standards in 40 CFR 264.601, if MEC were found incidentally in the application of land use controls (Alternative 2) or intentionally during the MEC removal (Alternative 3). Exclusion zones, engineering controls, and qualified personnel would be used in Alternatives 2 and 3 to comply with the ARAR when performing a **consolidated shot** or **blow-in-place** to dispose of MEC, if found;
- Long-Term Effectiveness and Permanence: Alternative 3 would provide greater long-term effectiveness and permanence than Alternative 2 because Alternative 3 would intentionally find and remove MEC to eliminate potential explosive hazards. Alternative 2 would only remove MEC if it is unintentionally found by someone, e.g., West Point resident. Alternative 1 would not be effective or permanent in the long-term because it includes no action;
- Long-Term Effectiveness and Permanence: To evaluate the long-term effectiveness, **Five-Year Reviews** would be conducted for Alternative 2. Alternatives 1 and 3 would not require such reviews, although Alternative 1 may leave potential explosive hazards at the MRS;
- Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment: Alternative 3 would reduce the toxicity, mobility, and volume of the principal threat waste (MEC) more than Alternative 2 because Alternative 3 would intentionally eliminate the potential explosive hazard. Only Alternative 3 satisfies the statutory preference for treatment as a principal element. Alternative 1 would not reduce the toxicity, mobility, or volume of MEC or satisfy the statutory preference for treatment as a principal element because it includes no action;
- Short-Term Effectiveness: Alternative 1 would be most effective in the short-term because it includes no action. Alternative 2 would be more effective in the short-term than Alternative 3 because Alternative 2 would only expose human receptors to the explosive hazards associated with on-site MEC destruction when MEC is unintentionally found by someone, e.g., West Point resident;
- Implementability: Alternative 1 would be most implementable because it includes no action. Alternative 2 would be more implementable than Alternative 3 because it would not require the use of heavy equipment on steep terrain with bedrock outcrops for clearcutting, the creation of an exclusion zone, and the evacuation of residential housing, facilities, including the Keller Army Community Hospital, the laundry plant, the U.S. Military Academy Preparatory School, the U.S. Treasury Depository, the Victor Constant Ski Slope, the West Point Golf Course, and the West Point Lumberyard and the Storm King Highway (State Route 218) for up to 10 months; and

- Cost: Alternative 1 would require no cost because it includes no action. Alternative 2 would cost less than Alternative 3.

The results of the remedial alternative evaluation conducted by the Army are summarized in **Table 2**. Of these evaluated remedial alternatives, the Army identified Alternative 2 as the preferred alternative. The final remedy will be selected based on the results of the Army's evaluation and any public comments received on this Proposed Plan.

NORTH ATHLETIC FIELD MRS

The following summarizes the Army's remedial alternative evaluation:

- Overall Protection of Human Health and Environment: Alternative 2 and Alternative 3 protect human health and the environment. Alternative 2 protects human health and the environment by changing human behavior. Alternative 3 protects human health and the environment by removing MEC. Alternative 1 is not protective of human health and the environment because it includes no action;
- Compliance with ARARs: Alternatives 1, 2, and 3 would comply with the ARAR that was identified by the Army for the remedial action at the MRS. Alternative 1 would comply because there would be no action. Alternatives 2 and 3 would comply with the Environmental Performance Standards in 40 CFR 264.601, if MEC were found incidentally in the application of land use controls (Alternative 2) or intentionally during the MEC removal (Alternative 3). Exclusion zones, engineering controls, and qualified personnel would be used in Alternatives 2 and 3 to comply with the ARAR when performing a consolidated shot or blow-in-place to dispose of MEC, if found;
- Long-Term Effectiveness and Permanence: Alternative 3 would provide greater long-term effectiveness and permanence than Alternative 2 because Alternative 3 would intentionally find and remove MEC to eliminate potential explosive hazards. Alternative 2 would only remove MEC if it is unintentionally found by someone, e.g., site visitor. Alternative 1 would not be effective or permanent in the long-term because it includes no action;
- Long-Term Effectiveness and Permanence: To evaluate the long-term effectiveness, Five-Year Reviews would be conducted for Alternative 2. Alternatives 1 and 3 would not require such reviews, although Alternative 1 may leave potential explosive hazards at the MRS;
- Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment: Alternative 3 would reduce the toxicity, mobility, and volume of the principal threat waste (MEC) more than Alternative 2 because Alternative 3 would intentionally eliminate the potential explosive hazard. Only Alternative 3 satisfies the statutory preference for treatment as a principal element. Alternative 1 would not reduce the toxicity, mobility, or volume of MEC or satisfy the statutory preference for treatment as a principal element because it includes no action;
- Short-Term Effectiveness: Alternative 1 would be most effective in the short-term because it includes no action. Alternative 2 would be more effective in the short-term than Alternative 3 because Alternative 2 would only expose human receptors to the explosive hazards associated with on-site MEC destruction when MEC is unintentionally found by someone, e.g., site visitor;
- Implementability: Alternative 1 would be most implementable because it includes no action. Alternative 2 would be more implementable than Alternative 3 because it would not require the creation of an exclusion zone and the evacuation of facilities, including the Army Softball Complex, the Arvin Annex, the Gillis Field House, Shea Stadium, and the Tronsrue Marksmanship Center for up to 6 months; and
- Cost: Alternative 1 would require no cost because it includes no action. Alternative 2 would cost less than Alternative 3.

The results of the remedial alternative evaluation conducted by the Army are summarized in **Table 3**. Of these evaluated remedial alternatives, the Army identified Alternative 2 as the preferred alternative. The final remedy will be selected based on the results of the Army's evaluation and any public comments received on this Proposed Plan.

SIEGE BATTERY – CONSTITUTION ISLAND MRS

The following summarizes the Army's remedial alternative evaluation:

- Overall Protection of Human Health and Environment: Alternative 2 and Alternative 5 protect human health and the environment. Alternative 2 protects human health and the environment by changing human behavior. Alternative 5 protects human health and the environment by changing human behavior and removing MEC. Alternative 1 is not protective of human health and the environment because it includes no action;
- Compliance with ARARs: Alternatives 1, 2, and 5 would comply with the ARAR that was identified by the Army for the remedial action at the MRS. Alternative 1 would comply because there would be no action. Alternatives 2 and 5 would comply with the Environmental Performance Standards in 40 CFR 264.601, if MEC were found incidentally in the application of land use controls (Alternative 2) or intentionally during the MEC removal (Alternative 5). Exclusion zones, engineering controls, and qualified

personnel would be used in Alternatives 2 and 5 to comply with the ARAR when performing a consolidated shot or blow-in-place to dispose of MEC, if found;

- Long-Term Effectiveness and Permanence: Alternative 5 would provide greater long-term effectiveness and permanence than Alternative 2 because it would intentionally remove MEC to reduce potential explosive hazards. Alternative 2 would only remove MEC if it is unintentionally found by someone, e.g., recreational user. Alternative 1 would not be effective or permanent in the long-term because it includes no action;
- Long-Term Effectiveness and Permanence: To evaluate the long-term effectiveness, Five-Year Reviews would be conducted for Alternatives 2 and 5. Alternative 1 would not require such reviews, although potential explosive hazards may be present at the MRS;
- Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment: Alternative 5 would reduce the toxicity, mobility, and volume of the principal threat waste (MEC) more than Alternative 2 because it would intentionally reduce the potential explosive hazard. Alternative 5 would satisfy the statutory preference for treatment as a principal element, while Alternative 2 would not. Alternative 1 would not reduce the toxicity, mobility, or volume of MEC or satisfy the statutory preference for treatment as a principal element because it includes no action;
- Short-Term Effectiveness: Alternative 1 would be most effective in the short-term because it includes no action. Alternative 2 would be more effective in the short-term than Alternative 5 because Alternative 2 would only expose human receptors to the explosive hazards associated with on-site MEC destruction when MEC is unintentionally found by someone, e.g., recreational user;
- Implementability: Alternative 1 would be most implementable because it includes no action. Alternative 2 would be more implementable than Alternative 5 because it would not require the use of equipment on steep terrain for vegetation and MEC removal, the disturbance of 10 acres of forest in a special natural area, and the potential disturbance of cultural resources (e.g., historical sites and artifacts); and
- Cost: Alternative 1 would require no cost because it includes no action. Alternative 2 would cost less than Alternative 5.

The results of the remedial alternative evaluation conducted by the Army are summarized in **Table 4**. Of these evaluated remedial alternatives, the Army identified Alternative 5 as the preferred alternative. The final remedy will be selected based on the results of the Army's evaluation and any public comments received on this Proposed Plan.

TARGET HILL MRS

The following summarizes the Army's remedial alternative evaluation:

- Overall Protection of Human Health and Environment: Alternative 2 and Alternative 4 protect human health and the environment. Alternative 2 protects human health and the environment by changing human behavior. Alternative 4 protects human health and the environment by changing human behavior and removing MEC. Alternative 1 is not protective of human health and the environment because it includes no action;
- Compliance with ARARs: Alternatives 1, 2, and 4 would comply with the ARAR that was identified by the Army for the remedial action at the MRS. Alternative 1 would comply because there would be no action. Alternatives 2 and 4 would comply with the Environmental Performance Standards in 40 CFR 264.601, if MEC were found incidentally in the application of land use controls (Alternative 2) or intentionally during the MEC removal (Alternative 5). Exclusion zones, engineering controls, and qualified personnel would be used in Alternatives 2 and 4 to comply with the ARAR when performing a consolidated shot or blow-in-place to dispose of MEC, if found;
- Long-Term Effectiveness and Permanence: Alternative 4 would provide greater long-term effectiveness and permanence than Alternative 2 because Alternative 4 would intentionally find and remove MEC to eliminate potential explosive hazards. Alternative 2 would only remove MEC if it is unintentionally found by someone, e.g., site visitor. Alternative 1 would not be effective or permanent in the long-term because it includes no action;
- Long-Term Effectiveness and Permanence: To evaluate the long-term effectiveness, Five-Year Reviews would be conducted for Alternatives 2 and 4. Alternative 1 would not require such reviews, although potential explosive hazards may be present at the MRS;
- Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment: Alternative 4 would reduce the toxicity, mobility, and volume of the principal threat waste (MEC) more than Alternative 2 because Alternative 4 would intentionally reduce the potential explosive hazard. Alternative 4 would satisfy the statutory preference for treatment as a principal element, while Alternative 2 would not. Alternative 1 would not reduce the toxicity, mobility, or volume of MEC or satisfy the statutory preference for treatment as a principal element because it includes no action;
- Short-Term Effectiveness: Alternative 1 would be most effective in the short-term because it includes no action. Alternative 2 would be more effective in the short-term

than Alternative 4 because Alternative 2 would only expose human receptors to the explosive hazards associated with on-site MEC destruction when it is unintentionally found by someone, e.g., site visitor;

- Implementability: Alternative 1 would be most implementable because it includes no action. Alternative 2 would be more implementable than Alternative 4 because it would not require the creation of an exclusion zone and the evacuation of the Target Hill wastewater treatment plant and the closure of the football field and multiple soccer fields; and
- Cost: Alternative 1 would require no cost because it includes no action. Alternative 2 would cost less than Alternative 3.

The results of the remedial alternative evaluation conducted by the Army are summarized in **Table 5**. Of these evaluated remedial alternatives, the Army identified Alternative 2 as the preferred alternative. The final remedy will be selected based on the results of the Army's evaluation and any public comments received on this Proposed Plan.

PREFERRED ALTERNATIVES

The Army's preferred alternatives for each of the four MRS are presented below.

ARTILLERY FIRING RANGE SOUTH MRS

Alternative 2, Risk Management, is the Army's preferred alternative for the Artillery Firing Range South MRS. Alternative 2 is preferred by the Army because it will reduce the potential explosive hazard posed to human receptors by MEC and will allow for the current and future land use zoning, which consists of the Candidate; Community Support; and Recreational, Industrial, Field Training land use zones. Evacuation of the residential housing, facilities, and the Storm King Highway (State Route 218) for up to 10 months would not be required under Alternative 2. Alternative 2 is also preferred by the Army because it is easily implemented, effective in the short-term, and very cost effective.

Based on information currently available, the Army, as the lead agency, believes the preferred alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. The Army expects the preferred alternative to satisfy the following statutory requirements of CERCLA §121(b) and CERCLA §121(d)(2): (1) be protective of human health and the environment; (2) comply with ARARs (or justify a waiver); (3) be cost-effective; and (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Alternative 2 would not satisfy the statutory preference for treatment as a principal element because MEC would only be treated by the Army when it is unintentionally discovered by someone, e.g., resident or worker.

NORTH ATHLETIC FIELD MRS

Alternative 2, Risk Management, is the Army's preferred alternative for the North Athletic Field MRS. Alternative 2 is preferred by the Army because it will reduce the explosive hazard posed to human receptors by MEC and will allow for the current and future land use zoning, which consists of the Cadet Support land use zone. Closure of multiple facilities for up to 6 months would not be required under Alternative 2. Alternative 2 is also preferred by the Army because it is easily implemented, effective in the short-term, and very cost effective.

Based on information currently available, the Army, as the lead agency, believes the preferred alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. The Army expects the preferred alternative to satisfy the following statutory requirements of CERCLA §121(b) and CERCLA §121(d)(2): (1) be protective of human health and the environment; (2) comply with ARARs (or justify a waiver); (3) be cost-effective; and (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Alternative 2 would not satisfy the statutory preference for treatment as a principal element because MEC would only be treated by the Army when it is unintentionally discovered by someone, e.g., visitor or worker.

SIEGE BATTERY – CONSTITUTION ISLAND MRS

Alternative 5, Partial Surface/Subsurface Munitions and Explosives of Concern Removal with Risk Management, is the Army's preferred alternative for the Siege Battery – Constitution Island MRS. Alternative 5 is preferred by the Army because it will reduce the explosive hazard posed to human receptors by MEC and will allow for the current and future land use zoning, which consists of the Recreational, Industrial, Field Training land use zone. Alternative 5 is preferred by the Army because MEC was found on the ground of the MRS and a removal action with Risk Management is more protective of the general public, which regularly visits the historical sites on the southern portion of the MRS and could readily come into contact with above ground MEC items, than Risk Management alone.

Alternative 5 is readily implemented and short-term effects including increased risks to workers and the public during MEC removal would be mitigated by strict adherence to safety protocols. The potentially adverse effects of vegetation removal (i.e., soil erosion) would be mitigated by appropriate storm water pollution prevention measures. The potential negative effects to cultural resources (e.g., historical artifacts) would be mitigated by following

Table 2 – Alternative Evaluation Summary for the Artillery Firing Range South MRS

Screening Criterion		Alternative 1—No Action	Alternative 2—Risk Management	Alternative 3—Removal of MEC to Qualify for UU/UE
Threshold	Overall Protectiveness of Human Health and Environment	Fail	Pass	Pass
	Compliance with Applicable or Relevant and Appropriate Requirements	Pass	Pass	Pass
Balancing	Long-Term Effectiveness and Permanence	Least Favorable	Moderately Favorable	Most Favorable
	Reduction of Toxicity, Mobility, or Volume through Treatment	Least Favorable	Moderately Favorable	Most Favorable
	Short-Term Effectiveness	Most Favorable	Moderately Favorable	Least Favorable
	Implementability	Most Favorable	Moderately Favorable	Least Favorable
	Cost	$0	$161,022	$14,769,540
Modifying	Regulatory Agency Acceptance	To Be Determined		
	Community Acceptance	To Be Determined		

Table 3 – Alternative Evaluation Summary for the North Athletic Field MRS

Screening Criterion		Alternative 1—No Action	Alternative 2—Risk Management	Alternative 3—Removal of MEC to Qualify for UU/UE
Threshold	Overall Protectiveness of Human Health and Environment	Fail	Pass	Pass
	Compliance with Applicable or Relevant and Appropriate Requirements	Pass	Pass	Pass
Balancing	Long-Term Effectiveness and Permanence	Least Favorable	Moderately Favorable	Most Favorable
	Reduction of Toxicity, Mobility, or Volume through Treatment	Least Favorable	Moderately Favorable	Most Favorable
	Short-Term Effectiveness	Most Favorable	Moderately Favorable	Least Favorable
	Implementability	Most Favorable	Moderately Favorable	Least Favorable
	Cost	$0	$143,381	$2,247,448
Modifying	Regulatory Agency Acceptance	To Be Determined		
	Community Acceptance	To Be Determined		

Table 4 – Alternative Evaluation Summary for the Siege Battery – Constitution Island MRS

Screening Criterion		Alternative 1—No Action	Alternative 2—Risk Management	Alternative 5—Partial Surface/Subsurface MEC Removal with Risk Management
Threshold	Overall Protectiveness of Human Health and Environment	Fail	Pass	Pass
	Compliance with Applicable or Relevant and Appropriate Requirements	Pass	Pass	Pass
Balancing	Long-Term Effectiveness and Permanence	Least Favorable	Moderately Favorable	Most Favorable
	Reduction of Toxicity, Mobility, or Volume through Treatment	Least Favorable	Moderately Favorable	Most Favorable
	Short-Term Effectiveness	Most Favorable	Moderately Favorable	Least Favorable
	Implementability	Most Favorable	Moderately Favorable	Least Favorable
	Cost	$0	$277,741	$1,061,639
Modifying	Regulatory Agency Acceptance	To Be Determined		
	Community Acceptance	To Be Determined		

Table 5 – Alternative Evaluation Summary for the Target Hill MRS

Screening Criterion		Alternative 1—No Action	Alternative 2—Risk Management	Alternative 4—Partial Surface MEC Removal with Risk Management
Threshold	Overall Protectiveness of Human Health and Environment	Fail	Pass	Pass
	Compliance with Applicable or Relevant and Appropriate Requirements	Pass	Pass	Pass
Balancing	Long-Term Effectiveness and Permanence	Least Favorable	Moderately Favorable	Most Favorable
	Reduction of Toxicity, Mobility, or Volume through Treatment	Least Favorable	Moderately Favorable	Most Favorable
	Short-Term Effectiveness	Most Favorable	Moderately Favorable	Least Favorable
	Implementability	Most Favorable	Moderately Favorable	Least Favorable
	Cost	$0	$121,802	$637,464
Modifying	Regulatory Agency Acceptance	To Be Determined		
	Community Acceptance	To Be Determined		

guidelines for protection and preservation of archaeological and historical artifacts. Alternative 5 is cost effective given its overall effectiveness.

Based on information currently available, the Army, as the lead agency, believes the preferred alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. The Army expects the preferred alternative to satisfy the following statutory requirements of CERCLA §121(b) and CERCLA §121(d)(2): (1) be protective of human health and the environment; (2) comply with ARARs (or justify a waiver); (3) be cost-effective; and (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, Alternative 5 satisfies the statutory preference for treatment as a principal element in the 10-acre area because MEC would intentionally be treated by the Army through detonation, in accordance with all DoD and Army safety standards.

TARGET HILL MRS

Alternative 2, Risk Management, is the Army's preferred alternative for the Target Hill MRS. Alternative 2 is preferred by the Army because it will reduce the explosive hazard posed to human receptors by MEC and will allow for the current and future land use zoning, which consists of the Cadet Support land use zone. Evacuation of the Target Hill wastewater treatment plant and the closure of the football and soccer fields would not be required under Alternative 2. Alternative 2 is also preferred by the Army because it is easily implemented, effective in the short-term, and very cost effective.

Based on information currently available, the Army, as the lead agency, believes the preferred alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. The Army expects the preferred alternative to satisfy the following statutory requirements of CERCLA §121(b) and CERCLA §121(d)(2): (1) be protective of human health and the environment; (2) comply with ARARs (or justify a waiver); (3) be cost-effective; and (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Alternative 2 would not satisfy the statutory preference for treatment as a principal element because MEC would only be treated by the Army when it is unintentionally discovered by someone, e.g., visitor or worker.

COMMUNITY PARTICIPATION

Detailed information regarding the Army's preferred alternatives for the four MRSs is available in the Administrative Record or in the three project information repositories located at: Highlands Falls Library, 298 Main Street, Highland Falls, NY 10928, the Julia L. Butterfield Memorial Library, 10 Morris Avenue, Cold Spring, NY 10516, or the Alice Curtis Desmond and Hamilton Fish Library 472 Route 403, Garrison, NY 10524.

An announcement of the availability of this Proposed Plan was published by the Army in the *Putnam County News*, *Cornwall Local*, and the *Times Herald Record*/*Pointer View*, in accordance with CERCLA requirements.

The Army is seeking comments on the preferred alternatives in this Proposed Plan. The public comment period is open from July 29, 2019 – August 28, 2019. All significant comments received by the Army will be considered before a final remedy is selected for the four MRSs. In addition, a public meeting will be held at Highland Falls Library, 298 Main Street, Highlands Falls, NY, 10928 on August 15, 2019. The Army has included a comment form at the end of this Proposed Plan to submit input on this Proposed Plan.

Mr. Jeff Sanborn, U.S. Army Garrison West Point by email at: jeffrey.l.sanborn.civ@mail.mil.

Or by mail at:
Mr. Jeff Sanborn
U.S. Army Garrison West Point
ATTN: IMML-PWE
667A Ruger Road
West Point, NY 10996-1592

GLOSSARY OF TERMS

Administrative Record	A collection of the documents used to make a decision on the selection of a remedial (cleanup) action under CERCLA. The Administrative Record contains the information and reports generated throughout the entire investigation and site remediation (cleanup). The Administrative Record is to be available for public review and a copy maintained near the MRS. The official Administrative Record for the four MRSs is located in Building 667, within the Environmental Engineering Branch, and is maintained by the Army. The point of contact for the Administrative Record is Jeff Sanborn (667A Ruger Road, West Point, New York, 10996).
Anomalies	Items detected below ground with a handheld metal detector or by a geophysical survey; items could be munitions debris or MEC.
Applicable or Relevant and Appropriate Requirements	Those Federal and more stringent State requirements that a selected remedy will attain. These requirements are cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address circumstances at a CERCLA site. These requirements may vary among sites and response actions. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable.
Battery	A unit of guns, cannons, rockets, or missiles grouped together to make their use easier and more effective.
Blow-in-Place	Method used to destroy unexploded ordnance, by use of explosives, in the location the item is encountered.
Capital Cost	A fixed one-time expense incurred for the purchase of equipment and/or services during the installation of a final remedy.
Comprehensive Environmental Response, Compensation, and Liability Act	Commonly known as the Superfund; enacted by Congress on December 11, 1980, and modified in 1986 by the Superfund Amendments and Reauthorization Act; authorizes federal action to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.
Consolidated Shot	When open detonation takes place in an area other than where the MEC was found. Typically, when consolidated shots, also known as consolidated detonations, are used on a site, multiple munitions are placed into one "shot" to minimize the threat to the public or damage to sensitive areas.
Decision Document	The Department of Defense has adopted the term Decision Document to refer to a legal public document, similar to a Record of Decision completed for National Priority List sites. The Decision Document certifies that the **remedial action** selection process was carried out in accordance with CERCLA, and to the extent practical, the NCP; provides a substantive summary of the technical rationale and background information in the Administrative Record; provides information necessary in determining the conceptual engineering components to achieve the Remedial Action Objectives established for an MRS. The Decision Document serves as a key communication tool for the public that explains the identified hazards that the selected remedial action will address, and the rationale for remedial alternative selection. The Decision Document will be maintained in the Administrative Record.
Defense Environmental Restoration Program	This program manages the Department of Defense's environmental restoration program for active, closed, or closing installations. It provides for the identification, investigation, and removal of contamination and military munitions associated with past activities at Department of Defense facilities to ensure potential threats to public health and the environment are appropriately assessed and addressed.
Dig Permit	A permit required when conducting work below ground at West Point. These permits are reviewed by West Point to determine if an **explosives safety hazard** exists at the location where below ground work is being conducted.

GLOSSARY OF TERMS

Discarded Military Munitions	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 **unexploded ordnance**, military munitions 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 United States Code [USC] 2710(e)(2)).
Ecological Receptor	Includes plants and animals that may be harmed by contacting munitions constituents. For example, plants and animals may be harmed by water with munitions constituents in it.
Engineering Controls	Physical item or items, such as sand bags, designed to protect workers from the explosive hazards posed by MEC.
Exclusion Zone	An area that is established around an activity that may accidentally result in the detonation (explosion) of MEC to prevent harming people not directly involved in the activity. The size of the exclusion zone is based on the munition or munitions that have been found or are suspected of being present within the area where the activity is occurring.
Explosives Safety Hazard	The probability (likelihood) for MEC to detonate (explode) and potentially cause harm to people, property, or the environment as a result of human activities. An explosives safety hazard exists if a person can come into contact with an MEC item and cause it to detonate or explode. The potential for an explosives safety hazard depends on the presence of three critical elements: a **source** (presence of MEC), a human receptor or person, and an **interaction** between the source and the human receptor (such as picking up the item or disturbing the item by plowing). There is no explosives safety hazard if any one element is missing.
Explosives Safety Hazard	The probability (likelihood) for MEC to detonate (explode) and potentially cause harm to people, property, or the environment as a result of human activities. An explosives safety hazard exists if a person can come into contact with an MEC item and cause it to detonate or explode. The potential for an explosives safety hazard depends on the presence of three critical elements: a source (presence of MEC), a human receptor or person, and an interaction between the source and the human receptor (such as picking up the item or disturbing the item by plowing). There is no explosives safety hazard if any one element is missing.
Feasibility Study	A study required for the CERCLA process that identifies and evaluates remedial alternatives for an MRS. The remedial alternatives are made of remedial actions, and are designed to protect people from harm at an MRS.
Final Remedy	The final remedial action selected by site after reviewing and considering all information submitted during the 30-day public comment period, which will be documented in a Decision Document or Record of Decision (NCP §300.430(f)(4)(i)).
Firing Point	The location from which a projectile, grenade, ground signal, rocket, guided missile, or other device is to be ignited, propelled, or released.
Firing Range	An area associated with munitions training where MEC may be present.
Five-Year Review	Required by CERCLA or program policy when hazardous substances remain on site above levels that permit unrestricted use and unlimited exposure. Five-year reviews provide an opportunity to evaluate the implementation and performance of a remedy to determine whether it remains protective of human health and the environment. Reviews take place five years following the start of a CERCLA response action and are repeated every five years so long as future uses remain restricted.
Geophysical Survey	An activity conducted by specially trained workers using specialized equipment that looks for anomalies located below ground.

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Geophysical Investigation	An activity conducted by specially trained workers using specialized equipment that looks for anomalies located below ground. The located anomalies are evaluated with specialized software to create a dig list of anomalies that require additional investigation. The anomalies on the dig list are exposed for investigation with hand tools or a combination of mechanized equipment and hand tools. The status of the exposed anomaly, e.g., cultural debris, materially potentially presenting an explosive hazard, munitions debris, or MEC, is determined by a specially trained worker. Depending on the status of the exposed anomaly, it may be detonated in-place or removed for disposal without deactivation.
Handheld Metal Detector Investigation	An activity conducted by specially trained workers that looks for munitions debris and MEC on the ground and anomalies below the ground. Any located munitions debris is removed for disposal. Any located MEC is detonated in-place to deactivate it or it may be consolidated with other located MEC, if it is deemed safe to move, for deactivation. Any located anomalies are exposed for investigation with hand tools or a combination of mechanized equipment and hand tools. The status of the exposed anomaly, e.g., cultural debris, materially potentially presenting an explosive hazard, munitions debris, or MEC, is determined by a specially trained worker. Depending on the status of the exposed anomaly, it may be detonated in-place or removed for disposal without deactivation.
Human Receptor	Includes people, such as homeowners or workers, that may be harmed by contacting munitions constituents or MEC. For example, homeowners may be harmed when they pick-up a MEC item or drink water with munitions constituents in it.
Interaction	One of three elements required for an explosives safety hazard to exist. An interaction is an activity conducted by a human receptor that puts them in contact with a source (MEC), such as walking, digging a garden, or repairing an underground utility.
Military Munitions Response Program	A program developed by the Department of Defense to address munitions-related concerns, including explosive safety, and environmental and health hazards from MEC at locations other than operational ranges on active installations such as West Point and on closed installations.
Munitions Constituents	Any materials originating from unexploded ordnance, **discarded military munitions**, or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions (10 USC 2710(e)(4)).
Munitions Debris	Pieces and parts of munitions (e.g., fragments, projectiles, shell casings) that remain after munitions have broken apart or exploded.
Munitions and Explosives of Concern	This term includes specific types of military munitions that may pose unique explosives safety risks, including: unexploded ordnance as defined in 10 USC 101(e)(5)(A) through (C) and 40 Code of Federal Regulations [CFR] 266.201, discarded military munitions as defined in 10 USC 2710(e)(2), and munitions constituents - explosives such as trinitrotoluene present in high enough concentrations to pose an explosive hazard as defined in 10 USC 2710(e)(3).
Munitions and Explosives of Concern Safety/Awareness Training	This is training provided to workers conducting below ground work at an MRS where there is a low-probability of finding MEC. This training will help workers identify suspected MEC and tell them what to do if they find suspected MEC.
Munitions Response	This is another term for a remedial action, but is more specific to the activities conducted at an MRS to reduce or eliminate the explosive hazards posed to human health and the environment by MEC.
Munitions Response Site	A specific area on a defense site known or expected to contain munitions requiring investigation to determine whether munitions or munitions constituents are present.
National Oil and Hazardous Substances Pollution Contingency Plan	The Federal regulation that implements CERCLA. The NCP was revised in February 1990. The purpose of the NCP is to provide the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, or contaminants.

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National Priorities List	A list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The National Priorities List is intended primarily to guide the USEPA in determining which sites warrant further investigation.
On-call Construction Support	A requirement when conducting work below the ground at a MRS where there is a low-probability of finding MEC. Specially trained workers must be made aware of the below ground work and available to go to the MRS if suspected MEC is found. The specially trained workers are trained to safely identify and destroy MEC when found.
Periodic Cost	An expense incurred on the purchase of equipment and/or services after the installation of a final remedy that does not occur on an annual basis.
Preferred Alternative	The remedial alternative selected by the Army and presented in the Proposed Plan that would be protective of human health and the environment, would comply with ARARs, would be cost-effective, and would utilize solutions and alternative treatment technologies to the maximum extent practicable. The preferred alternative can change in response to public comment or new information.
Present Worth Cost	A method of evaluation of expenditures that occur over different time periods. By discounting all costs to a common base year, the costs for different remedial action alternatives can be compared on the basis of a single figure for each alternative. When calculating present worth cost, total operations and maintenance costs are to be included.
Promulgated	To announce something publicly, such as a new law.
Principal Threat Waste	Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health of the environment should exposure occur.
Projectile	An object projected by an applied force (e.g., fired or shot) and continuing in motion by its own inertia, such as a bullet, bomb, shell, or grenade.
Project Information Repository	A file containing current information, technical reports, and reference documents duplicated from the Administrative Record maintained for a site. The project information repository is usually located in a public building convenient for local residents, such as a public school, city hall, or library. There are project information repositories located at the Highlands Falls Library, 298 Main Street, Highland Falls, NY, 10928, the Julia L. Butterfield Memorial Library, 10 Morris Avenue, Cold Spring, NY 10516, and the Alice Curtis Desmond and Hamilton Fish Library 472 Route 403, Garrison, NY 10524.
Proposed Plan	A document that presents a proposed remedial (cleanup) alternative, including rationale for selection, and requests the public to provide comments regarding the preferred alternative.
Regulatory	Restricting according to rules or principles.
Remedial Action	An action taken to remove munitions or chemicals from the environment that may pose a risk to humans, animals, or other potential receptors, or to prevent these munitions or chemicals from entering the environment and causing risk. The term includes, but is not limited to, actions such as covering or capping, excavation and disposal, chemical treatment, incineration, transportation, storage, or any other actions necessary to protect the public health or welfare and the environment, such as land use and institutional controls.
Remedial Action Objective	Objectives established for remedial actions to guide the development of remedial alternatives and focus the comparison of acceptable remedial alternatives, if warranted. Remedial Action Objectives also assist in clarifying the goal of minimizing risk and achieving an acceptable level of protection for human health and the environment.
Remedial Investigation	A study of a site that provides information regarding the location and concentration of chemicals and munitions in soil, surface water, groundwater, and/or sediment, and whether these chemicals and munitions pose a risk to human health and the environment.

GLOSSARY OF TERMS

Responsiveness Summary	This summary includes an Army response to all public comments received during the public comment period held for the Proposed Plan.
Risk Management	The process of analyzing, selecting, implementing, and evaluating actions to reduce risk.
Risk Screening	A study that determines if enough munitions constituents, such as lead, are present to cause harm to humans and plants/animals that use or live at an MRS. The results from these studies are used by the Army to help determine what action or actions should be taken to prevent humans and plants/animals from being hurt at an MRS.
Site Inspection	A study of a site that determines if munitions constituents or MEC are present at an MRS, and if a Remedial Investigation should be conducted.
Source	One of three elements required for an explosives safety hazard to exist. A source is an MEC item or munitions debris that suggests that an MEC item may also be present.
Statutory	Required, permitted, or enacted by law.
To-Be Considered Guidance	Non-promulgated criteria, advisories, guidance, and proposed standards developed by Federal and State environmental and public health agencies that are not legally binding but may provide useful information or recommended procedures.
Unexploded Ordnance	Includes military munitions that have been primed, fuzed, armed, or otherwise prepared for action; have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installation, personnel, or material; and remain unexploded either by malfunction, design, or any other cause. 10 USC 101(e)(5)(A) through (C) and 40 CFR 266.201.
Unlimited Use and Unrestricted Exposure	The selected remedy does not include a restriction on land or groundwater use to be protective. (DoDM 4715.20, Definitions).
Visual Survey	An activity conducted by specially trained workers that looks for MEC and munitions debris located on the ground. This activity is often assisted by a handheld metal detector.
Work Plan	A document that outlines the scope, procedures, and goals of a project to help ensure that the project is done safely and correctly.

ACRONYMS AND ABBREVIATIONS

ARARs	Applicable or Relevant and Appropriate Requirements
Army	U.S. Department of the Army
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
MEC	Munitions and Explosives of Concern
MMRP	Military Munitions Response Program
MRS	Munitions Response Site
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NYSDEC	New York State Department of Environmental Conservation
O&M	Operation and Maintenance
RAO	Remedial Action Objective
USC	United States Code
USEPA	U.S. Environmental Protection Agency
West Point	U.S. Army Garrison West Point

USE THIS FORM TO WRITE YOUR COMMENTS

Your input on this Proposed Plan is important to the Army. The comments that the Army receives will be used to select the remedial alternative for the four MRSs: Artillery Firing Range South MRS, North Athletic Field MRS, Siege Battery – Constitution Island MRS, and Target Hill MRS. Changes to the preferred alternatives can be made based on comments made by the public.

Please use the space below to submit your comments on this Proposed Plan to the Army. If you need more space for your comments, attach additional pages.

After you have completed the form, e-mail to:
Mr. Jeff Sanborn, U.S. Army Garrison West Point
jeffrey.l.sanborn.civ@mail.mil

Or by mail to:
Mr. Jeff Sanborn
U.S. Army Garrison West Point
ATTN: IMML-PWE
667A Ruger Road
West Point, NY 10996-1592

If you have any questions about the public comment process, please contact Jeff Sanborn at (845) 938-5041.

Comments must be postmarked or e-mailed by August 28, 2019.

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Name_____

Affiliation_____

Address_____

City, State, Zip_____

Follow the 3Rs

Recognize

Recognize when you may have encountered a munition.

Recognizing when you may have encountered a munition is the most important step in reducing the risk of injury or death. Munitions may be encountered on land or in the water. They may be easy or hard to identify.

To avoid risk of injury or death:

- Never move, touch, or disturb a munition or suspect munition.
- Be aware that munitions do not become safer with age, in fact, they may become more dangerous.
- Don't be tempted to take or keep a munition as a souvenir.

Munitions come in many sizes, shapes, and colors. Some may look like bullets or bombs, while others look like pipes, small cans or even a car muffler. Whether whole or in parts, new or old, shiny or rusty, munitions can still explode.

Retreat

Do not touch, move, or disturb it; but carefully leave the area.

Avoid death or injury by recognizing that you may have encountered a munition and promptly retreating from the area.

If you encounter what you believe is a munition, do not touch, move, or disturb it. Instead, immediately and carefully leave the area by retracing your steps, leaving the same way you entered. Once safely away from the munition, mark the path (e.g., with a piece of clothing or global positioning system (GPS) coordinates) so response personnel can find the munition.

CALL!

On-post Military Police….845-938-3333

845-938-3312

Off-post……..911

Report

Immediately notify the police.

Protect yourself, your family, your friends, and your community by immediately reporting munitions or suspected munitions to the police.

Help the police by providing as much information as possible about what you saw and where you saw it. This information will help the police and the military or civilian explosives ordnance disposal personnel find, evaluate, and address the situation.

If you believe you may have encountered a munition, call and report the following information:

- The area where you encountered it.
- Its general description. Remember: do not approach, touch, move, or disturb it.
- When possible, provide:
  - Its estimated size
  - Its shape
  - Any visible markings, including coloring

3-inch Stokes Mortars and related debris