Final Proposed Plan
Camp O'Ryan Rifle Range, New York
Military Munitions Response Program
Munitions Response Site NYHQ-008-R-02
NYSDEC Site No. 961012
May 2022

1.0 INTRODUCTION

This **Proposed Plan** (PP) identifies **munitions constituents** (MC) Alternative 3: Target Berm **Decision Units** (DUs): **Soil Stabilization**, Excavation, and Off-Site Disposal as Non-Hazardous Waste with **Munitions Response Site** (MRS)-wide **Land Use Controls** (LUCs) for addressing military munitions and MC-contaminated media at Camp O'Ryan Rifle Range **Munitions Response Site** (MRS) 2 NYHQ-008-R-02, New York (**Figure 1**); New York State Department of Environmental Conservation (NYSDEC) site identification number 961012. The purpose of this PP is to describe the site, provide the rationale for the **Preferred Alternative** recommendation, and summarize the other alternatives evaluated for addressing **contaminants** at the site. Additionally, this plan explains how the public can participate in the remedy selection process (**Box 1**).

NOTE: Definitions for terms shown in **boldface** are included in a glossary in **Section 12** of this document. Acronyms and abbreviations used throughout this document are listed in **Section 11**.

The Camp O'Ryan MRS 2 is a Non-Department of Defense (DoD) Non-Operational Defense Site (NDNODS). NDNODS are defense sites that were used exclusively by a state Army National Guard and were never owned, leased, or otherwise possessed or used by the United States (U.S.) Army or another DoD component. Camp O'Ryan Rifle Range was formerly used by the New York Army National Guard (NYARNG) for training. The Camp O'Ryan

BOX 1. MARK YOUR CALENDAR FOR THE PUBLIC COMMENT PERIOD March 22, 2022 TO April 21, 2022

The Army National Guard will accept written comments on the PP during the public comment period. Comment letters must be postmarked by April 21, 2022, and should be submitted to:

Rob Halla
ARNG G-9, Cleanup & Restoration Branch
111 S. George Mason Drive
Arlington VA 22204-1382
(703) 607-7995
walter.r.halla2.civ@army.mil

To request an extension, send a written request to the above.

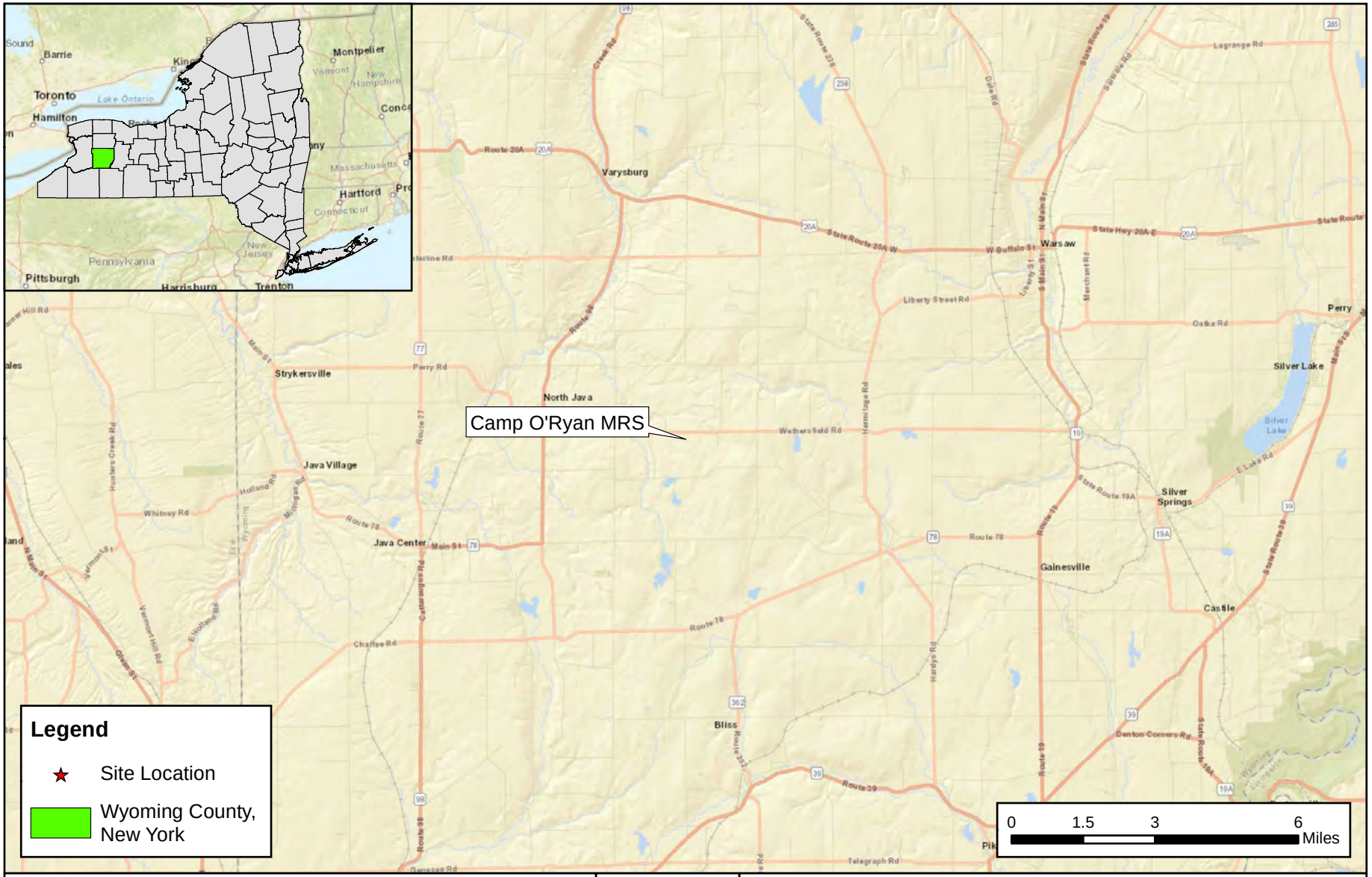
PUBLIC MEETING:
A public meeting will be held if requested by the public to explain this PP and answer questions. Interested parties should contact Mr. Rob Halla, Army National Guard on or before April 21, 2022 with their interest.

Information Repository:
For more information, see the Camp O'Ryan Rifle Range MRS 2 project documents at:

Gainesville Town Hall
2 Toolhouse Road
Gainesville, NY 14066
Telephone: (585) 493-2809

Days and Hours of Operation:
Monday, Wednesday, Friday: 3pm to 5pm
Thursday: 6pm to 8pm

The public may obtain a copy of the PP and other project documents via email by contacting the Mr. Rob Halla on or before April 21, 2022 with their request.



CLIENT	Army National Guard			
PROJECT	Proposed Plan for Camp O'Ryan, NY MRS			
REVISION NO	0	GIS BY	MS	9/22/2021
SCALE	1:190,080	CHK BY	JW	9/22/2021
SOURCE	ARNG; State of New York, ESRI & Partners	PM	LS	9/22/2021

Camp O'Ryan Site Location

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 1

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MRS 2 is a 42-acre site located behind the property currently occupied by King Brothers Fireplace and Stove, Inc. (**Figure 2**).

MC Alternative 3: Target Berm DUs: Soil Stabilization, Excavation, and Off-Site Disposal as Non-Hazardous Waste with MRS-wide LUCs is the Preferred Alternative for addressing MC-contaminated soil at NYHQ-008-R-02. The remedial action alternatives described in this PP are:

- MC Alternative 1: No Action
- MC Alternative 2: LUCs
- MC Alternative 3: Target Berm DUs: Soil Stabilization, Excavation, and Off-Site Disposal as Non-Hazardous Waste with MRS-wide LUCs
- MC Alternative 4: All DUs: MC-Contaminated Soil Stabilization and Off-Site Disposal as Non-Hazardous Waste

Based on the evaluation of the alternatives, the Preferred Alternative meets the required threshold criteria and balancing criteria. A summary of the remedial alternatives for MC is presented in **Section 7**. The evaluation of the remedial alternatives is presented in **Section 8**. The selection of the Preferred Alternative for MC is presented in **Section 9**.

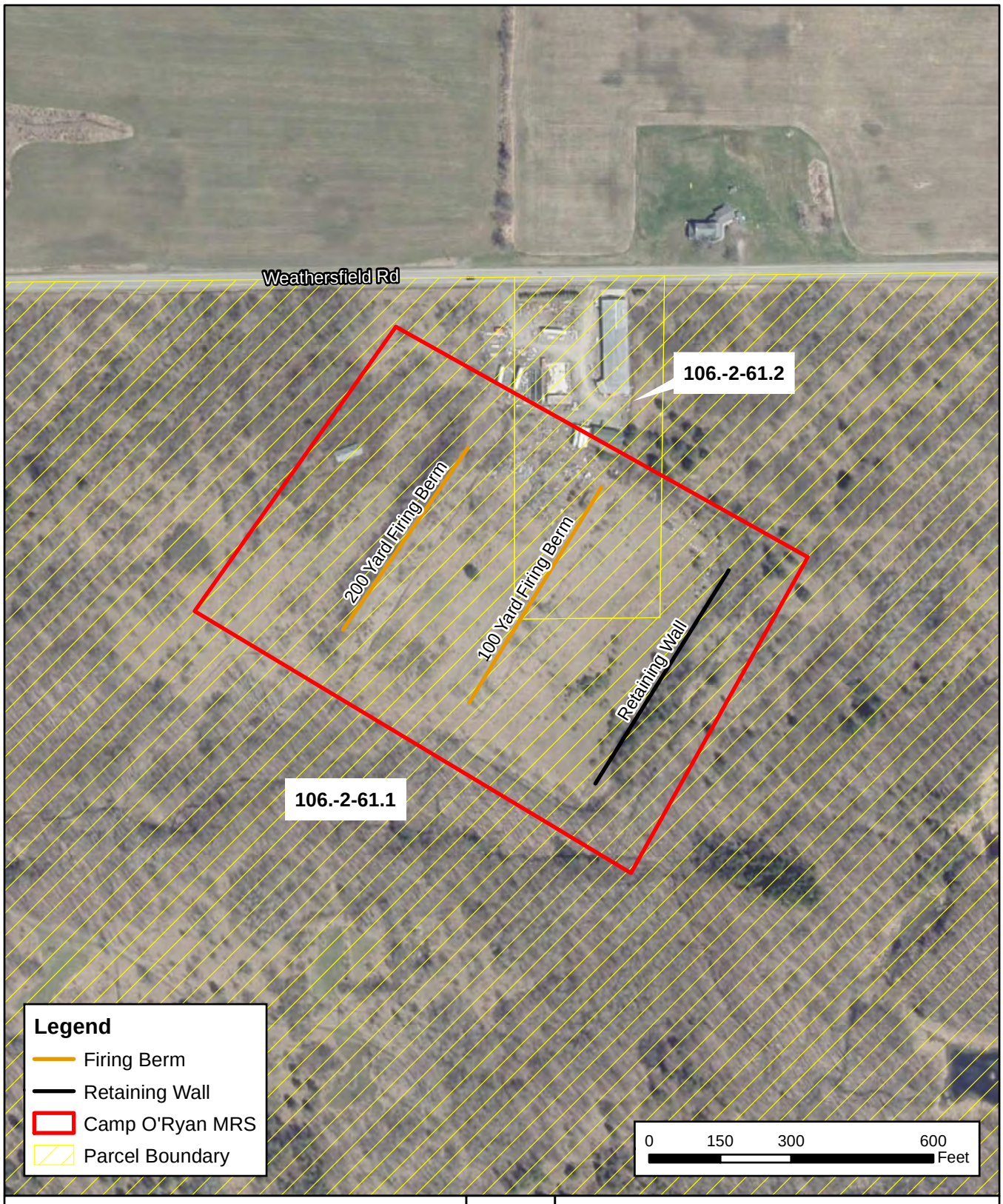
This document is being prepared by the National Guard Bureau Army Guard Directorate (ARNG), the lead agency for the site cleanup activities. The ARNG will select the final remedy for the Camp O'Ryan MRS 2 after reviewing and considering all information submitted during the public comment period and the public meeting (if requested by the public). The ARNG may modify the Preferred Alternative or select other response actions presented in this PP based on new information or public comments. Therefore, the public is encouraged to review and comment on all the MC alternatives presented in this PP. See **Box 1** (page 1) for public participation information.

The ARNG is required under the **Comprehensive Environmental Response, Compensation, and Liability Act** (CERCLA) §117(a) and **National Oil and Hazardous Substances Pollution Contingency Plan** (NCP) §300.430(f)(2) to issue this PP and seek public comment and participation. This PP summarizes information that can be found in greater detail in the Final **Remedial Investigation** (RI) (AECOM, 2021a), Final **Feasibility Study** (FS) (AECOM, 2022), and other documents contained in the **Administrative Record** File for this MRS that can be accessed at the **Information Repository** listed in **Box 1**. The ARNG encourages the public to review these documents to gain a more comprehensive understanding of the Camp O'Ryan MRS 2 and investigation activities that have been conducted. Public input to this PP will be documented in a **Responsiveness Summary** that will be included in a **Record of Decision** (ROD) that documents the selected **remedial action**.

2.0 SITE BACKGROUND

The Camp O'Ryan Rifle Range MRS 2 is a 42-acre area in Wethersfield, New York located on the northern boundary of the 370-acre former Camp O'Ryan. Camp O'Ryan was divided into three MRSs: MRS 1 Pistol Range, MRS 2 Rifle Range, and MRS 3 Maneuvering Area. The Camp O'Ryan Rifle Range MRS 2 contains mostly gently rolling, forested terrain comprised of deciduous trees with patches of open grass fields. (**Figure 2**). Undeveloped areas of the Camp O'Ryan MRS 2 are heavily vegetated with mature forest at the target area, tall grass and shrubs at the firing points and lines, and several bodies of ponded water/wetland areas in and immediately around the Camp O'Ryan MRS 2.

Based on a review of the available historical records, former munitions-related training



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Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	LS	9/22/2021

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Camp O'Ryan Munitions Response Site Layout

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12420 Milestone Center Drive
Germantown, MD 20876

Figure 2

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was limited to small arms (rifles and potentially pistols) at the Camp O'Ryan MRS 2. The Camp O'Ryan MRS 2 was used by the NYARNG from 1949 to 1974 and then again from 1989 to 1994. From 1949 to 1974, training areas at the camp included a rifle range, a pistol range, and a tank driver training course, and structures at the site included a range storage building, a field latrine, and a mess hall. Camp O'Ryan was reactivated as a training area in 1989 and was used until the lease was terminated on 23 November 1994.

Potential small arms munitions used were .30 caliber M1, .22, .38, and .45 caliber as well as 5.56 millimeter (mm) and 7.62mm caliber cartridge munitions. The Camp O'Ryan MRS 2 consists of a hillside impact **berm** and a former 200-yard range with 50 targets and firing berms at distances of 100 and 200 yards. The Camp O'Ryan MRS 2 also includes a concrete retaining wall. Based on the 2020 RI data, the Camp O'Ryan MRS 2 boundary was enlarged to include the full extent of lead concentrations in soil exceeding its human health screening criterion; the revised Camp O'Ryan MRS 2 is 42 acres (originally 17.5 acres).

Since 2009, seven environmental assessments have been completed at the NDNODS Camp O'Ryan MRS 2. These assessments include:

- NYSDEC Site Investigation Report (NYSDEC, 2009)
- Final National Guard Bureau NDNODS Inventory Report for New York (Preliminary Assessment [PA]; Malcolm Pirnie, Inc., 2009)
- Preliminary Site Investigation Report, Former Camp O'Ryan (FUDS Property No. C0NY1132) (Woods Hole Group, Inc., 2011)
- Final Historical Records Review (HRR)/Work Plan, New York, 2011 (Parsons, 2011 [Appendix H-3])
- Final New York Site Inspection (SI) Report, ARNG MMRP, 2012 (Parsons, 2012)
- Final RI Report, Camp O'Ryan Rifle Range MRS, New York (AECOM, 2021a)
- Final FS, Camp O'Ryan Rifle Range MRS, New York (AECOM, 2022)

3.0 SITE CHARACTERISTICS

PHYSICAL SETTING

The Camp O'Ryan MRS 2 was originally about 17.5 acres and was expanded to 42.41 acres as a result of the RI. The Camp O'Ryan MRS 2 comprises a cleared open grass field with a large, heavily wooded hill along the eastern boundary that acted as an impact berm downrange of the former target area during training. The hillside rises to the east and plateaus in a semi-permanently flooded meadow before continuing to rise. The boundary of the Camp O'Ryan MRS 2 is heavily vegetated with trees and shrubs as well. The Camp O'Ryan MRS 2 is accessible via the King Brothers Fireplace and Stove, Inc. property located north of the cleared field.

The area outside of the Camp O'Ryan MRS 2, within the former Camp O'Ryan, was used by NYARNG for both company and squad level training including maneuver practicing and camping. The former mess hall is now occupied by King Brothers Fireplace and Stove, Inc., along with a small shed within the Camp O'Ryan MRS 2. Medium to high disturbance of the Camp O'Ryan MRS 2 is present. The area surrounding the Camp O'Ryan MRS 2 is predominantly forested, with exception of the portion abutting the King Brothers Fireplace and Stove Inc. business, which is devoid of vegetation.

The developed land is used for commercial and recreational purposes, and there are few structures within 2 miles of the Camp

O'Ryan MRS 2, including residential and commercial properties.

CURRENT AND FUTURE RESOURCE USE

Currently, the former rifle range is owned by private landowners and is occupied by the King Brothers Fireplace and Stove, Inc. business. The remaining portion of the MRS is private undeveloped land. The former range spans two privately owned tax parcels: parcel #106.-2-61.2 and parcel # 106.-2-61.1. Live-fire training no longer occurs at the Camp O'Ryan MRS 2. Because the land is privately owned, there is potential that the Camp O'Ryan MRS 2 could be used for residential and/or recreational purposes in the future.

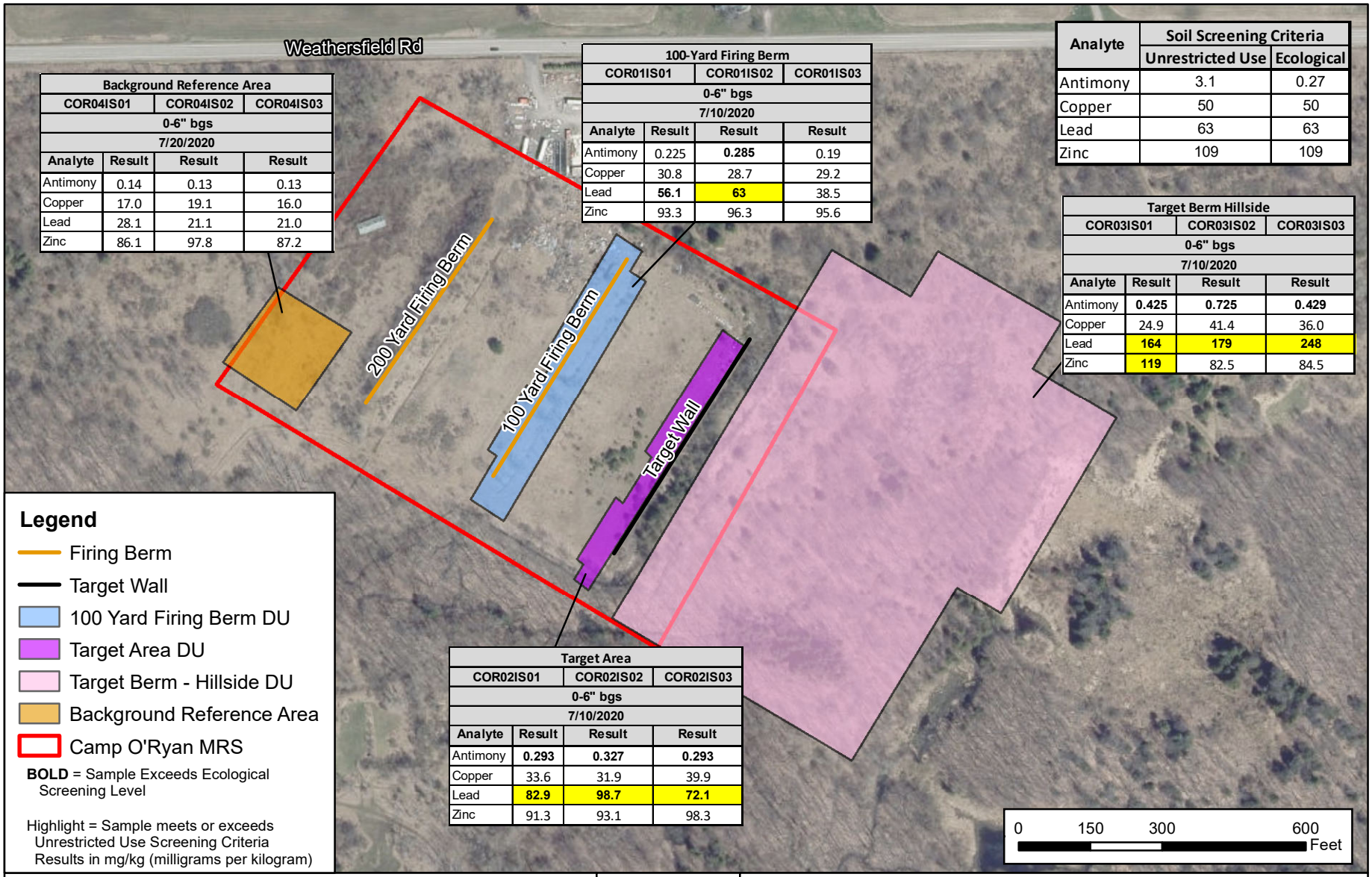
NATURE AND EXTENT OF MC

For the purpose of the RI, the Camp O'Ryan MRS 2 was divided into three DUs: the 100-yard Firing Berm, Target Area, and Target Berm Hillside DUs that cover areas of potential contamination, as indicated by site history and post-training construction activities. Two additional DUs were identified during the RI: the Target Berm - Ponded DU and the Wet Meadow DU, which were semi-permanently flooded areas adjacent to the Target Berm Hillside DU, where MC in sediment was investigated. The small arms debris related to training at the Camp O'Ryan MRS 2 include bullets, bullet fragments, and the related metals (lead, antimony, copper, and zinc). The 200-yard Firing Berm is not expected to have residual small arms MC present in soil because it was used for firing, not as a target area, and is up-range of MC depositional areas. It was not included in this RI.

The RI field activities included **x-ray fluorescence** (XRF) screening of **discrete surface soil samples** collected on a grid from the three soil DUs to evaluate the lateral extent of lead in soil. Composite surface soil samples using **incremental sampling methodology** (ISM) were obtained for evaluating risks. The ISM provides an improved measure of the DU-wide concentration of lead compared to calculating a DU concentration based on limited discrete samples. Based on the XRF results, discrete soil samples were subsequently collected at depth. Discrete sampling of sediment was performed at the Target Berm - Ponded and Wet Meadow DUs for human health and ecological risks evaluation. Details of the sampling methodology and results are documented in the Final RI Work Plan/Uniform Federal Policy - Quality Assurance Project Plan (UFP-QAPP; AECOM, 2019) and the Final RI Report (AECOM, 2021a).

100-yard Firing Berm DU: For the purpose of the RI, the NYSDEC Soil Cleanup Objective for lead for Unrestricted Use (63 mg/kg) was used as the **human health criterion**. Exceedances of the unrestricted use criterion for lead were observed in XRF screening results at the 100-yard Firing Berm DU and resulted in **step-out sampling** that enlarged the DU area to 1.39 acres. ISM sample results at the 100-yard Firing Berm indicate that lead is present in soil equal to the unrestricted use screening criterion (**Figure 3**).

Two locations at the 100-yard Firing Berm (locations #34 and #39) were selected to represent distinct areas at the DU for discrete subsurface soil sampling. At location #34, all MC were below unrestricted use and **ecological screening criteria** at the 12- to 18-inch below ground surface (bgs) depth, thus the 24- to 30-inch bgs sample was not analyzed. At location #39, lead concentrations present in the 12- to 18-inch bgs interval exceeded the unrestricted use screening criterion, and antimony exceeded the ecological screening criterion. At the 24-



Background Reference Area			
COR04IS01	COR04IS02	COR04IS03	
0-6" bgs			
7/20/2020			
Analyte	Result	Result	Result
Antimony	0.14	0.13	0.13
Copper	17.0	19.1	16.0
Lead	28.1	21.1	21.0
Zinc	86.1	97.8	87.2

100-Yard Firing Berm			
COR01IS01	COR01IS02	COR01IS03	
0-6" bgs			
7/10/2020			
Analyte	Result	Result	Result
Antimony	0.225	**0.285**	0.19
Copper	30.8	28.7	29.2
Lead	**56.1**	**63**	38.5
Zinc	93.3	96.3	95.6

Target Area			
COR02IS01	COR02IS02	COR02IS03	
0-6" bgs			
7/10/2020			
Analyte	Result	Result	Result
Antimony	**0.293**	**0.327**	**0.293**
Copper	33.6	31.9	39.9
Lead	**82.9**	**98.7**	**72.1**
Zinc	91.3	93.1	98.3

Analyte	Soil Screening Criteria	
	Unrestricted Use	Ecological
Antimony	3.1	0.27
Copper	50	50
Lead	63	63
Zinc	109	109

Target Berm Hillside			
COR03IS01	COR03IS02	COR03IS03	
0-6" bgs			
7/10/2020			
Analyte	Result	Result	Result
Antimony	**0.425**	**0.725**	**0.429**
Copper	24.9	41.4	36.0
Lead	**164**	**179**	**248**
Zinc	**119**	82.5	84.5

CLIENT	Army National Guard			
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Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	AS	3/1/2022

Camp O'Ryan ISM Results

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Figure 3

to 30-inch bgs interval, location #39 showed lead and antimony concentrations present below their human and ecological screening criteria (**Figure 4**).

Target Area DU: Exceedances of the unrestricted use criterion for lead were observed in XRF screening results at the Target Area DU and resulted in step-out sampling that enlarged the DU area to 0.071 acres. ISM sample results indicate that lead is present in soil above its unrestricted use screening criterion, and antimony is present above its ecological screening criterion (**Figure 3**).

Two locations at the Target Area DU (locations #4 and #14) were selected to represent distinct areas at the DU for discrete subsurface soil sampling. At location #4, all MC were below unrestricted use and ecological screening criteria at the 12- to 18-inch bgs depth, thus the 24- to 30-inch bgs sample was not analyzed. In the location #14 12- to 18-inch bgs interval, lead was present above the unrestricted use screening criterion, and antimony was present above the ecological screening criterion. At the 24- to 30-inch bgs interval, location #14 showed all MC below their human and ecological screening criteria (**Figure 5**).

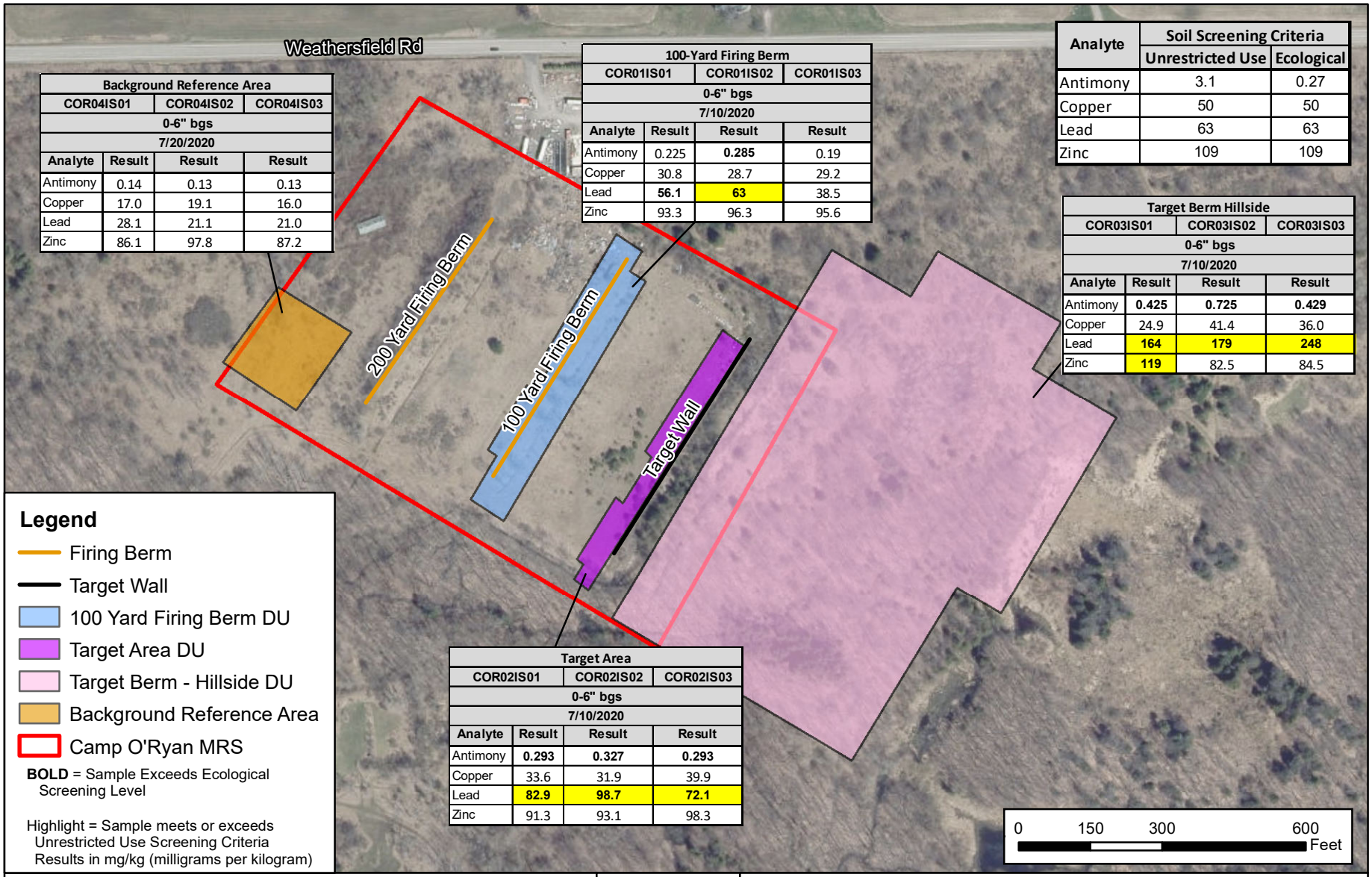
Target Berm - Hillside DU: Exceedances of the unrestricted use criterion for lead were observed in XRF screening results at the Target Berm - Hillside DU and resulted in step-out sampling that enlarged the DU area to 18.51 acres. ISM sample results indicate that lead and zinc are present in soil above unrestricted use screening criteria, and antimony is present above ecological screening criteria (**Figure 3**).

Three locations at the Target Berm - Hillside DU (locations #1, #40, and #46) were selected to represent distinct areas at the DU for discrete subsurface soil sampling. At location #1, the 12- to 18-inch bgs interval indicated that antimony is present above ecological screening criterion. The deeper sample collected at 25-inches bgs indicated that concentrations of lead, copper, and zinc exceeded unrestricted use screening criteria, and antimony remained above ecological screening criteria. These concentrations are likely due to mechanical movement of soil during active range use to fill in bullet pockets or the collection of bullet fragments against the hard cobble subsurface layer. Discrete subsurface sampling at location #40 indicated that all MC were below unrestricted use and ecological screening criteria at the 12- to 18-inch bgs depth, thus the 24- to 30-inch bgs sample was not analyzed. Concentrations of lead at location #46 exceeded unrestricted use screening criteria. At the 24- to 30-inch bgs interval, location #46 showed MC concentration exceedances of unrestricted use or ecological screening criteria (**Figure 6**).

Target Berm - Ponded DU: Concentrations of lead exceeded unrestricted use screening criterion in each of the eight discrete sediment samples collected, and antimony also exceeded unrestricted use screening criterion in the sample with the highest lead concentration (**Figure 7**). All MC concentrations exceeded ecological screening criteria at select sample locations.

Wet Meadow DU: Concentrations of lead exceeded unrestricted use screening criterion in four of the eight discrete sediment samples (**Figure 8**). Concentrations of copper and zinc also exceeded ecological screening criteria at select sample locations.

Background Reference Area: Because MC can occur naturally, samples were collected from an area unaffected by historical range training activities. In general, all MC concentrations in ISM samples were elevated above background reference area ISM MC concentrations, except for zinc, which was measured at similar levels measures at the soil DUs.



Background Reference Area			
COR04IS01	COR04IS02	COR04IS03	
0-6" bgs			
7/20/2020			
Analyte	Result	Result	Result
Antimony	0.14	0.13	0.13
Copper	17.0	19.1	16.0
Lead	28.1	21.1	21.0
Zinc	86.1	97.8	87.2

100-Yard Firing Berm			
COR01IS01	COR01IS02	COR01IS03	
0-6" bgs			
7/10/2020			
Analyte	Result	Result	Result
Antimony	0.225	**0.285**	0.19
Copper	30.8	28.7	29.2
Lead	**56.1**	**63**	38.5
Zinc	93.3	96.3	95.6

Target Area			
COR02IS01	COR02IS02	COR02IS03	
0-6" bgs			
7/10/2020			
Analyte	Result	Result	Result
Antimony	**0.293**	**0.327**	**0.293**
Copper	33.6	31.9	39.9
Lead	**82.9**	**98.7**	**72.1**
Zinc	91.3	93.1	98.3

Analyte	Soil Screening Criteria	
	Unrestricted Use	Ecological
Antimony	3.1	0.27
Copper	50	50
Lead	63	63
Zinc	109	109

Target Berm Hillside			
COR03IS01	COR03IS02	COR03IS03	
0-6" bgs			
7/10/2020			
Analyte	Result	Result	Result
Antimony	**0.425**	**0.725**	**0.429**
Copper	24.9	41.4	36.0
Lead	**164**	**179**	**248**
Zinc	**119**	82.5	84.5

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Camp O'Ryan ISM Results

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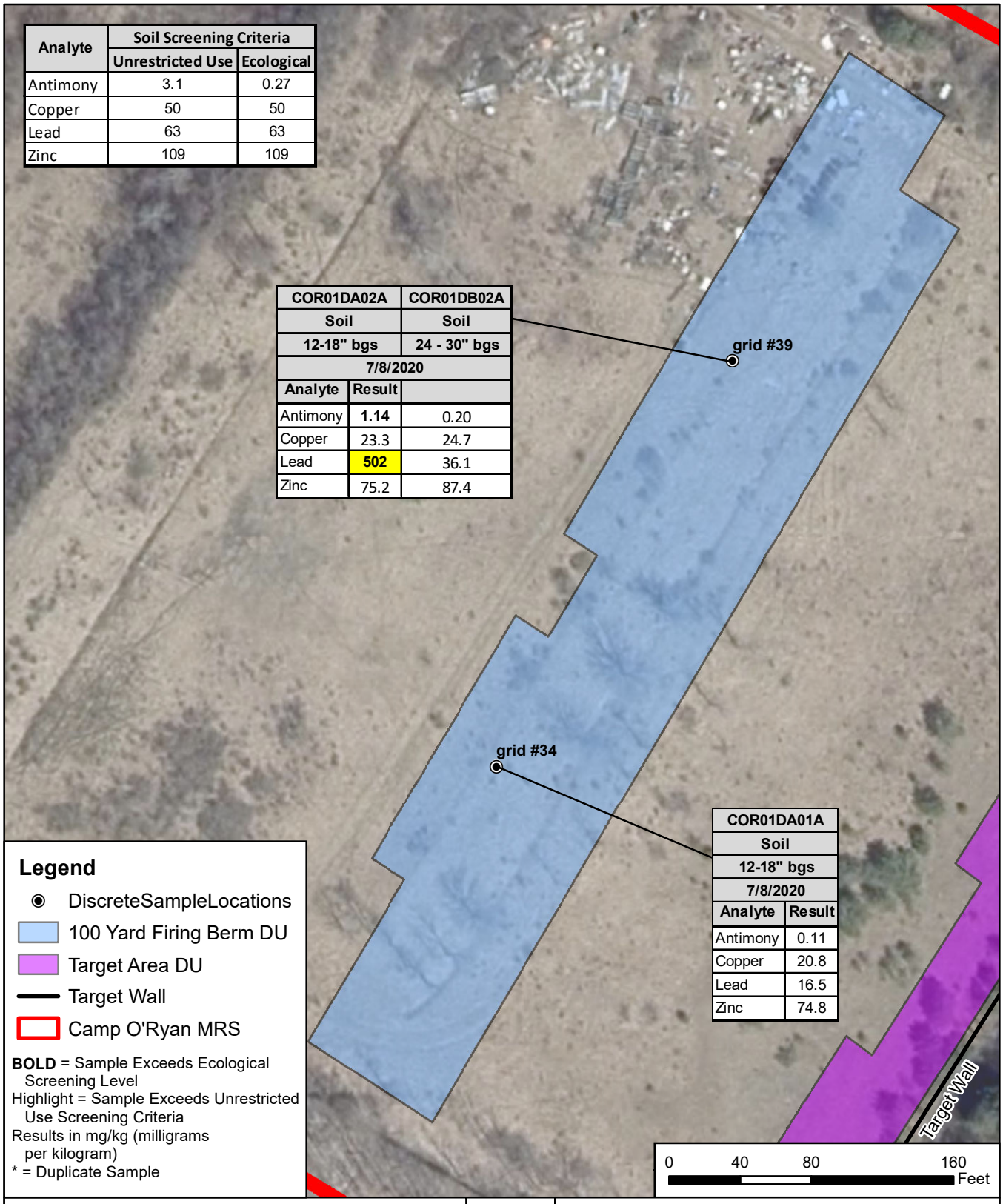
Figure 3


Analyte
Soil Screening Criteria
Unrestricted Use
Ecological
Antimony 3.1 0.27
Copper 50 50
Lead 63 63
Zinc 109 109
COR01DA02A
Soil
12-18" bgs
7/8/2020
Analyte Result
Antimony 1.14
Copper 23.3
Lead 502
Zinc 75.2
COR01DB02A
Soil
24 - 30" bgs
0.20
24.7
36.1
87.4
grid #39
grid #34
COR01DA01A
Soil
12-18" bgs
7/8/2020
Analyte Result
Antimony 0.11
Copper 20.8
Lead 16.5
Zinc 74.8
Target Wall
Legend
DiscreteSampleLocations
100 Yard Firing Berm DU
Target Area DU
Target Wall
Camp O'Ryan MRS
BOLD = Sample Exceeds Ecological Screening Level
Highlight = Sample Exceeds Unrestricted Use Screening Criteria
Results in mg/kg (milligrams per kilogram)
* = Duplicate Sample
0 40 80 160
Feet
CLIENT Army National Guard
PROJECT Proposed Plan for Camp O'Ryan, NY MRS
REVISION NO 0 GIS BY GC 3/1/2022
SCALE 1:960 CHK BY JW 3/1/2022
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
PM LS 3/1/2022
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100-Yard Firing Berm DU Discrete Results
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Figure 4
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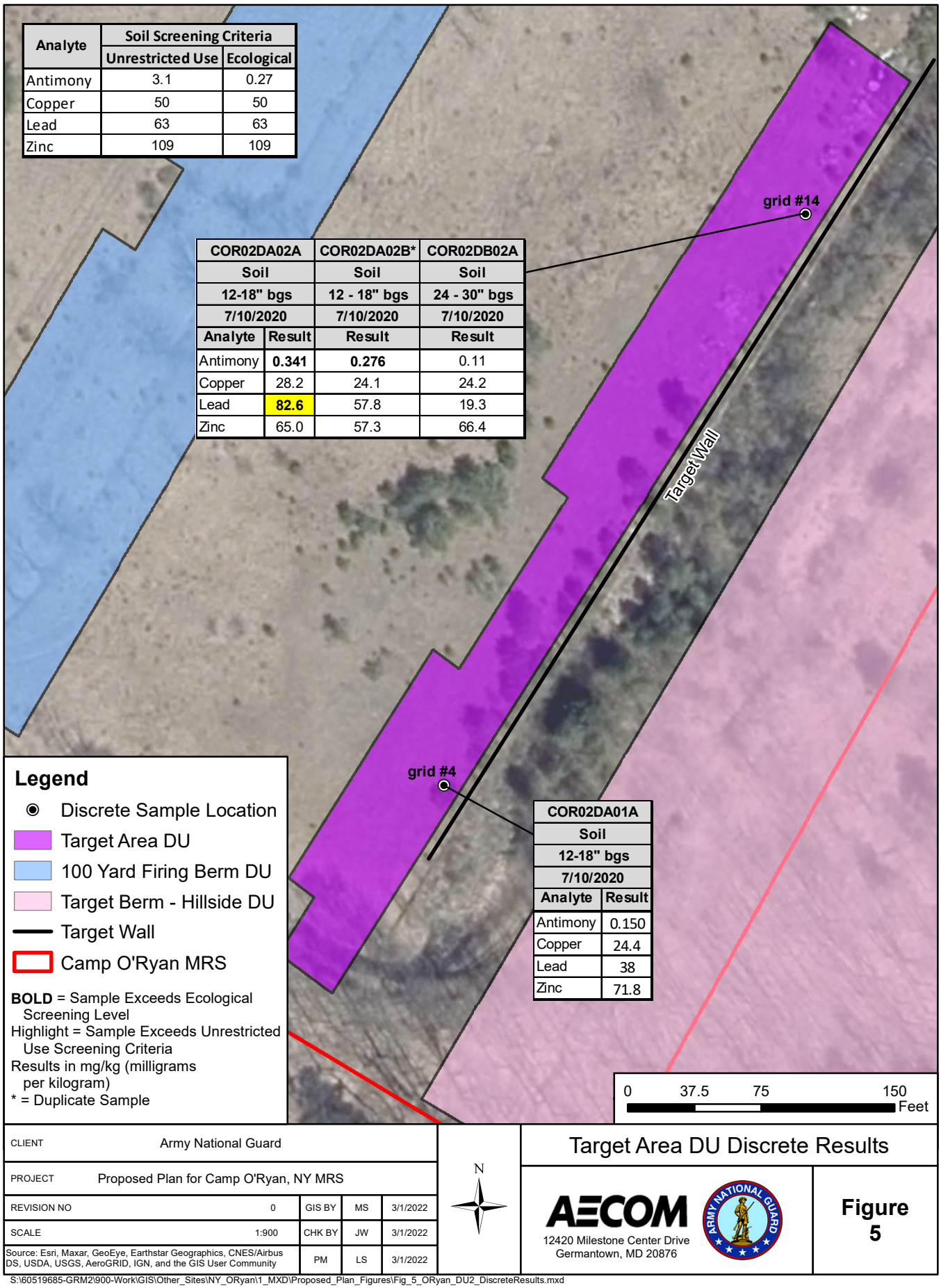
Analyte
Soil Screening Criteria
Unrestricted Use
Ecological
Antimony 3.1 0.27
Copper 50 50
Lead 63 63
Zinc 109 109
COR02DA02A
Soil
12-18" bgs
7/10/2020
Analyte Result
Antimony 0.341
Copper 28.2
Lead 82.6
Zinc 65.0
COR02DA02B*
Soil
12 - 18" bgs
7/10/2020
Result
0.276
24.1
57.8
57.3
COR02DB02A
Soil
24 - 30" bgs
7/10/2020
Result
0.11
24.2
19.3
66.4
grid #14
Target Wall
grid #4
COR02DA01A
Soil
12-18" bgs
7/10/2020
Analyte Result
Antimony 0.150
Copper 24.4
Lead 38
Zinc 71.8
Legend
Discrete Sample Location
Target Area DU
100 Yard Firing Berm DU
Target Berm - Hillside DU
Target Wall
Camp O'Ryan MRS
BOLD = Sample Exceeds Ecological Screening Level
Highlight = Sample Exceeds Unrestricted Use Screening Criteria
Results in mg/kg (milligrams per kilogram)
* = Duplicate Sample
0 37.5 75 150
Feet
CLIENT Army National Guard
PROJECT Proposed Plan for Camp O'Ryan, NY MRS
REVISION NO 0 GIS BY MS 3/1/2022
SCALE 1:900 CHK BY JW 3/1/2022
PM LS 3/1/2022
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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Target Area DU Discrete Results
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Figure 5
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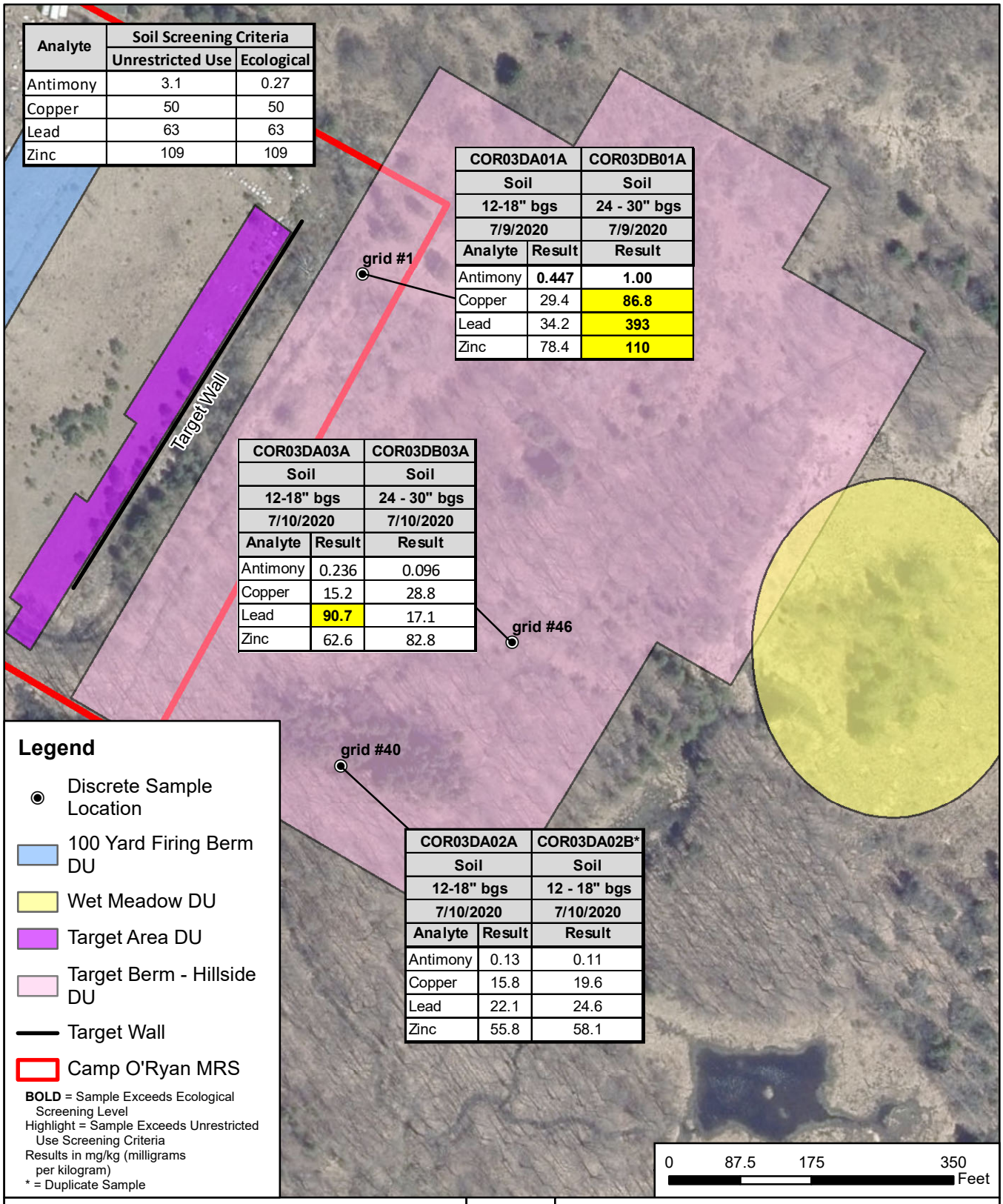
Analyte
Soil Screening Criteria
Unrestricted Use
Ecological
Antimony 3.1 0.27
Copper 50 50
Lead 63 63
Zinc 109 109
COR03DA01A
COR03DB01A
Soil
Soil
12-18" bgs
24 - 30" bgs
7/9/2020
7/9/2020
Analyte
Result
Result
Antimony 0.447 1.00
Copper 29.4 86.8
Lead 34.2 393
Zinc 78.4 110
grid #1
Target Wall
COR03DA03A
COR03DB03A
Soil
Soil
12-18" bgs
24 - 30" bgs
7/10/2020
7/10/2020
Analyte
Result
Result
Antimony 0.236 0.096
Copper 15.2 28.8
Lead 90.7 17.1
Zinc 62.6 82.8
grid #46
grid #40
COR03DA02A
COR03DA02B*
Soil
Soil
12-18" bgs
12 - 18" bgs
7/10/2020
7/10/2020
Analyte
Result
Result
Antimony 0.13 0.11
Copper 15.8 19.6
Lead 22.1 24.6
Zinc 55.8 58.1
Legend
Discrete Sample Location
100 Yard Firing Berm DU
Wet Meadow DU
Target Area DU
Target Berm - Hillside DU
Target Wall
Camp O'Ryan MRS
BOLD = Sample Exceeds Ecological Screening Level
Highlight = Sample Exceeds Unrestricted Use Screening Criteria
Results in mg/kg (milligrams per kilogram)
* = Duplicate Sample
0 87.5 175 350
Feet
CLIENT Army National Guard
PROJECT Proposed Plan for Camp O'Ryan, NY MRS
REVISION NO 0 GIS BY MS 3/1/2022
SCALE 1:2,100 CHK BY JW 3/1/2022
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community PM LS 3/1/2022
N
Target Berm- Hillside DU Discrete Results
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Germantown, MD 20876
Figure 6
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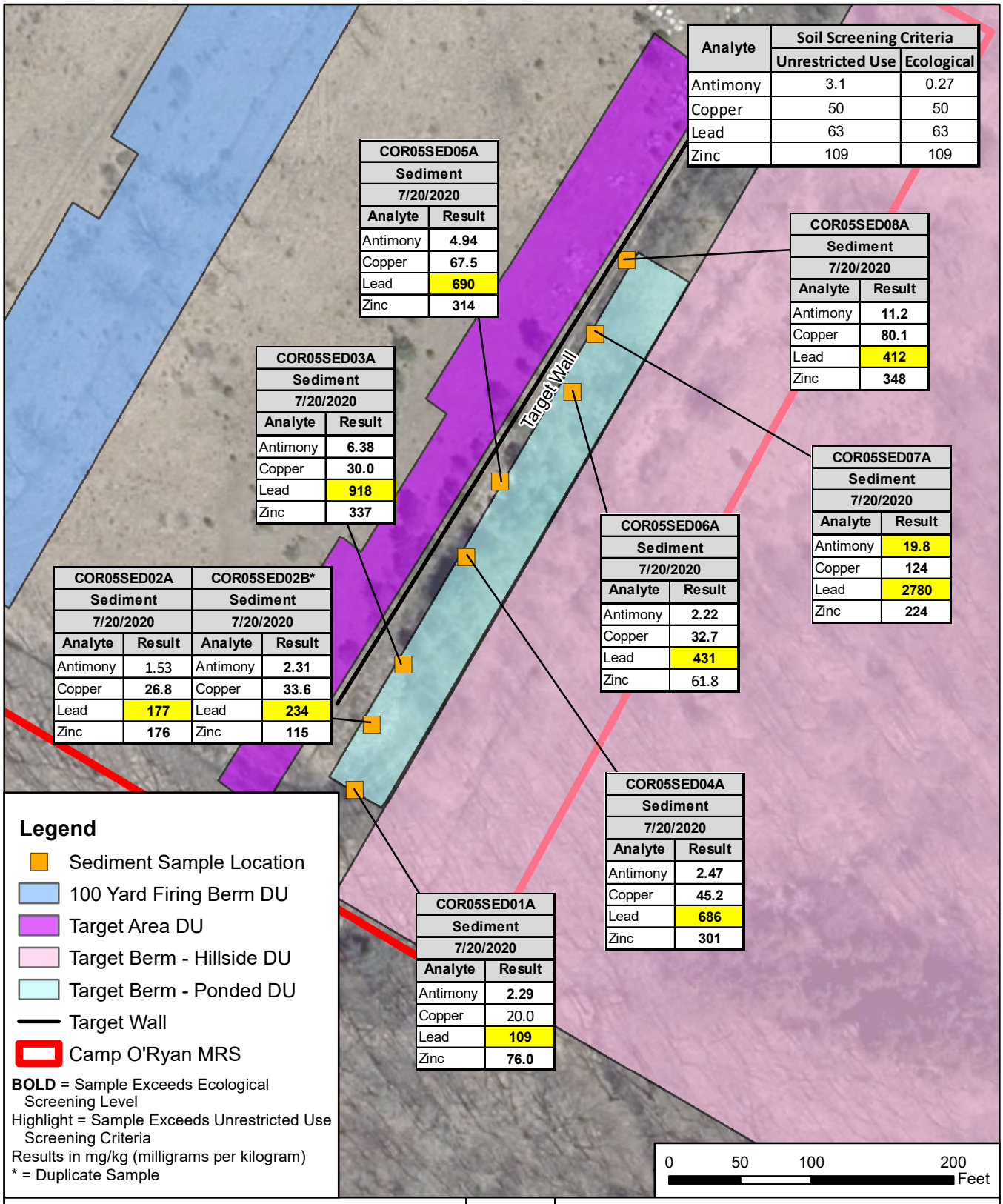

CLIENT	Army National Guard			
PROJECT	Proposed Plan for Camp O'Ryan, NY MRS			
REVISION NO	0	GIS BY	MS	3/1/2022
SCALE	1:1,200	CHK BY	JW	3/1/2022
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	LS	3/1/2022

Target Berm- Ponded DU Sediment Sample Results

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Figure 7

S:\60519685-GRM2\900-Work\GIS\Other_Sites\NY_ORyan\1_MXD\Proposed_Plan_Figures\Fig_7_ORyan_DU5_SedResults.mxd

4.0 SCOPE AND ROLE OF THE ACTION

It is anticipated that the Preferred Alternative 3 will constitute the final response action for NYHQ-008-R-02. The overall strategy of the ARNG is to eliminate human health risks from the Camp O'Ryan MRS 2. The Preferred Alternative 3 would provide a high level of long-term effectiveness and permanence and reduce the potential for direct contact of MC-contaminated soil by human receptors, considering the current and potential future land uses.

5.0 SUMMARY OF SITE RISKS

MC analytical data generated during the RI were compared to unrestricted use risk-screening criteria to evaluate whether past munitions-related practices have resulted in contaminant releases exceeding human health or ecological screening criteria.

WHAT ARE THE "CONTAMINANTS OF CONCERN?"

MC-contaminated soil (lead: 248 ***milligrams per kilogram*** *[mg/kg], and zinc: 119mg/kg) was identified at NYHQ-008-R-02 exceeding the NYSDEC's Remedial Action Guideline Soil Cleanup Objectives for Unrestricted Use (lead: 63 mg/kg; zinc: 109 mg/kg). In sediment, lead (2,780 mg/kg) and antimony (19.8 mg/kg) were also identified above the NYSDEC Remedial Action Guideline Soil Cleanup Objectives for Unrestricted Use (lead: 63 mg/kg; antimony: 14.6 mg/kg).*

For the purposes of this PP, the NYSDEC Soil Cleanup Objective for Unrestricted Use is used to develop remedial alternatives. It should be noted, however, that the cleanup objective is the same as the Soil Cleanup Objective for Protection of Ecological Resources. The NYSDEC Soil Cleanup Objective for Protection of Human Health (Residential) is 400 mg/kg.

ISM samples were collected from surface soil at the 100-yard Firing Berm, Target Area, and Target Berm - Hillside DUs to determine the concentration of MC that a receptor visiting the site may be exposed to. These data were used to evaluate potential risk at the DUs because the methodology provides a robust estimate of the true concentration for an area sampled. Discrete subsurface samples were collected for the purpose of conservatively determining the vertical extent of MC, not for risk assessment use. Sediment samples were collected for assessing risks at the Target Berm-Ponded and Wet Meadow DUs.

HUMAN HEALTH SUMMARY

To understand the potential risk to human health, the surface soil ISM results are screened against established criteria. The ISM data are used because these data reflect the MC concentrations that a receptor would be exposed to (e.g., visitors may be exposed to surface soil) for the entirety of their respective DU. As a conservative approach, the maximum detected concentrations of each analyte from each DU's three ISM soil samples were compared with the NYSDEC Soil Cleanup Objectives for Unrestricted Use screening criteria to determine if a human health risk assessment (HHRA) were necessary.

ISM sample results indicate that lead is present above unrestricted use screening criterion in all three DUs (**Table 5-1**). Results from the Target Berm - Hillside indicate that zinc is also present in soil above unrestricted use screening criterion. Sediment sample results indicate that antimony and lead are present above unrestricted use screening criteria in the Target Berm - Ponded and Wet Meadow DUs (**Table 5-2**). As a result, an HHRA was performed to evaluate risk at all five DUs.

Table 5-1: Human Health Risk Summary (Soil)

Analyte	Unrestricted Use Screening Level (mg/kg)	Soil ISM Maximum Detected Concentration (mg/kg)		
		100-Yard Firing Berm	Target Area	Target Berm Hillside
Antimony	3.1	0.285	0.327	0.725
Copper	50	30.8	39.9	41.4
Lead	63	63	98.7	248
Zinc	109	96.3	98.3	119

Exceeds screening criteria

Table 5-2: Human Health Risk Summary (Sediment)

Analyte	Unrestricted Use Screening Level (mg/kg)	Sediment Maximum Detected Concentration (mg/kg)	
		Target Berm-Ponded	Wet Meadow
Antimony	14.6	19.8	1.7
Copper	1460	124	41.3
Lead	63	2780	154
Zinc	11000	348	211

Exceeds screening criteria

The HHRA evaluated the following human receptors: outdoor worker, construction worker, site visitor/recreational user (child/adult), and hypothetical resident (child/adult). The results of the HHRA screening identified lead as a soil constituent of potential concern. The remaining MC metals were eliminated from further evaluation due to adverse health effects from exposure being unlikely. Non-cancer hazard results indicated that adverse health effects are not likely for potential receptors at the Target Berm - Hillside DU and the Target Berm - Ponded DU. No other DUs required non-cancer hazard risk analysis.

Lead concentrations in blood were modeled for each receptor exposed to the soil medium. U.S. Environmental Protection Agency's (USEPA's) **Adult Lead Methodology and Integrated Exposure Uptake Biokinetic model** was used to evaluate soil exposure to each receptor. Lead modeling indicated that adverse health effects are possible for the child site visitor/recreational user receptor scenario and hypothetical child resident receptor scenario at the Target Berm - Ponded DU. However, the lead modeling results for sediment are likely to be overestimated due to limited site access and conservative modeling assumptions.

ECOLOGICAL SUMMARY

To understand the potential risk to ecological health, ISM surface soil samples and sediment samples were screened against established criteria.

The ecological screening criteria for antimony, lead, and zinc were exceeded in ISM samples at the Target Berm - Hillside DU. The ecological screening criteria for antimony and lead were met or exceeded in ISM samples at the 100-yard Firing Berm and Target Area DUs (**Table 5-3**).

Table 5-3: Ecological Risk Summary (Soil)

Analyte	Ecological Screening Level (mg/kg)	Soil ISM Maximum Detected Concentration (mg/kg)		
		100-Yard Firing Berm	Target Area	Target Berm Hillside
Antimony	0.27	0.285	0.327	0.725
Copper	50	30.8	39.9	41.4
Lead	63	63	98.7	248
Zinc	109	96.3	98.3	119

Exceeds screening criteria

In sediment samples, all MC exceeded ecological screening criteria at the Target Berm – Ponded DU, and all MC except antimony exceeded ecological screening criteria at the Wet Meadow DU (**Table 5-4**).

Table 5-4: Ecological Risk Summary (Sediment)

Analyte	Ecological Screening Level (mg/kg)	Sediment Maximum Detected Concentration (mg/kg)	
		Target Berm-Ponded	Wet Meadow
Antimony	2	19.8	1.7
Copper	23	124	41.3
Lead	26	2780	154
Zinc	63	348	211

Exceeds screening criteria

The results of the screening level ecological risk assessment (SLERA) indicate that there is negligible risk identified for the soil macroinvertebrate community, benthic macroinvertebrate community (Wet Meadow DU), terrestrial wildlife community, aquatic and semi-aquatic wildlife community, and groundwater to surface water pathway. The SLERA also indicated the potential for adverse ecological affects to the benthic macroinvertebrate community at the Target Berm - Ponded DU.

RISK ASSESSMENT CONCLUSION

Although the results of the HHRA indicate that risk levels are acceptable for human receptors at the 100-yard Firing Berm, Target Area, Target Berm - Hillside, and Wet Meadow DUs, adverse health effects are possible for human receptors from the exposure to lead at the Target Berm - Ponded DU. The presence of unacceptable risks to human health warranted an FS for the Camp O'Ryan MRS 2 to evaluate possible remedial actions.

6.0 REMEDIAL ACTION OBJECTIVES (RAOs)

RAOs are site-specific objectives that are established based on the nature and extent of contamination, potential for human and environmental exposure, and **applicable or relevant and appropriate requirements** (ARARs). The RAO is described below, and ARARs for the Camp O'Ryan MRS 2 are presented in **Appendix A**. The ARARs include 40 Code of Federal Regulations (CFR) 266 Subpart M and 264.601 Subpart X, to the extent that there is a cleanup standard, standard of control, or other substantive requirement that specifically addresses a hazardous substance, pollutant or contaminant, remedial action, location, or other circumstance found at the Camp O'Ryan MRS 2. In addition to ARARs, other non-promulgated advisories or guidance documents, such as the NYSDEC Soil Cleanup Objectives, that are to be considered may be used to supplement an ARAR. The possible response actions to achieve the RAO are discussed in the following section.

MC REMEDIAL ACTION OBJECTIVES

The general goal of an MC remedial action is to reduce the hazard to ensure the protection of human health, public safety, and the environment. The MC hazard can be mitigated by reducing the potential for direct contact through the removal and disposal of MC-contaminated soil or by limiting human contact through administrative or engineering controls often called a LUC. The RAO for NYHQ-008-R-02 is listed below.

The RAO for MC is to prevent human exposure to lead above the NYSDEC's Soil Cleanup Objective for Unrestricted Use (63 mg/kg) within the Camp O'Ryan MRS 2. It should be noted that the NYSDEC Cleanup Objective for Unrestricted Use is the value for Protection of Ecological Resources. The NYSDEC Cleanup Objective for Protection of Public Health (Residential) is 400 mg/kg. Thus, it is possible for a remedial alternative to achieve protection of human health without achieving **unlimited use and unrestricted exposure (UU/UE)** at the Camp O'Ryan MRS 2. The primary remedial goal is to prevent human contact with MC-contaminated soil. The MC RAO will address the likelihood of exposure to workers, residents, visitors, and trespassers during work and construction such that an acceptable condition of negligible risk of injury or exposure due to dermal contact or incidental ingestion with MC-contaminated soil is achieved. It is anticipated that any remediation conducted to remove exposure risks to human receptors will also reduce the exposure risk to ecological receptors as well. This procedure is appropriate given the limited size of the revised Camp O'Ryan

MRS 2 and the lack of critical habitats within it.

Because the RI sediment samples were collected from areas that are not perennially inundated, this PP is referring to all solid media as 'soil'. The same goals apply to soil and sediment and the remedy alternatives address sediment in the same manner as soil, thus there is no meaningful distinction between these media.

7.0 SUMMARY OF REMEDIAL ALTERNATIVES

The four alternatives evaluated in the FS (AECOM, 2022) to address MC-contaminated soil at NYHQ-008-R-02 are presented in **Table 7-1** and described below.

Table 7-1
Remedial Alternatives for MC

Designation	Description
Alternative 1	No Action
Alternative 2	LUCs
Alternative 3	Target Berm DUs: Soil Stabilization, Excavation, and Off-Site Disposal as Non-Hazardous Waste with MRS-wide LUCs
Alternative 4	All DUs: MC-Contaminated Soil Stabilization and Off-Site Disposal as Non-Hazardous Waste

ALTERNATIVE 1 – NO ACTION

Alternative 1 leaves the Camp O'Ryan MRS 2 in its present condition with no LUCs or remedial actions. Alternative 1 assumes that no action would be taken regarding MC-contaminated soil at the Camp O'Ryan MRS 2. Alternative 1 provides no protection to human health and does not reduce the human health hazard. MC-contaminated soil would not be eliminated, reduced, or controlled through treatment, engineering, or LUCs.

This alternative is required by the NCP, and it serves as a baseline against which the other alternatives are compared (40 CFR300.430[e][6], 2014). No applicable chemical-, location-, or action-specific ARARs were identified for Alternative 1. There are also no costs associated with this alternative.

ALTERNATIVE 2 – LUCs

Alternative 2 involves legal LUCs and educational controls at the Camp O'Ryan MRS 2. Legal LUCs (proprietary controls) would include environmental easements (e.g., deed restrictions), and educational controls would include the posting of warning signs along the Camp O'Ryan MRS 2 boundary. Successful implementation of LUCs is contingent upon the cooperation and active participation of the existing landowners/users.

Legal LUCs are not enforceable by the ARNG; however, NYSDEC may be able to enforce legal LUCs. LUCs for the Camp O'Ryan MRS 2 will not result in conditions that allow for **unlimited use and unrestricted exposure (UU/UE)** at the Camp O'Ryan MRS 2. Therefore, Five-Year Reviews are required under CERCLA Section (§) 121(c) and NCP, CFR §300.430(f)(4)(ii)) to ensure that the remedy continues to be protective of human health and the environment.

Estimated Costs for Alternative 2-

Capital:	$42,698
O&M/Periodic:	$110,260
Total:	**$152,958**
Total PV:	$128,356

* O&M = operation and maintenance; PV = present value

ALTERNATIVE 3 – TARGET BERM DUs: SOIL STABILIZATION, EXCAVATION, AND OFF-SITE DISPOSAL AS NON-HAZARDOUS WASTE WITH MRS-WIDE LUCs

Alternative 3 involves stabilization, excavation, and off-site disposal of the lead-contaminated soil at the Target Berm – Ponded DU and the lower reach of the Target Berm – Hillside DU. The Target Berm – Ponded DU is the only DU at the Camp O'Ryan MRS 2 that poses unacceptable risk to human health based on the results of the HHRA. The excavation would eliminate the risk of encountering MC-contaminated soil but would not achieve UU/UE at other areas of the Camp O'Ryan MRS 2.

General work requirements include obtaining **Rights-of-Entry** (ROE) to the Camp O'Ryan MRS 2, **in-situ** soil stabilization, removing soil using an excavator, hauling soil offsite for disposal, and restoring the site. Based on the results of the RI, the extent of soil removal was estimated to be 0.42 acres to a depth of 1 foot across the Target Berm – Ponded DU; however, after discussion with the NYSDEC, the excavation area was expanded to include 1.55 acres to a depth of 2 feet across the lower reach of the Target Berm – Hillside DU based on concentrations of MC in samples collected during the 2009 NYSDEC Site Investigation. The revised total Alternative 3 excavation area is 1.97 acres (**Figure 9**). The estimate of contaminated soil to be stabilized and removed is 5,679 bank cubic yards (BCY). Soil with lead concentrations above landfill disposal criteria will undergo in-situ soil stabilization, which renders the soil harmless. The soil would be stabilized, excavated, and disposed of based on waste classification analysis per the requirements of the **Resource Conservation and Recovery Act** (RCRA) Part 261, which establishes standards for generators of hazardous waste and **Subtitle C solid waste disposal facilities**.

Lead concentrations in **confirmation soil samples** would be measured in the field using XRF and discrete samples submitted for laboratory analysis. Discrete step-out confirmation soil samples will be used at excavation vertical and lateral boundaries to confirm that the RAO is achieved during excavation. Step-out sampling and excavation expansion will occur, if necessary, in the direction of the hillside advance as far as practical due to health and safety concerns related to dense vegetation and steep slopes. Alternative 3 also includes the implementation of physical and legal LUCs across the entire MRS. Legal LUCs and educational controls included in Alternative 3 are the same as those included in Alternative 2. Successful implementation of LUCs is contingent upon the cooperation and active participation of the existing landowners/users. Legal LUCs are not enforceable by the ARNG; however, NYSDEC may be able to enforce legal LUCs. Although Alternative 3 stabilizes and removes soil that poses unacceptable risk to human health at the Target Berm - Ponded DU (no other DU demonstrated unacceptable risk in the HHRA) and the adjacent hillside, the excavation would not achieve UU/UE at other areas of the Camp O'Ryan MRS 2. Therefore, Five-Year Reviews are required under CERCLA Section (§) 121(c) and NCP, CFR §300.430(f)(4)(ii)) to ensure that the remedy continues to be protective of human health and the environment.

Estimated Costs for Alternative 3-

Capital:	$1,905,665
O&M/Periodic:	$110,260
Total:	**$2,015,925**
Total PV:	$1,991,319

CLIENT	Army National Guard			
PROJECT	Proposed Plan for Camp O'Ryan, NY MRS			
REVISION NO	0	GIS BY	MS	5/2/2022
SCALE	1:3,600	CHK BY	JW	5/2/2022
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	LS	5/2/2022

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Camp O'Ryan - Alternative 3 Excavation Area

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Figure 9

ALTERNATIVE 4 – ALL DUs: MC-CONTAMINATED SOIL STABILIZATION AND OFF-SITE DISPOSAL AS NON-HAZARDOUS WASTE

Alternative 4 involves stabilization, excavation, and off-site disposal of the lead-contaminated soil with concentrations above established unrestricted use screening criteria (63 mg/kg) at all Camp O'Ryan MRS 2 DUs. Alternative 4 was evaluated because it would achieve UU/UE at Camp O'Ryan MRS 2.

General work requirements include clearing the vegetation, obtaining ROE to the Camp O'Ryan MRS 2, removing soil by using an excavator, hauling soil offsite for hazardous waste disposal, confirmation sampling, and restoring the site.

Based on the results of the RI, the extent of MC-contaminated soil was determined to cover 20.61 acres to a depth of 2 feet (100-yard Firing Berm, Target Area, and Target Berm – Hillside DUs) and cover a 3-acre area to a depth of 1 foot (Target Berm – Ponded DU and Wet Meadow DU) The total excavation area is approximately 48.7% of the Camp O'Ryan MRS 2 (**Figure 10**).

The initial estimate of MC-contaminated soil to be stabilized and removed is 66,276 BCY from the 100-yard Firing Berm, Target Area, and Target Berm – Hillside DUs, and an additional 4,840 BCY of MC-contaminated soil to be stabilized and removed from the Target Berm-Ponded DU and Wet Meadow DU. The MC-contaminated soil would be excavated and disposed of based on waste classification analysis per the requirements of the RCRA Part 261, which establishes standards for generators of hazardous waste and Subtitle C solid waste disposal facilities.

Lead concentrations in confirmation soil samples would be measured in the field using XRF and discrete samples submitted for laboratory analysis to confirm that the RAO is achieved during excavation.

Estimated Costs for Alternative 4-

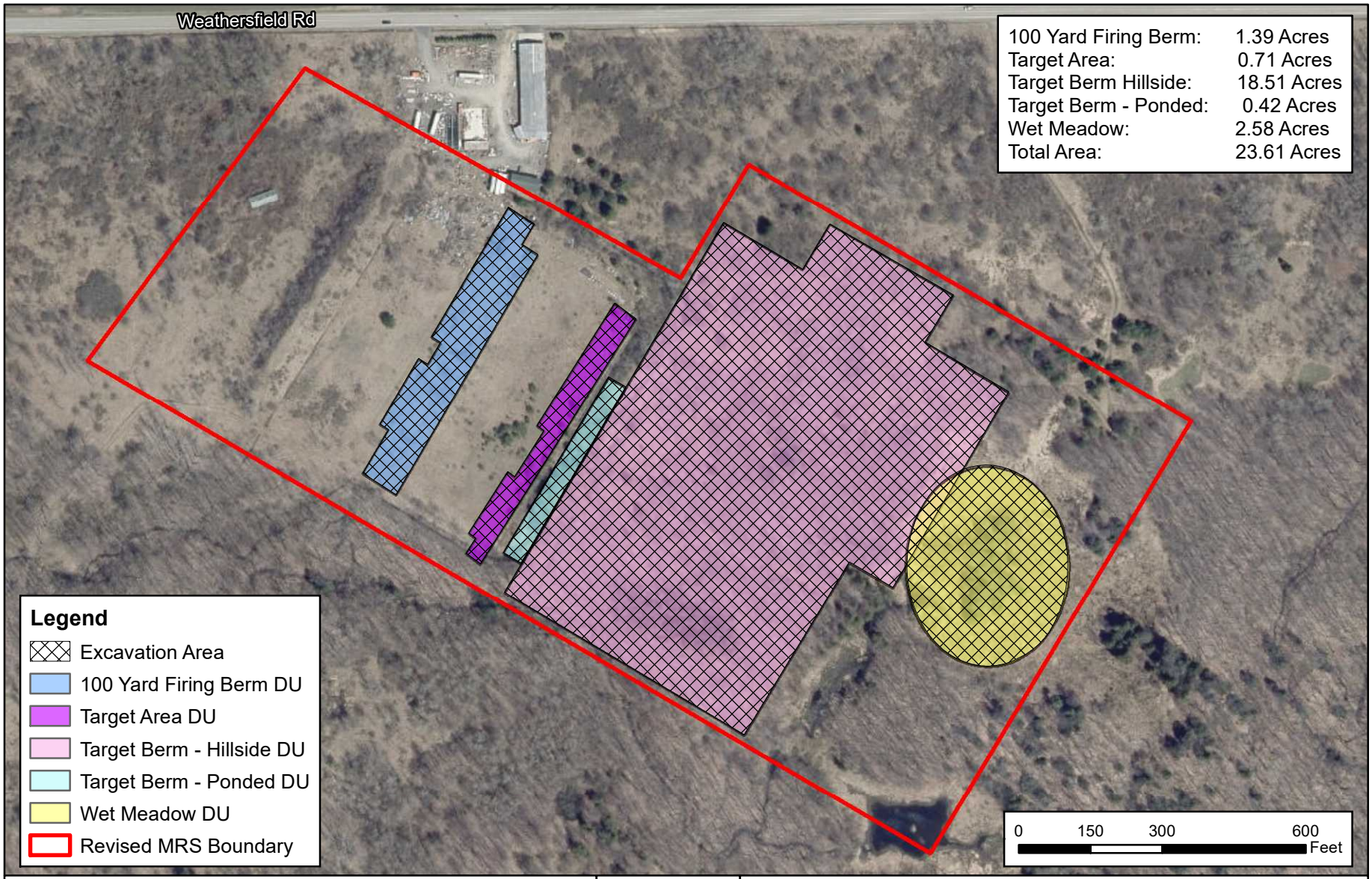
Capital:	$26,139,894
O&M/Periodic:	$0
Total:	**$26,139,894**
Total PV:	$26,139,894

8.0 EVALUATION OF ALTERNATIVES

Nine **evaluation criteria** are statutory criteria required by the NCP (40 CFR 300, 2014) and described in the Guidance for Conducting RI and FS under CERCLA (USEPA, 1988). The nine criteria were used to evaluate the different alternatives individually and against each other in order to select a remedy. These nine criteria are segregated into three groups (threshold, balancing, modifying) and are summarized in **Box 2 (page 22)**.

Threshold criteria are requirements that each alternative must meet in order to be selected. Balancing criteria are used to weigh major trade-offs among alternatives. Modifying criteria may be considered to the extent that information is available during the FS but can only be fully considered after public comment is received on the PP. In the final balancing of trade-offs among alternatives upon which the final remedy selection is based, modifying criteria are of equal importance to the balancing criteria.

Detailed analysis of the four MC alternatives were conducted against the nine criteria, and a comparative analysis was conducted to compare the alternatives against each other to determine the Preferred Alternative. The comparative analysis identified the advantages and disadvantages of each alternative so that key differences could be identified. This process provides a framework for selection of an appropriate remedy for the Camp O'Ryan MRS 2.



CLIENT	Army National Guard			
PROJECT	Proposed Plan for Camp O'Ryan, NY MRS			
REVISION NO	0	GIS BY	MS	1/24/2022
SCALE	1:3,600	CHK BY	JW	1/24/2022
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	LS	1/24/2022

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Camp O'Ryan - Excavation Areas

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Figure 10

A summary of the following detailed descriptions appears in **Table 8-1**.

THRESHOLD CRITERIA:

Overall Protection of Human Health and the Environment –

Alternatives 1 and 2 do not provide protection of both human health and the environment. Alternatives 3 and 4 are protective of human health and the environment by reducing or eliminating the MC-contaminated soil from the Camp O'Ryan MRS 2. Alternative 4 could achieve UU/UE at the Camp O'Ryan MRS 2.

Compliance with ARARs –

There are no ARARs associated with Alternative 1. The NYSDEC's Soil Cleanup Objective (63 mg/kg) is based on complete exposure pathways and is considered by NYSDEC to be protective for human receptors. MC-contaminated soil will remain in-situ for Alternatives 1 and 2. Partial or complete removal of MC-contaminated soil under Alternatives 3 and 4 would be performed to comply with all ARARs (**Appendix A**).

PRIMARY BALANCING CRITERIA:

Long-Term Effectiveness and Permanence –

Alternatives 1 and 2 would not be effective or permanent. The long-term effectiveness of Alternative 2 is contingent on the cooperation and active participation of the existing landowners/users, NYSDEC, and other government agencies. Maintaining the LUCs is administratively feasible but Alternative 2 does not eliminate the possibility of risk to human health and/or environment since the MC-contaminated soil would stay in place. Alternatives 3 and 4 would provide long-term effectiveness in reducing or eliminating the possibility of lead leaching and migrating

BOX 2. REMEDY EVALUATION CRITERIA

THRESHOLD CRITERIA

1. ***Overall Protection of Human Health and the Environment*** determines whether an alternative eliminates, reduces, or controls threats to public health and the environment.
2. ***Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)*** evaluates whether the alternative meets federal and State environmental statutes, regulations, and other requirements that are applicable or relevant and appropriate to the site, or whether a waiver is justified. ARARs are listed in Appendix A at the end of this PP.

PRIMARY BALANCING CRITERIA

3. ***Long-term Effectiveness and Permanence*** considers the ability of an alternative to maintain protection of human health and the environment over time.
4. ***Reduction of Toxicity, Mobility, or Volume of Contaminants Through Treatment*** evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
5. ***Short-Term Effectiveness*** considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.
6. ***Implementability*** considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
7. ***Cost*** includes estimated capital and annual operation and maintenance (O&M) costs, as well as **present worth cost**. Present worth cost is the total cost of an alternative over time in terms of today's dollar value.

MODIFYING CRITERIA

8. ***State Agency Acceptance*** considers whether the State agrees with the analyses and recommendations described in the PP.
9. ***Community Acceptance*** considers whether the local community agrees with analyses and preferred alternative. Comments received on the PP are an important indicator of community acceptance.

Table 8-1
Comparative Analysis of Remedial Alternatives for Soil Containing Elevated MC

Screening Criteria		Alternative 1 No Action	Alternative 2 LUCs	Alternative 3 Target Berm DUs: Soil Stabilization, Excavation, and Off-Site Disposal as Non-Hazardous Waste with MRS-wide LUCs	Alternative 4 All DUs: MC-Contaminated Soil Stabilization and Off-Site Disposal as Non-Hazardous Waste
Threshold	Overall Protection of Human Health and the Environment	○	○	◘	●
	Compliance with ARARs	○	○	●	●
Balancing	Long-Term Effectiveness	○	◘	◘	●
	Reduction of TMV Through Treatment	○	○	◘	●
	Short-Term Effectiveness	●	●	◘	◘
	Implementability	●	◘	◘	○
	Cost (x1,000)	$0	$153	$2,016	$26,140
Modifying (a)	State Acceptance	TBD	TBD	TBD	TBD
	Community Acceptance	TBD	TBD	TBD	TBD

Notes:
(a) The Modifying criteria of state and community acceptance are 'To Be Determined' (TBD) following review and input from these parties.
● Favorable ('YES' for threshold criteria)
◘ Moderately Favorable
○ Not Favorable ('NO' for threshold criteria)
TMV = toxicity, mobility, or volume

into the environment from the associated excavation areas. Alternative 4 would be highly effective and permanent, as all MC-impacted soil would be removed. Alternative 4 could allow for UU/UE of the entire Camp O'Ryan MRS 2.

Reduction of TMV through Treatment –

Alternatives 1 and 2 would not reduce the TMV at the Camp O'Ryan MRS 2. Alternative 3 would be moderately effective in meeting the removal action objectives and would reduce the toxicity of the contaminated soil at Target Berm-Ponded DU by stabilizing and disposing of the material off-site. Alternative 4 would be very effective in meeting the removal action objectives and would reduce the toxicity of the contaminated soil throughout the Camp O'Ryan MRS 2 because all contaminated material would be stabilized and disposed of.

Short-Term Effectiveness –

Alternative 2 would be the most effective in the short term, whereas Alternatives 3 and 4 would be less effective in the short term due to required site disturbance and handling of the MC-contaminated soil. For Alternatives 1 and 2, there would be minimal to no construction or operation activities, so there would be no short-term risks to the community, site workers, or the environment. Alternatives 3 and 4 pose potential risks to site workers from the handling of MC-contaminated soil during excavation and the transportation of the material off-site for disposal.

Implementability –

Alternative 1 has no implementability concerns, as it requires no action. Alternatives 2, 3, and 4 require approval and participation of the State and the private landowners because the property is not owned by the U.S. Army. ROE agreements would be needed to access to the property, which could impact the implementability. Alternative 2 would be the easiest to implement. Alternative 3 is considered relatively easy to implement due to the small size of the excavation area. Alternative 4 is considered more difficult to implement due to the safety concerns associated with the large excavation area, the vegetation that would need to be cleared, and locally steep terrain. Alternatives 3 and 4 require approval and acceptance of all excavated material as potentially hazardous material by a disposal facility, which could impact the implementability.

Cost –

The net present value costs for each remedial alternative are presented in **Table 8-2**. As shown in this table, Alternative 1 incurs no cost to implement, while Alternative 4 would be the costliest to implement. The detailed cost estimate is presented in the Final FS Report (AECOM, 2022).

MODIFYING CRITERIA:

State and Community and Acceptance –

State acceptance will be assessed based on regulatory review of this PP. Modifying criteria (State and Community Acceptance) are considered in the remedy selection process.

Selection –

Selection of the final remedy will be documented in a ROD that will be based on the PP's Preferred Alternative and input from the regulators and community.

Table 8-2
Cost Comparison of Remedial Action Alternatives for Soil Containing Elevated MC

Cost	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Capital	$0	$42,698	$1,905,665	$26,139,900
O&M / Periodic	$0	$110,260	$110,260	$0
Total	**$0**	**$152,598**	**$2,015,925**	**$26,139,900**
Total PV	$0	$128,356	$1,991,319	$26,139,900

Notes:
O&M = operation and maintenance; PV = present value

9.0 PREFERRED ALTERNATIVE

The results of the comparative analysis (**Tables 8-1 and 8-2**) highlight the relative advantages and disadvantages of each alternative and identify key tradeoffs. Alternative 3 is the Preferred Alternative for the Camp O'Ryan MRS 2 because it achieves the RAO and is cost effective.

The ARNG expects the Preferred Alternative to satisfy the following statutory requirements of CERCLA § 121(b):

- To be protective of human health and the environment,
- comply with ARARs (**Appendix A**),
- be cost-effective,
- utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable, and
- satisfy the preference for treatment as a principal element or explain why the preference for treatment will not be met.

The elements of Alternative 3 are technically and administratively feasible.

The Preferred Alternative can change in response to public comment or if new information is obtained for the Camp O'Ryan MRS 2.

10.0 COMMUNITY PARTICIPATION

Information regarding the implementation of the Preferred Alternatives at NYHQ-008-R-02 is provided to the public through information and documents in the ARNG Administrative Record File and announcements published in local newspapers. The public is encouraged to refer to these sources to stay informed on issues pertaining to the restoration activities.

The dates for the public comment period and the location of the RI Report and other project documents at the Gainesville Town Hall are provided on Page 1 of this PP. Nearby residents and other interested parties are encouraged to use the comment period for questions and concerns about the proposed decision for the Camp O'Ryan MRS 2. ARNG will summarize and respond to public comments in a responsiveness summary, which will become part of the ROD.

11.0 ACRONYMS AND ABBREVIATIONS

ARARs	Applicable or relevant and appropriate requirements
ARNG	Army National Guard
BCY	bank cubic yards
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DoD	Department of Defense
DU	Decision Unit
FS	Feasibility Study
HHRA	Human Health Risk Assessment
ISM	Incremental sampling methodology
LUCs	Land use controls
MC	munitions constituents
mg/kg	milligrams per kilogram
mm	millimeter
MRS	Munitions Response Site
NCP	National Contingency Plan
NDNODS	Non-Department of Defense Non-Operational Defense Site
NYARNG	New York Army National Guard
NYSDEC	New York State Department of Environmental Conservation
O&M	Operation and maintenance
PA	Preliminary Assessment
PP	Proposed Plan
RAO	Remedial action objective
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
ROE	Right-of-entry
SI	Site Inspection
SLERA	screening level ecological risk assessment
TMV	toxicity, mobility, or volume
U.S.	United States of America
UFP-QAPP	Uniform Federal Policy - Quality Assurance Project Plan
USEPA	United States Environmental Protection Agency
UU/UE	Unlimited Use and Unrestricted Exposure
XRF	X-ray fluorescence

12.0 GLOSSARY

Administrative Record – A collection of documents made available to the public that includes all the information considered and relied on in selecting a remedy for a contaminated site.

Adult Lead Methodology and Integrated Exposure Uptake Biokinetic models – statistical software models developed by the USEPA that estimate blood lead concentrations in human receptors (adults or children respectively) exposed to lead from sources via multiple routes of exposure.

Applicable or Relevant and Appropriate Requirements (ARARs) – State or federal requirements, standards, criteria, or limitations that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site, or that are sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Generally, the federal standards are the ARARs; state standards may apply if they are more stringent than their federal counterparts.

Berm – A flat strip of land, raised bank, or terrace that is used at a firing range to help limit the spread of fired bullets.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) - Passed in 1980 and subsequently amended, this law provides for liability, compensation, cleanup, and emergency response in connection with the cleanup of inactive hazardous waste disposal sites that endanger public health and safety of the environment.

Confirmation Soil Samples – Samples collected at the complete of an excavation beneath or adjacent to areas from which contaminated soil has been removed in order to determine/verify whether cleanup levels have been achieved

Contaminant – A compound or element that upon exposure will or may reasonably be anticipated to cause certain specified harmful health effects.

Decision Units – The locations where soil sampling occurs.

Discrete Surface Soil Sample – This is the process of collecting a single soil sample from a specific location.

Ecological Screening Criteria – A set of criteria used to determine to potential of a substance to impact an environment.

Evaluation Criteria – A set of criteria where the sustainability and performance of an action or procedure are determined.

Feasibility Study (FS) - A document that describes and evaluates potential cleanup alternatives for a contaminated site based on data and risk assessments documented in the RI.

Human Health Criterion – A set of criteria that determine the potential of a substance to present risks to human health. For the purpose of the human health assessment, the NYSDEC Soil Cleanup Objective for lead for Unrestricted Use was used for human health screening.

In-Situ – The original place or location.

Incremental sampling methodology - a structured composite sampling and processing protocol that provides a reasonably unbiased estimate of mean contaminant concentrations in a volume of soil targeted for sampling.

Information Repository – The location in the community where the administrative record and other documents containing site information are available for review by the public.

Land Use Controls (LUCs) - Physical, legal, or administrative mechanisms that restrict the use of, or limit access to, property to prevent or reduce risks to human health and the environment from contamination.

Milligrams per kilogram (mg/kg) – A unit of measure for the amount of chemicals in soil. One mg/kg is a millionth of a gram of a chemical in one kilogram of soil.

Munitions Constituents (MC) – Materials that originate from ordnance or other military munitions such as bullets.

Munitions Response Site – Sites that are known or suspected to contain unexploded ordnance, discarded military munitions, or munitions constituents.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP) - A set of federal regulations that provide the organizational structure and procedures for preparing for and responding to discharges of oils and releases of hazardous substances, pollutants, or contaminants into the environment. (See 40 CFR Part 300).

Preferred Alternative - The remedial action alternative that provides the best balance of tradeoffs with respect to the evaluation criteria among all of the alternatives evaluated in a Proposed Plan.

Present Worth Cost - A method for evaluating and comparing costs that occur over different time periods that takes into account the fact that the value of money changes over time. Present worth cost is the amount of money required today to construct and operate a remedial action over a specified period of time. By discounting all costs that occur over the lifetime of a remedy to today's dollar value, the costs for different remedial action alternatives can be compared relative to one another, regardless of when those costs will be incurred.

Primary Balancing Criteria – Criteria that is used to weigh major trade-offs among alternatives.

Proposed Plan - A document used to facilitate public involvement in the remedy selection process for a CERCLA contaminant release site. The document presents the lead agency's preliminary recommendation concerning how best to address contamination at a site.

Record of Decision (ROD) - A legal document that certifies that the remedy selection process was carried out in accordance with CERCLA and the NCP, that documents the cleanup action or remedy selected for a site, the basis for the choice of that remedy, and public comments received on the Proposed Plan.

Remedial Investigation (RI) - A study of a contaminant release site that includes data collection and analysis to determine 1) the nature and extent of the contamination, 2) the potential risks to human health and the environment from that contamination, and 3) whether or not remedial action is warranted.

Remedial Action (also called a Cleanup Action) – Action taken at a contaminated site to reduce or eliminate the human health or ecological risks associated with the contaminants.

Remedial Action Objective (RAO) - Site-specific goals that a remedial action is expected to accomplish in order to protect human health and the environment.

Resource Conservation and Recovery Act (RCRA) – A law enacted in 1976 that gives the EPA the right to control the generation, transportation, treatment, storage, and disposal of hazardous wastes.

Responsiveness Summary – A summary of responses to comments made by the public during the public comment period.

Right-of-entry (ROE) – An agreement form that grants permission of access to an area.

Soil Stabilization –Soil treatment that renders lead less prone to leaching and may reduce bioavailability. Potential binders include Portland cement, lime-fly ash, asphalt, and sorbents such as activated carbon, clays, zeolites, and anhydrous sodium silicate.

Step-Out Sampling – Additional sampling used to delineate concentrations of MC in soil beyond the original scope of sampling around the Decision Units.

Subtitle C Solid Waste Disposal Facility - A sort of facility like a landfill that is specifically designed to receive hazardous solid wastes.

Unlimited Use and Unrestricted Exposure (UU/UE) - A term used to describe when contamination at a site has been reduced to levels that are safe for any land use, including residential land uses.

X-ray fluorescence – A technique that uses the emission of x-rays to determine the elemental composition of a material.

13.0 DOCUMENT REFERENCES

- AECOM, 2019. Final Remedial Investigation Work Plan and UFP-QAPP, Camp O'Ryan Rifle Range, New York. April.
- AECOM, 2021a. Final Remedial Investigation Report, Camp O'Ryan Rifle Range, New York. June.
- AECOM, 2022. Final Feasibility Study Report, Camp O'Ryan Rifle Range, New York. January.
- Code of Federal Regulations (CFR). Revised 2014. Applicable Sections of Title 40, Part 300, National Oil and Hazardous Substances Pollution Contingency Plan.
- Malcom Pirnie, Inc., 2009. Final State/Territory Inventory Report, National Guard Bureau, NDNODS Inventory, New York, July.
- New York State Department of Environmental Conservation (NYSDEC), 2009. Site Investigation Report Camp O'Ryan Rifle Range. May.
- Parsons Infrastructure and Technology (Parsons), 2012. Final New York Site Inspection Report, Army National Guard Military Munitions Response Program, July.
- United States Environmental Protection Agency. (USEPA). 1988. Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA. USEPA/540/G-89/004. Interim Final.

Appendix A – Potential Federal and State Applicable or Relevant and Appropriate Requirements

APPENDIX A
FEDERAL AND STATE APPLICABLE OR RELEVANT
AND APPROPRIATE REQUIREMENTS

Standard, Requirement, Criteria or Limitation	Citations	Description	ARAR Type	Applicability to Site
Solid and Hazardous Waste Management				
RCRA Miscellaneous Units	40 CFR Part 264.601, Subpart X*	Environmental performance standards that require miscellaneous units be located, designated, constructed, operated, maintained and closed in a manner that will prevent any release that may have adverse effects on human health and the environment.	Chemical and Action	ARAR/Applicable to soils containing elevated levels of lead at concentrations that may affect human health.
RCRA Military Munitions Rule	40 CFR Part 266, Subpart M*	Identifies when military munitions become solid waste, and, if these wastes are also hazardous under this subpart or 40 CFR part 261, the management standards that apply to these wastes.	Action	ARAR/Applicable if military munitions (i.e. soil containing lead from small arms waste) meeting the definition of a solid waste are encountered during the remedial action.

Notes:

* = The ARARs include 40 CFR 266 Subpart M and 264.601 Subpart X, to the extent that there is a cleanup standard, standard of control, or other substantive requirement that specifically addresses a hazardous substance, pollutant or contaminant, remedial action, location, or other circumstance found at the Camp O'Ryan Rifle Range MRS.

RCRA = Resource Conservation and Recovery Act

USEPA = United States Environmental Protection Agency

MRS= Munitions Response Site

MC = Munitions Constituents