FINAL
PROPOSED PLAN FOR
ACTION SITES AT THE
FORMER CURTIS BAY ORDNANCE DEPOT
CURTIS BAY, MARYLAND

Contract No. [redacted]/Task Order No. [redacted]

Prepared for

Defense Logistics Agency
8725 John J. Kingman Road
Fort Belvoir, VA 22060

U.S. Army Corps of Engineers
Baltimore District
2 Hopkins Plaza
Baltimore, Maryland 21201

Prepared by

EA-Bay West Joint Venture, LLC
225 Schilling Circle, Suite 400
Hunt Valley, Maryland 21031
[redacted]

May 2026

ACRONYMS AND ABBREVIATIONS

%	Percent
ARAR	Applicable or relevant and appropriate requirement
bgs	Below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Constituent of concern
COPEC	Contaminant of potential ecological concern
CY	Cubic yard(s)
Depot	Former Curtis Bay Ordnance Depot
DLA	Defense Logistics Agency
DNSC	Defense National Stockpile Center
DU	Decision unit
EA	EA Engineering, Science, and Technology, Inc., PBC
EC	Environmental Concern
EPA	U.S. Environmental Protection Agency
ERT	ERT, Inc.
ESAR	Environmental Survey and Analysis Report
ESI	Expanded Site Inspection
FRI	Focused Remedial Investigation
FS	Feasibility Study
FSI	Focused Site Inspection
ft	Foot (feet)
ft^2	Square foot (feet)
FUDS	Formerly Used Defense Site
FYR	Five-year review
GSA	General Services Administration
HHRA	Human Health Risk Assessment
HI	Hazard index
HQ	Hazard quotient
in.	Inch(es)
IRP	Installation Restoration Program
ISM	Incremental sampling method
LUC	Land use control
MDE	Maryland Department of the Environment
Mg/kg	Milligram(s) per kilogram
MMRP	Military Munitions Response Program
NA	Not Applicable
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
PAH	Polycyclic aromatic hydrocarbon
PP	Proposed Plan
PRG	Preliminary remediation goal
RAO	Remedial action objective
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
RSL	Regional Screening Level
SLERA	Screening Level Ecological Risk Assessment
SU	Sampling unit

ACRONYMS AND ABBREVIATIONS (continued)

TRV	Toxicity reference value
UCL	Upper confidence level
UCLM	Upper confidence limit of the mean
UECA	Uniform Environmental Covenants Act
USACE	U.S. Army Corps of Engineers
UU/UE	Unlimited use/unrestricted exposure

1. INTRODUCTION

1.1 PURPOSE OF PROPOSED PLAN

This Proposed Plan (PP) provides information necessary to allow the public to participate with the Defense Logistics Agency (DLA) and U.S. Army Corps of Engineers (USACE), in the remedy selection process at sites specified as "Action Sites" at the Former Curtis Bay Ordnance Depot (Depot) located in Anne Arundel County, Maryland. Action sites at the Depot include Environmental Concern (EC) sites EC-21, EC-28, EC-32, EC-36, EC-52, EC-57B, and Decision Units (DUs) DU 1 (sampling unit [SU]12, SU15, SU18, SU24, and SU37), DU 2 (SU03, SU06, SU07, SU08, SU11, SU12, SU14, and SU15), and DU 3 (EC-57D, SU01, SU02, SU03, SU04, SU06, SU07, SU08, SU09, and SU10) (**Figure 1**). This action is being conducted in consultation with the State of Maryland, which is being represented by the Maryland Department of the Environment (MDE), the lead regulatory agency.

This PP summarizes the information in previous investigations, and the additional documents available in the Administrative Record. The public is encouraged to review these documents to understand the environmental activities conducted to date at the Depot. Comments on this PP will be documented in the Record of Decision (ROD) for the Depot, which will set forth the final remedial actions chosen.

1.1.1 Purposes of this Proposed Plan

In 2021/2022, individual Remedial Investigations (RIs)/Feasibility Studies (FSs) were prepared for the Depot EC sites by EA Engineering, Science, and Technology, Inc., PBC (EA) and DU sites by ERT, Inc. (ERT).

This PP identifies the Preferred Alternative to reduce risks from soil to human health and the environment in the Depot. This PP also summarizes the historical uses of the Depot, the constituents of concern (COCs) historically detected in surface soil, the data objectives of the RI and subsequent non-time critical removal action, the remedial alternatives considered in both Depot Feasibility Studies, and the justification for these initial recommendations in the PP.

General Services Administration (GSA) currently owns the former Depot, approximately 435 acres, and plans to transfer this property. The Department of Defense delegated to the DLA the responsibility for completing the environmental investigations and remedial actions associated with the former defense-related operations and activities onsite. DLA, with the support of USACE Baltimore and Munition Design Center of Excellence, is completing the former defense-related environmental efforts onsite. These remedial efforts are being conducted in consultation with the MDE, the lead regulatory agency, as well as GSA, the property owner. MDE concurs with the Preferred Alternative as necessary to protect human health, welfare, and the environment from actual or threatened releases of hazardous substances into the environment. However, final acceptance of the PP is reserved until the public comment period ends.

The DLA and USACE are issuing this PP as part of the public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, 42 U.S. Code § 9617(a), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) at 40 Code of Federal Regulations (CFR) 300.430(f)(2). The public is encouraged to review and comment on this PP.

An electronic copy of this PP and relevant documents that support the selection of the preferred alternative are available for review online at: https://www.dla.mil/Installation-Management/Environmental-documents/.

For convenience, these documents are available to the public at:

Brooklyn Park Library
1 East 11th Avenue
Baltimore, Maryland 21225

or

Maryland Department of the Environment (MDE)
1800 Washington Boulevard
Baltimore, Maryland 21230

The Administrative Record is maintained at:

Defense Logistics Agency
8725 John J. Kingman Road
Fort Belvoir, VA 22060-6221

For administrative records access, contact either the DLA Restoration Division Chief or DLA Public Affairs Office.

A 30-day public comment period will be held from May 20 through June 18, 2026.

The public comment period will include a public meeting during which the DLA, USACE, and MDE will present information and answer questions related to the site. The public meeting will be held on May 20, 2026 at 6 p.m. Please email DLAEnvPC@dla.mil for information on how to participate via computer or phone. Comments may also be submitted online through June 18, 2026 via email at DLAEnvPC@dla.mil.

Based on new information that becomes available or public comments, the DLA and USACE, in consultation with MDE, may modify the preferred alternative for the site outlined within this PP. Therefore, the public is encouraged to review and comment on all alternatives for the site that are discussed in this document.

Dates to Remember

Public Comment Period:	May 20 through June 18, 2026. The DLA and USACE will accept written comments on the Proposed Plan via email at DLAEnvPC@dla.mil.
Public Meeting:	May 20, 2026 at 6 p.m. The DLA, USACE, and MDE will hold a public meeting to explain the Proposed Plan and to answer questions. Oral and written comments will also be accepted at the meeting. Registration and access instructions for the public meeting are available via the DLA link below: https://www.dla.mil/Installation-Management/Environmental-documents/ OR Please email DLAEnvPC@dla.mil for information on how to participate via computer or phone.

2. SITE BACKGROUND

The Depot is located at 710 East Ordnance Road, Baltimore, in Anne Arundel County, Maryland, approximately 1 mile southeast of Baltimore City. The Depot is bordered to the north by the Baltimore Beltway (Interstate 695) and East Ordnance Road, to the south by Furnace Creek, to the east by Curtis Creek and Stahl Point Road, and to the west by Back Creek (**Figure 1**) (EA 2021).

GSA currently owns approximately 435 acres associated with the Depot. This acreage represents the remaining portion of the original 789-acre (later expanded to 815 acres) U.S. Army Depot established in 1918. The 435-acre area where continued Department of Defense storage activities occurred (and current remediation is taking place) is separate from the 316-acre Formerly Used Defense Site (FUDS)-eligible portion of the Depot that was transferred to various entities between 1958-1982.

Operational in 1920-1950s, past Depot uses included receiving, shipping, storage, maintenance, and demilitarization of munitions from domestic and overseas supplies (the Depot was a portion of the property formerly known as the U.S. Army Ordnance Depot). In 1952, GSA delegated a new strategic and critical materials stockpile program to its own newly established Emergency Procurement Service. A portion of the Depot was set aside for the storage of strategic and critical materials by the Emergency Procurement Service. In 1958, storage activities at the Depot were placed on inactive status, apart from strategic and critical materials activities; the property was renamed the Curtis Bay Ordnance Depot.

During this time, the 435-acre Depot property, which included critical materials storage areas, was transferred to the GSA as excess property. In 1992, the Defense Logistics Agency (DLA) established the Defense National Stockpile Center (DNSC) to manage the stockpile program after DLA was assigned responsibility over the program. DNSC ceased active stockpile operations at the site in 2005, and all stockpiles were removed from the Depot. Currently, there are no DLA activities occurring at the Depot.

2.1 HISTORY OF SITE INVESTIGATIONS

The DLA was the most recent user of the property and oversees investigation and remediation of the property. Numerous site investigations have occurred at the Depot, including those in **Table 1**, for varying environmental concerns that can be found in greater detail in the Final Remedial Investigation Report (EA 2021) and other documents contained in the Administrative Record file for this site.

Table 1. Historical Site Investigations for the Depot

Focused Site Investigation (FSI) – 2000
Expanded Site Investigation (ESI) – 2003
Focused Remedial Investigation (FRI) – 2005
Final Environmental Survey and Analysis Report (ESAR) – 2011
Remedial Investigation for MMRP and IRP EC Sites – 2021
Site-wide Remedial Investigation for Arsenic and Manganese (DUs) – 2021

2.1.1 Remedial Investigation/Feasibility Study for EC Sites

As part of the RI evaluation, it was determined that further evaluation was needed based on the distribution and locations of arsenic and/or manganese contaminated soil in the EC sites. RI sampling was conducted (including at EC-3, -16 [-16A, -16B, -16C, -16D], -21, -22, -27, -28, -29, -30, -31, -32, -33, -34, -35, -36, -39, -50, -52, -53, -57B, -57C, -57D, -58B, and -58C) to evaluate compounds that could potentially pose unacceptable human health and/or ecological risks in surface soil, subsurface soil, surface water, or sediment across the facility.

Military Munitions Response Program (MMRP) EC sites were investigated for both munitions and explosives of concern hazards, and munitions constituents contamination; while the Installation Restoration Program (IRP) EC sites were investigated for Hazardous and Toxic Waste contamination. The MMRP and IRP EC Sites RI Report (EA 2021) provides methodology and results of the RI investigations and findings for the IRP and MMRP EC sites listed above. The RI Report includes Human Health Risk Assessments (HHRAs) and Screening Level Ecological Risk Assessments (SLERAs) for the EC sites. Six EC sites were recommended for evaluation in an FS to address the remaining human health and ecological risks from soils; groundwater was no further action. The HHRA identified three sites, EC-21, EC-32, and EC-57B, where an unacceptable risk to human health was found in soil due to the presence of polycyclic aromatic hydrocarbons (PAHs) and/or manganese. In addition, the SLERA identified unacceptable ecological risk at EC-28, EC-36, EC-57B, and EC-57D (now included in the site-wide DU 3) due to lead, PAHs, and zinc (**Table 2**). From the RI, "Due to the multiple locations for EC-57, ERT reviewed historical records and concluded that EC-57 is three separate areas; EC-57B, EC-57C, and EC-57D. Research indicated that EC-57A is not an EC…" (EA 2021). Therefore, EC-57A was dropped from the program. Additionally, from the RI, it was concluded that EC-58 is comprised of two separate subareas, EC-58B and EC-58C (research indicated that EC-58A was not an EC); only EC-58B corresponds to the location presented in the ESP (USACE 2012) and ESAR (EA 2011). Locations of EC sites are shown on **Figure 1**.

Table 2. MMRP and Installation Restoration Program EC Sites Included in this Proposed Plan

MMRP EC Sites
EC-21: Landfill/"Open Dump" and Barricade 645
EC-52: Disturbed Areas at End of G-Line Road
EC-57B: Building 1022 – Brass and Steel Area
EC-57D: Brass and Steel Stockpile Area (now part of DU 3)
IRP EC Sites
EC-28: Building 825 – Post Engineer Shops
EC-32: Building S832 – Post Engineer Lumber Storage
EC-36: Building 515 – Incinerator Plant

An FS was then completed for the EC sites with human health and ecological risks (EA 2022). The FS included remedial action objectives (RAOs), preliminary remedial goals (PRGs), and evaluations of four remedial alternatives to meet the RAOs. The alternatives were evaluated using the NCP criteria, including protection of human health and the environment, compliance with regulations, short-term and long-term effectiveness, implementability, and cost.

2.1.2 Remedial Investigation/Feasibility Study for Site-Wide Arsenic and Manganese in Soil

A second, site-wide RI was conducted to address identified site-wide arsenic and manganese concentrations in soil at the facility; also referred to as the RI/FS for the Decision Units (DUs). Incremental sampling was conducted; and a SLERA and HHRA were completed for three DUs encompassing the Depot (ERT 2021). The total investigation area for arsenic and manganese in soil is approximately 425 acres. DU 1 consists of approximately 411.1 acres, DU 2 approximately 8.6 acres, and DU 3 approximately 5.1 acres. DU 2 consisted of the IRP Shop EC sites (EC-28, EC-31, EC-32, and EC-33 are within this footprint). DU 3 addresses concerns at EC-57D. Groundwater received no further action based on early RI sampling.

Based on the results of the site-wide HHRA, potentially unacceptable risks were identified for: hypothetical future resident child receptor due to manganese in surface and subsurface soil in DU 1; hypothetical future resident child and adult receptors due to arsenic and/or manganese in DU 2; and current and future site workers in DU 3 due to manganese concentrations in surface and subsurface soil combined (ERT 2021). Based on the results of the site-wide SLERA, significant ecological impacts due to arsenic in soils are unlikely; and potentially significant ecological impacts exist at DU 3 from manganese in soil (ERT 2021).

The FS was then completed for site-wide arsenic and manganese (ERT 2022) and included RAOs, PRGs, and evaluations of six remedial alternatives to meet the objectives. For each of the three DUs, the alternatives were also screened against the NCP criteria.

Combining the RI/FS for the EC sites and site-wide arsenic and manganese, the Depot sites of interest were divided into sites requiring action and sites requiring land use control (LUC)[1] only. **Figure 2** presents the DU Action Sites to be addressed in this PP. The total Depot Action Sites include: EC-21, EC-28, EC-32, EC-36, EC-52, EC-57B, DU 1, DU 2, and DU 3.

The focus of this PP is all investigated sites which have been identified as containing human health or ecological hazards in either of the RIs. Sites anticipated to require LUC only, which have been specified as "LUC Sites" in the Performance Work Statement, will be the focus of a separate PP. In

1. Maryland has adopted the Uniform Environmental Covenants Act (UECA). Therefore, MDE requires an Environmental Covenant as the instrument used to convey environmental requirements to future property owners. State and local governments have clear rights to enforce the land use controls. GSA (as the current property owner) is responsible for implementation of the environmental covenants. If ownership of the property is transferred, then the responsibility for maintaining the covenant would also transfer.

addition to the LUC-only sites, the remainder of the Depot (except sites EC-25 and EC-49 that are investigated under a separate RI that is currently in progress) is subject to LUC.

2.2 SITE CHARACTERISTICS

The Depot's current features consist of warehouses in various stages of disrepair, concrete pads where warehouses and other buildings once stood, a network of paved and gravel roads, numerous revetments, railroad tracks, and vacated railroad beds. The dock area of Curtis Creek (east of the Depot) is owned and controlled by the U.S. Army Reserve; however, access to the dock area is via existing Depot roads. The property is zoned for "W2 – Industrial Light" (Anne Arundel County 2019) use and the future land use is expected to remain industrial.

The ecological site characteristics of the Depot indicate altered habitat and lack of native vegetation. The Depot has been filled, drained, graded, and otherwise altered to the point that there are few natural areas remaining. All areas of the Depot have been altered to varying degrees by management practices and by mission-related maintenance activities within the past 80 years. Outside the Depot boundary but within the 0.5-mile radius of the site, most of the land area is of mixed use (residential, industrial, commercial) and open water.

Shallow groundwater depths at the Depot range from 1.71 feet (ft) below ground surface (bgs) (southern areas) to 62.82 ft bgs (northern areas) (EA 2011).

Table 3 provides the estimated plan area (square foot [ft^2]) and volume (cubic yard [CY]) of impacted soil at each EC site based on comparison of the PRGs to existing site data, site/topographic constraints, as outlined in the FS (EA 2022). The total CY to be excavated in the EC sites is approximately 2,922 CY. **Figures 3** through **8** present visualizations of the areal extent of impact at the EC sites.

Table 3. Summary of Estimated Areas/Volumes of Impact for EC Sites

EC Site	Contaminant of Concern in Soil	Maximum Depth of Impact (ft)	Estimated Area of Impact[(1)] (ft^2)	Estimated Volume of Impact[(1)] (CY)	Driver
Military Munitions Response Sites					
EC-21 (Figure 3)	Lead	0.5	107,100	1981.5	human health, ecological
	PAH				
	Propellant	0.25	34,300	318.5	plant growth
EC-52 (Figure 4)	Propellant	0.25	29,800	274.1	plant growth
EC-57B (Figure 5)	Zinc	0.5	9,800	181.5	ecological
Installation Restoration Program Sites					
EC-28 (Figure 6)	Lead	0.5	190	3.5	ecological
EC-32 (Figure 7)	PAH	0.5	6,200	114.8	human health
EC-36 (Figure 8)	Lead	0.5	2,700	48.1	ecological
Total				**2,922**	

Note 1. Estimated areas/volumes of impact are based upon existing site data, site/topographic constraints, and best engineering judgement.

For an excavation remedial alternative, "hot spot" soil removals at the DUs would be conducted up to 2 ft bgs in the DU SUs with identified risks. Hot spots are defined as SUs with manganese concentrations that result in a DU-wide 95 percent (%) upper confidence level (UCL) greater than the PRG. ProUCL was used to determine the DU-wide 95% UCL by removing the maximum manganese concentration at each sampling interval until the PRG was achieved. ProUCL is the U.S. Environmental Protection Agency (EPA) statistical software package for analysis of environmental data sets. **Table 4** provides the estimated volume (CY) of impacted soil at each DU to be excavated based on comparison of the 95% UCL above PRGs to existing site data, site/topographic constraints, and best engineering judgement (ERT 2022). **Figures 9** through **11** present visualizations of the extent of impact at the DUs.

Table 4. Summary of Estimated Areas/Volumes of Impact for Site-Wide DU Sites

DU	Constituent of Concern in Soil	Maximum Depth of Impact (ft)	Estimated Volume of Impact[1] (CY)
DU 1 (Figure 9)	Manganese	1.0	5,833
	Manganese	2.0	
DU 2 (Figure 10)	Arsenic, Manganese	1.0	8,870
	Arsenic, Manganese	2.0	
DU 3 (Figure 11)	Arsenic, Manganese	1.0	9,680
	Arsenic, Manganese	2.0	
Total			**24,383**

Note 1. Estimated areas/volumes of impact are based upon existing site data, site/topographic constraints, and best engineering judgement.

2.3 SUMMARY OF SITE RISKS

Two RIs and two FSs were prepared for the Depot EC sites and the site-wide (DUs) arsenic and manganese in soil, respectively. The RIs identified the types, quantities, and locations of contaminants and the associated risk; then the individual FSs developed alternatives to address the unacceptable risk identified in the RIs. Risk assessments were performed on sites that contain measurable levels of COCs in environmental media. Risks to human health and the environment can be estimated using concentrations of COCs. Soil, sediment, and surface water data were evaluated during the HHRAs and SLERAs.

The primary purpose of the SLERA is to compare concentrations of site-related constituents to ecological screening values and to conduct a risk characterization. Based on the extent of potential ecological risk, additional work may be required at a site. For ecological receptors, surface soil exposures, as well as potential exposures to surface water and sediment, were evaluated in the EC SLERAs. Although the Depot will likely be used for industrial purposes based on current zoning, a SLERA was also performed in accordance with EPA guidance for each site DU. A complete description of the methodology used in conducting the SLERAs can be found in the RI reports (ERT 2021; EA 2021).

2.3.1 Site Risks for EC Sites

Information about identified COCs for MMRP Sites EC-21, EC-52, and EC-57B; and IRP Sites EC-28, EC-32, and EC-36 are discussed below. Locations of EC sites included in this PP are shown on **Figure 1** (EA 2022).

EC-21 Landfill/"Open Dump" and Barricade 645 (Shell Burning Pit) (MMRP Site)

EC-21 is located on the western side of the Depot, along the banks of Back Creek. Residual propellant grains remain in the top 3 inches (in.) of soil in the southern portion of EC-21. The presence of nitrates in the propellant has impacted soils through elevated nitrogen, thereby inhibiting plant growth.

The RI also identified lead and PAHs in soil as COCs at EC-21. Based on the Incremental Sampling Methodology (ISM) sample results, the HHRA determined that the incremental cancer risk level for the current site worker exceeds the acceptable level specified by MDE (1×10^{-5}). There may be potential risk concerns for trespassers intermittently contacting the EC based upon these results. The noncancer hazard indices (HIs) do not exceed the acceptable level of one for both the current site worker and future construction worker in discrete and ISM samples. EC-21 sampling results did not show widespread lead concentrations; however, the two highest detected concentrations of lead were significantly higher than both the commercial and industrial land use soil screening criteria (EPA 2024). Lead "hot spots" are a potential human health concern. However, the average lead concentration in discrete surface soil, surface soil/subsurface soil, and the average ISM lead concentration is less than the MDE soil screening level for commercial and industrial land use. In addition, the HHRA identified potential unacceptable incremental cancer risk, as specified by MDE criteria ($1x10^{-5}$), for the site

worker from PAHs in surface soil (based upon incremental sampling results). Further action for lead and PAHs in surface soil is required for the protection of human health in EC-21.

The EC-21 SLERA found no analytes were retained as Contaminant of Potential Ecological Concern (COPEC) due to risk to site-wide populations of ecological receptors. However, for several analytes, high concentrations detected in three to five of the surface soil sample locations were greater than toxicity reference values (TRVs) for plants, soil invertebrates, and omnivorous birds as well as background concentrations. These samples may contribute risk to ecological receptors. EC-21 COPECs include antimony, copper, lead, manganese, and 2,4-dinitrotoluene.

EC-52 Disturbed Areas at the End of G-Line Road (MMRP Site)

EC-52 is located on the western side of the Depot, along the banks of Back Creek. Residual propellant grains remain in the top 3 in. of soil in the western portion of EC-52. Soil sampling indicated that this material poses no chemical or explosive hazard to the site. However, the presence of nitrates in the propellant has impacted soils through elevated nitrogen, thereby inhibiting plant growth (USACE 2020). The SLERA found no potential unacceptable ecological risk at EC-52.

EC-57B Building 1022 – Brass and Steel Area (MMRP Site)

EC-57B is a warehouse (Building 1022) located in the southeastern corner of the Depot, along the banks of Furnace Creek. The SLERA found potential unacceptable ecological risks due to manganese and zinc. Manganese was evaluated in a site-wide (DU) arsenic and manganese investigation and the SLERA found that ecological impacts were not likely due to manganese (ERT 2021). Further action for surface soil is required to protect ecological receptors at EC-57B due to zinc.

EC-28 Building 825 – Post Engineer Shops (IRP Site)

EC-28 is in the northeastern portion of the Depot and is associated with Building 825. Lead was detected in four surface soil samples collected at the site. As part of the SLERA, the risk characterization for birds indicated that the estimated dose exceeds the Lowest Observed Adverse Effect Level-based TRV. The SLERA found potential unacceptable ecological risks due to arsenic and lead for at least one ecological receptor. Arsenic was evaluated in a site-wide (DU) investigation and the SLERA found that ecological impacts were not likely due to arsenic in the DU associated with EC-28 (ERT 2021). However, further action for soil is required to protect ecological receptors due to lead at EC-28.

EC-32 Building S832 – Post Engineer Lumber Storage (IRP Site)

EC-32 is in the northeastern portion of the Depot and is associated with Building S832. Results for four PAH compounds were greater than the project screening levels and indicative that a release had occurred. Based on the HHRA, there are potential noncancer hazards for the construction worker due to benzo(a)pyrene; and the acceptable incremental cancer risk level is not exceeded for the construction worker at EC-32. However, incremental cancer risks for the site worker were greater than the MDE acceptable level (1×10^{-5}). The primary contributor to the unacceptable risk was PAHs. Trespassers may also potentially face unacceptable risk from intermittent access to surface soil in this EC. The SLERA found no potential unacceptable ecological risk. Further action for PAHs in soil is required to protect human health at EC-32.

EC-36 Building 515 – Incinerator Plant (IRP Site)

EC-36 is in the northern portion of the Depot and is associated with Building 515. RI results included elevated lead concentrations indicative that a release to surface soil had occurred from the incinerator activities. The HHRA concluded that there were no unacceptable human health risks. Based on the comparison of maximum and 95% upper confidence limit of the mean (95UCLM) concentrations and estimated doses to TRVs protective of ecological receptors and to Background Threshold Values, lead is retained as a COPEC for plants and birds. No COPECs were identified for soil invertebrates or mammals. The SLERA concluded further action for soil is recommended to protect ecological receptors at EC-36 due to lead.

2.3.2 Site Risks for Site-Wide Arsenic and Manganese in Soil

Arsenic and manganese exceeded the project screening level in numerous locations around the Depot and was investigated during the site-wide RI as DUs (ERT 2021). Therefore, individual EC sites with an arsenic exceedance (EC-28, EC-36, and EC-52) were not evaluated in the HHRAs in the EC RI, except for EC-32 soil. Similarly, arsenic was not evaluated in an HHRA for EC-57D due to its evaluation in a site-wide investigation as DU 3 (ERT 2021). A complete description of the methodology used in conducting the HHRAs can be found in the RI reports (ERT 2021; EA 2021).

An HHRA for three DUs was completed encompassing the Curtis Bay Depot (ERT 2021). A summary of the RI conclusions and recommendations to mitigate potential risks to human health and/or the environment that remain within the Depot is presented for each DU below (Section 2.3.2). Locations of DUs are shown on **Figure 2** (ERT 2022). The DUs are further divided into A and B for surface soil and subsurface soil samples, respectively (such as DU 1A are surface soil samples in the DU Number 1).

DU 1
Within DU 1A/B, 59 of 829 possible SUs were randomly selected for sampling (using a statistical software called Visual Sample Plan version 7.12). Subsurface soil was collected from the 1-2 ft bgs interval. Manganese was the only COC for which human health risks were identified in DU 1 with eight SU samples in the surface (DU 1A) and five SU samples in the subsurface (DU 1B) soil being greater than the PRG.

Under the assumption that the percentage of all possible DU 1 SUs where manganese concentrations are greater than the PRG, equals the percentage of SUs sampled where manganese concentrations are greater than the PRG, then 116 SUs in the surface and 66 SUs in the subsurface soil within DU 1 are impacted by manganese. This is equal to approximately 58 acres in the surface soil and 33 acres in the subsurface soil.

Based on the results of the HHRA, potential risks to human health (hypothetical future resident child receptor) in select SUs due to manganese contamination in surface (DU 1A) and subsurface (DU 1B) soil exist in DU 1. The SLERA concluded that ecological impacts were unlikely (ERT 2022). Further action is warranted to address the manganese impacts to DU 1 soil.

DU 2
During the RI, every possible SU within DU 2A/B (18 SUs at each interval) was sampled. Arsenic and manganese were identified as COCs for which human health risks were identified with 11 SU (5.5 acres) sampling results greater than the PRG for arsenic and/or manganese in the surface (DU 2A) and/or subsurface (DU 2B) soil. Subsurface soil was collected from the 1-2 ft bgs interval. Based on the results of the HHRA, potential risks to human health (hypothetical future resident child and adult receptors) due to arsenic and/or manganese contamination in surface (DU 2A) and subsurface (DU 2B) soil exist in DU 2. The SLERA concluded that ecological impacts were unlikely (ERT 2022). The SLERA found that no analytes are retained as COPECs at EC-31 (now part of DU 2). Further action is warranted to address the arsenic and/or manganese impacts to soil at DU 2.

DU 3
During the RI, every possible SU within DU 3 A/B (10 SUs at each interval) was sampled. Arsenic and manganese were identified as COCs for which human health risks were identified with eight SU (4 acres) sampling results greater than the PRG for arsenic and/or manganese in the surface (DU 3A) and/or subsurface (DU 3B) soil. Subsurface soil was collected from the 1-2 ft bgs interval.

Based on the results of the HHRA and SLERA, potential risks to human health (all evaluated human receptors) and/or the environment due to arsenic and/or manganese contamination in surface (DU 3A) and subsurface (DU 3B) soil exist in DU 3. Unacceptable noncancer hazards were identified for site and construction workers at DU 3 from manganese. The SLERA concluded that ecological impacts due to manganese concentrations in soil were likely; manganese is the ecological COPEC in DU 3 soil. Further action is warranted to address the manganese impacts to soil at DU 3.

2.4 SCOPE AND ROLE OF THE RESPONSE ACTION

This PP presents the Preferred Alternative to address the potential risks posed by contaminants present in surface and subsurface soil within the Depot. The purpose of the remedial actions for soil is to prevent unacceptable risks to future hypothetical residential human receptors and ecological receptors. In conjunction with previous Action Sites characterization efforts, the results of sampling efforts performed in support of the HHRA and SLERA reports prepared for the Depot were used to determine appropriate response actions.

As discussed further in this PP, the Preferred Alternative for the Depot Action Sites is EC Alternative 4 and site-wide (DU) arsenic and manganese in soil Alternative 3 (both include Soil Excavation and Site-Wide LUCs). The Preferred Alternative is protective of human health and the environment and is effective in the long- and short-term.

3. REMEDIAL ACTION OBJECTIVES

RAOs provide goals for protecting human health and the environment and are established based on media-specific contaminants.

3.1 REMEDIAL ACTION OBJECTIVES FOR EC SITES

Potential unacceptable human health and/or ecological risk from exposure to soil has been identified at five of the six EC sites included in this PP (EC-21, EC-57B, EC-28, EC-32, and EC-36). In addition, at EC-21 and EC-52, residual propellant grains in surface soil have been identified to cause erosion due to inhibition of plant growth. Therefore, RAOs were developed to address the potential future risk to certain human and ecological receptors from exposure to soil and to address potential erosion of soil (EA 2022).

The RAOs identified to be appropriate for the EC sites at the Depot are as follows:

- EC-21: Reduce direct contact exposure to surface soil (to concentrations less than or equal to the contaminant-specific PRGs), such that cumulative cancer risk for site workers and trespassers is less than 1×10^{-5}, or noncarcinogenic adverse health effects are reduced to less than an HQ of 1, for each of the target COCs (lead, PAHs). Minimize future erosion of surface soil by mitigating the impact of propellant grains, which inhibit plant growth.

- EC-28: Prevent future potential ecological exposure (birds) to lead by reducing surface soil concentrations to less than or equal to the ecological lead PRG.

- EC-32: Reduce direct contact exposure to PAHs in surface soil for site workers and trespassers at the site, to concentrations that are less than or equal to contaminant-specific PRGs such that cumulative cancer risk is less than 1×10^{-5} or noncarcinogenic adverse health effects are reduced to less than an HQ of 1 for each of the target COCs.

- EC-36: Prevent future potential ecological exposure (plants, birds) to lead by reducing surface soil concentrations to less than or equal to the ecological lead PRG.

- EC-52: Minimize future erosion of surface soil by mitigating the impact of propellant grains, which inhibit plant growth.

- EC-57B: Prevent future potential ecological exposure (plants, soil invertebrates, and birds) to zinc by reducing surface soil concentrations to less than or equal to the zinc PRG.

PRGs are contaminant concentration levels that are established to meet RAOs that are developed during the remedial alternative analysis in the FS. Specifically, PRGs are developed to comply with Applicable or Relevant and Appropriate Requirements (ARARs) or to be considered guidance, be protective of human receptors from adverse health effects, and be protective of the environment. **Table 5** presents the PRGs for soil that were developed to address the RAOs for the EC

areas. PRGs will be used until they are refined into final contaminant-specific cleanup levels that will be selected in the ROD. Remediation Goals will be established in the ROD to meet RAOs. **Table 6** presents the PRGs for specific PAH COCs in soil in EC sites developed for each receptor found to be at potential unacceptable risk.

Table 5. Summary of Preliminary Remediation Goals for the EC Sites

EC Area	COC in Soil	Preliminary Remediation Goal
EC-21	Lead	1,050 mg/kg[1]
	PAH	Variable[2]
	Propellant	Visible Impact (3 in. removal)[3]
EC-52	Propellant	Visible Impact (3 in. removal)
EC-57B	Zinc	395 mg/kg
EC-28	Lead	124 mg/kg
EC-32	PAH	Variable[2]
EC-36	Lead	124 mg/kg

Notes:
1. Lead PRG based upon MDE Lead Soil Screening Update Effective 1 July 2020; Fact Sheet dated May 2020.
2. Table 6 shows proposed PRG values for individual PAHs.
3. The basis of the PRG for propellant (removal to depth of 3 in. and then confirmed visually) is field observation made by USACE that was documented in the May 2020 Memorandum (USACE 2020). Aerial photos of the two EC sites were used to approximate the extent of propellant impacts.
mg/kg = Milligram(s) per kilogram

Table 6. Preliminary Remediation Goals for PAHs for the EC Sites

Contaminant of Concern	Preliminary Remediation Goal (mg/kg)[1]	Receptor	Risk Level
Benz(a)anthracene	20.6	Site Worker	Cancer risk = 10^{-6}
Benzo(a)pyrene	2.1	Site Worker	Cancer risk = 10^{-6}
Benzo(b)fluoranthene	21.1	Site Worker	Cancer risk = 10^{-6}
Dibenz(a,h)anthracene	2.1	Site Worker	Cancer risk = 10^{-6}
Indeno(1,2,3-c,d)pyrene	21.1	Site Worker	Cancer risk = 10^{-6}

Notes:
1. PAH PRGs were developed in the FS (EA 2022) for the EC sites.

3.2 REMEDIAL ACTION OBJECTIVES FOR SITE-WIDE ARSENIC AND MANGANESE IN SOIL

The RAO for the Depot is to prevent direct contact (ingestion and/or dermal contact) with COCs in surface and subsurface soil that cause an unacceptable risk to an exposed human or ecological receptor.

Based on the COCs, constituents of ecological concern, affected media, exposure pathways, and the preliminary remediation goals, the Depot RAOs for arsenic and manganese in soil include:

- Prevent direct contact with arsenic and/or manganese contaminated soil having a noncarcinogenic HI greater than 1.
- Prevent direct contact with arsenic and/or manganese contaminated soil having a carcinogenic risk greater than 1×10^{-5}.
- Reduce ecological risks to no more than a moderate risk level (HQ less than 10).

PRGs were developed for COCs in total soil based on the RAOs. **Table 7** presents the PRGs for arsenic and manganese in soil for each DU (ERT 2022).

Table 7. Summary of Preliminary Remedial Goals for the Site-Wide DUs

DU	Exposure Point Concentration (mg/kg)	Maximum (mg/kg)	Preliminary Remediation Goal (mg/kg)[1]
DU 1			
Arsenic	18.6	55.1	18.6
Manganese	6,153	27,700	2,255
DU 2			
Arsenic	55.6	137.1	18.7
Manganese	2,764	7,010	2,169
DU 3			
Arsenic	24.5	108.1	18.8
Manganese	29,584	48,800	2,227

Notes:
1. DU soil PRGs are for human health and were developed in the FS (ERT 2022).

4. SUMMARY OF REMEDIAL ALTERNATIVES

4.1 ALTERNATIVES FOR EC SITES

This section describes the remedial alternatives that were developed in the FS for the EC sites (EA 2022). The alternatives were screened against effectiveness, implementability, and cost. Alternative 1 was retained as a baseline for all EC sites. Four remedial alternatives for EC sites were retained for evaluation to undergo the more thorough and detailed analysis against the CERCLA nine criteria to meet the RAOs by preventing future exposure to potential contaminants in soil:

- Alternative 1 – No Action
- Alternative 2 – Site-Wide LUCs
- Alternative 3 – RCRA Cap within EC Sites and Site-Wide LUCs
- Alternative 4 – Soil Excavation within EC Sites and Site-Wide LUCs

4.1.1 EC Alternative 1: No Action

Pursuant to Section 300.430(e)(3)(ii)(6) of the revised NCP, the "No Action" alternative is developed to provide a baseline against which the other remedial alternatives are to be compared. The No Action alternative includes no remedial actions or institutional controls. No additional monitoring or maintenance would be conducted. In accordance with CERCLA Section 121(c) and EPA guidance, Five-Year Reviews (FYRs) would be conducted by USACE because COCs would remain in soil at concentrations exceeding PRGs.

Estimated Capital Cost: $0-0.1 Million[2]
Estimated Time to Achieve RAOs: Will not achieve RAOs

4.1.2 EC Alternative 2: Site-Wide LUCs

This alternative would consist of the implementation of a site-wide (for the entire Depot parcel) LUC (such as an environmental covenant) to restrict land uses that would include children and adolescents (i.e., schools, daycares, camps, playgrounds) without further assessment of potential risk. The fencing around the entire Depot parcel would be maintained as an engineering control, and additional fencing would restrict access to EC sites with unacceptable risk. Informational signage would be placed on the fencing. LUCs would limit future uses to only those compatible with the remedy. FYRs would be required to assess the continued protectiveness of the remedy.

Estimated Capital Cost: $0.5 Million
Estimated Time to Achieve the RAO: Will not achieve RAOs

2. Per EPA guidance (EPA 1988), the present worth cost and capital cost of the No Action alternative is $0, since no action is being taken. However, if the No Action alternative is selected, then Five-Year reviews would be required; the estimated cost is included for the Five-Year Reviews.

4.1.3 EC Alternative 3: RCRA Cap within EC Sites and Site-Wide LUCs

This alternative would involve placement of a Resource Conservation and Recovery Act (RCRA) Subtitle C cap over both soil with metal or PAH concentrations exceeding PRGs and soil with propellant grains containing elevated nitrogen. Capping involves placing a cover over contaminated material. Installation of a cap would restrict the potential for contact with soil in the contaminated EC sites and limit mobilization of contaminants from the soil. The cap would likely consist of (in order of base-to-surface) a 2-in. geosynthetic clay liner, a 60-mil high-density polyethylene membrane, a 12-in. thick sand drainage layer, an 18-in. layer of soil, and a 6-in. layer of topsoil.

This alternative also includes implementation of a site-wide LUC (like that in Alternative 2). The caps constructed at the EC sites would require long-term maintenance, including control of tree and plant growth on/around the cap. The site existing fencing would be maintained, and LUCs would include restrictions to protect the integrity of the caps and restrict future uses to those compatible with the remedy. The site-wide LUCs would remain in place; FYRs would be required to assess the continued protectiveness of the remedy.

Estimated Capital Cost: $2.1 Million
Estimated Time to Achieve the RAO: 6 months

4.1.4 EC Alternative 4: Soil Excavation within EC Sites and Site-Wide LUCs

This alternative includes the excavation and off-site disposal of soil from the EC sites with metals and PAH concentrations exceeding the PRGs, as well as soil containing propellant grains associated with elevated nitrogen. It also includes implementation of a site-wide LUC (like that in Alternative 2). The estimated volumes of soil to be excavated at each EC are presented in **Table 3**; the total CY to be excavated in the EC sites is approximately 2,922 CY. The depth of excavation is estimated to be approximately 0.5-ft for EC-21, EC-57B, EC-28, and EC-36. At areas within EC-21 and EC-52 where propellant grains are present, the estimated excavated depth is 0.25-ft.

Following soil excavation at each EC, confirmation soil sampling would be conducted to document PRGs have been met. In propellant grain areas, visual confirmation would be used and photo documentation would be taken to confirm removal of the soil volume containing concentrated propellant. Excavated soil would be disposed off-site at an appropriate facility permitted or licensed to accept the characterized waste stream. Excavated areas would be backfilled with clean topsoil to pre-existing site topography and reseeded with native grass. The site-wide LUCs would remain in place; FYRs would be required to assess the continued protectiveness of the remedy.

Estimated Capital Cost: $1.5 Million
Estimated Time to Achieve the RAO: 4 months

4.2 ALTERNATIVES FOR SITE-WIDE ARSENIC AND MANGANESE IN SOIL

This section describes the remedial alternatives that were developed in the FS for three site-wide DUs at the Depot (ERT 2022). The alternatives were screened against effectiveness, implementability, and cost. Each of these alternatives were evaluated for each of the three DUs at the Depot. Alternative 1 was retained as a baseline for all three DUs. Four remedial alternatives for DUs were retained for evaluation to undergo the more thorough and detailed analysis against the CERCLA nine criteria to meet the RAOs by preventing future exposure to potential contaminants in soil:

- Alternative 1 – No Action (DU 1, DU 2, and DU 3)
- Alternative 2 – LUCs (DU 1 and DU 2)
- Alternative 3 – Partial Soil Removal with LUCs (DU 1, DU 2, and DU 3)
- Alternative 5 – Capping (DU 3)

4.2.1 DU Alternative 1: No Action

Pursuant to Section 300.430(e)(6) of the NCP, the no-action alternative is developed to provide a baseline against, which the other remedial alternatives are to be compared. The No Action alternative would involve leaving the subject areas in their current condition. Under this alternative, no remedial action will be taken, and any potential contaminants are left "as is," without the

implementation of any containment, removal, treatment, or other protective actions. This alternative would leave arsenic and manganese concentrations in place, without further environmental management or remedial action. In accordance with CERCLA Section 121(c) and EPA guidance, FYRs would be conducted by USACE because COCs would remain in soil at concentrations exceeding PRGs.

Estimated Capital Cost: $0-0.1 Million[2]
Estimated Time to Achieve RAOs: Will not achieve RAOs

4.2.2 DU Alternative 2: LUCs

For DU 1 as well as DU 2, Alternative 2 may include environmental covenants (a UECA agreement) to limit access to the DU. This alternative would consist of the implementation of a site-wide LUC (such as an environmental covenant) to restrict land uses that would include children and adolescents (i.e., schools, daycares, camps, playgrounds) without further assessment of potential risk. LUCs, administrative and physical, can include signage, security fencing, environmental covenants, and/or education to limit access. Alternative 2 will include an environmental covenant for the Depot that conveys when the property is sold to restrict land use to industrial purposes. A LUC Implementation Plan will be developed, and FYRs would be required to assess the continued protectiveness of the remedy.

Estimated Capital Cost: $1.4 Million
Estimated Time to Achieve the RAO: 30 years of Operation and Maintenance (O&M)

4.2.3 DU Alternative 3: Partial Soil Removal and LUCs

DU Alternative 3 includes implementation of a site-wide LUC (like that in Alternative 2). However, LUCs alone will not mitigate the risks to human and ecological receptors. Therefore, Alternative 3 includes partial removal of manganese contaminated soil by excavation to mitigate the risks to human and ecological receptors and LUCs to mitigate risks to human receptors. FYRs would be required to assess the continued protectiveness of the remedy.

Alternative 3 entails conducting "hot spot" soil removals up to 2 ft bgs in SUs with identified risks. Hot spots are defined as SUs with manganese concentrations that result in a DU-wide 95% UCL greater than the PRG. The estimated volumes of soil to be excavated at each DU are presented in **Table 4**. The estimated volumes of soil to be excavated for Alternative 3 includes a total excavation of 24,383 CY from the DUs. **Figures 9** through **11** show the locations and excavation depths for the DU 1 through DU 3 SUs, respectively. Because the DU SUs were selected using statistical methods (as opposed to sampling 100% of the SUs), additional areas may be present within the DU where contaminant concentrations are greater than the PRG. Additional delineation sampling will be conducted to verify that the DU-wide 95% UCL contaminant concentration was less than the PRG.

Following the excavation, confirmation sampling will be conducted. Additional soil sampling and analysis will be completed to verify that the concentrations of contaminants in the DUs soil result in a DU-wide 95% UCL that is less than the PRG; and to properly profile and dispose of the waste stream as either RCRA hazardous (Subtitle C) or RCRA non-hazardous (Subtitle D).

Estimated Capital Cost: $6.8 Million
Estimated Time to Achieve the RAO: The time to meet the remedial objectives would be short. 30 years of O&M.

4.2.4 DU Alternative 5: Capping and LUCs

For DU 3, Alternative 5 includes capping of soil to mitigate risks to ecological receptors and LUCs to mitigate risks to human receptors (like that in Alternative 2). FYRs would be required to assess the continued protectiveness of the remedy.

Estimated Capital Cost: $4.2 Million
Estimated Time to Achieve the RAO: Implementation would be short. 30 years of O&M

5. EVALUATION OF REMEDIAL ALTERNATIVES

In evaluating remedial alternatives, the potential performance of each alternative is evaluated in terms of the evaluation criteria required by the NCP at 40 CFR 300.430(e)(9)(iii), an explanation of which is included in **Table 8**. The nine criteria are categorized into three categories: threshold criteria, primary balancing criteria, and modifying criteria. The alternative selected must satisfy the threshold criteria, which are of primary importance. The primary balancing criteria are used to weigh the major trade-offs among the alternatives, and the modifying criteria are considered after the public has commented on the PP. The two FS Reports provide more detailed comparative analyses.

Table 8. Explanation of Evaluation Criteria for Superfund Remedial Alternatives

Threshold Criteria
Overall Protection of Human Health and the Environment refers to whether a remedy provides adequate protection against harmful effects. It calls for consideration of how human health or environmental risks are eliminated, reduced, or controlled through treatment, engineering controls, or land use controls.
Compliance with ARARs addresses whether a remedy meets all the applicable or relevant and appropriate requirements of federal and state environmental statutes.
Primary Balancing Criteria
Long-Term Effectiveness and Permanence refers to the magnitude of residual risk and the ability of a remedy to maintain reliable protection of human health and the environment after cleanup goals have been meet.
Reduction of Toxicity, Mobility, or Volume through Treatment refers to the effectiveness of the treatment technologies to reduce the toxicity, mobility, or volume of contaminants.
Short-Term Effectiveness refers to the speed with which the remedy achieves protection and to the remedy's potential, during construction and implementation, to have adverse effects on human health and the environment.
Implementability refers to the technical and administrative feasibility of a remedy, including the availability of required materials and services.
Cost includes capital expenditures and operation and maintenance costs. Present worth cost is the total cost of an alternative over time in terms of today's dollar value.
Modifying Criteria
State Acceptance indicates whether the State concurs with, opposes, or has no comment on the preferred alternative based on its review of the feasibility study report(s) and PP, and any public comments received on the PP.
Community Acceptance considers whether the local community agrees with MDE's analyses and preferred alternative. Community Acceptance is documented in the ROD following a review of public comments on the PP.

5.1 EVALUATION OF ALTERNATIVES FOR EC SITES

5.1.1 Threshold Criteria

Overall Protection of Human Health and the Environment

EC Alternatives 3 and 4 provide protection for human health and the environment, through either capping or excavating soil that presents potential risk, and through LUCs to restrict site use. Alternatives 1 and 2 do not meet this threshold criterion, as they would not address potential exposure to impacted soil.

Compliance with Applicable or Relevant and Appropriate Requirements

EC Alternatives 3 and 4 would be implemented in compliance with applicable chemical-specific, location-specific, and action-specific ARARs. Alternatives 1 and 2 do not meet this threshold criterion, as they would not comply with chemical-specific or location-specific ARARs.

5.1.2 Primary Balancing Criteria

Long-Term Effectiveness and Permanence

EC Alternatives 3 and 4 would meet RAOs. Alternative 4 would provide the greatest long-term effectiveness and permanence because soil containing contaminants exceeding the PRG or containing propellant grains would be removed from the site. Alternative 3 would also provide long-term effectiveness and permanence, with residual risk minimized via cap maintenance. LUCs would minimize the likelihood of exposure to soil remaining at levels unacceptable for unlimited use/unrestricted exposure (UU/UE). EC Alternatives 1 and 2 would not meet RAOs and would not be effective in the long term.

Reduction in Toxicity, Mobility, and Volume through Treatment
EC Alternatives 1, 2, 3, and 4 do not provide any reduction of toxicity, mobility, or volume through treatment, because none of the alternatives include treatment. However, Alternative 4 would provide the greatest reduction of toxicity, mobility, and volume of contaminated soil on-site, by removing it from the site. EC Alternative 3 would reduce contaminant mobility through capping.

Short-Term Effectiveness
Potential risk to workers and the environment during implementation of Alternative 3 or 4 would be addressed using engineering controls, the use of personal protective equipment, and observance of Occupational Safety and Health Administration guidelines. Anticipated short-term risk under either of these alternatives is minor. The estimated time for implementation is approximately 6 months for Alternative 3 and approximately 4 months for Alternative 4. Alternatives 1 and 2 have no short-term effectiveness.

Implementability
The implementability of Alternatives 2, 3, and 4 is considered high, as required equipment and personnel are readily available. Alternative 1 has no construction or operation involved, however, would likely not be implementable due to inability to obtain regulatory approval for a No Action alternative.

Cost
The estimated cost of EC Alternative 2 ($0.5 million) is lower than Alternative 4 ($1.5 million), which is lower than the estimated cost of Alternative 3 ($2.1 million). No costs are associated with Alternative 1 (other than Five-Year Reviews).

Modifying Criteria
The modifying criteria (i.e., state acceptance and community acceptance) will be addressed in the ROD after public comments on the PP have been received and responses have been prepared.

MDE supports the preferred remedial alternative as necessary to protect human health and the environment adequately and cost-effectively. The comparative analysis of the remedial alternatives for the EC sites is summarized in **Table 9**.

Table 9. Comparative Analysis Summary of EC Site Remedial Alternatives

Criteria	Alternative 1 No Action	Alternative 2 Land Use Controls	Alternative 3 RCRA Cap and Land Use Controls	Alternative 4 Soil Excavation and Land Use Controls
Overall Protection of Human Health and the Environment	○	○	•	•
Compliance with ARARs	○	○	•	•
Long-Term Effectiveness and Permanence	○	◊	•	•
Reduction of Toxicity, Mobility, or Volume Through Treatment	○	○	○	◊
Short-Term Effectiveness	NA	◊	•	•
Implementability	◊	•	•	•
Total Cost (30-year present worth) **	$0-$81,000*	$528,000	$2,116,000	$1,473,000
State Acceptance				Yes
Community Acceptance	**	**	**	**

Notes:
* = The No Action alternative is included as a baseline for comparison with other alternatives. The present worth cost and capital cost of the No Action alternative is $0; however, if selected, costs will be incurred for Five-Year Reviews.
** = To be addressed during PP review and ROD preparation.
• = Favorable (Yes for threshold criteria)
◊ = Moderately Favorable (Partially meets threshold criteria)
○ = Not Favorable (No for threshold criteria)
NA = Not applicable

5.2 EVALUATION OF SITE-WIDE ALTERNATIVES FOR ARSENIC AND MANGANESE IN SOIL

5.2.1 Threshold Criteria

Overall Protection of Human Health and the Environment

DU Alternative 1 is not protective of human health and the environment; it is not favorable for the threshold criteria. DU Alternatives 2, 3, and 5 are protective of human health and the environment.

Compliance with Applicable or Relevant and Appropriate Requirements

Location-specific ARARs are related to the protection of the environment and wildlife species. Under DU Alternative 1, since no action will be taken, all location-specific ARARs will be complied with and no action-specific ARARs are triggered; therefore, Alternative 1 complies with ARARs. Alternatives 2, 3, and 5 will comply with the location-specific ARARs.

Because no removals or construction of physical LUCs will be implemented under Alternative 2, action-specific ARARs are not triggered. Under Alternatives 3 and 5, action-specific ARARs would be triggered, and remedial actions would be required to be conducted so that all action-specific ARARs are met. Soil removal and capping are common remedial technology and proper planning of the remedial actions will ensure that the location-specific ARARs are met is implementable. Therefore, Alternatives 3 and 5 will comply with the location-specific ARARs.

5.2.2 Primary Balancing Criteria

Long-Term Effectiveness and Permanence

DU Alternative 1 is not favorable for the long-term effectiveness criterion because it would leave any contaminated soil potentially present in place, and potential risks are not mitigated. Alternative 2 is favorable in providing long-term effectiveness by limiting DU 1 to industrial uses, minimizing human exposure. However, Alternative 2 would leave any (will not remove any) contaminated soil in place, and while the access of receptors to potential risks is reduced, it is not eliminated.

Alternative 3 is favorable in providing long-term effectiveness by limiting DU 1 to industrial uses, minimizing human exposure, and by reducing exposure to ecological receptors. However, Alternative 3 may leave some contaminated soil in place, and while the access of receptors to potential risks is reduced, it is not eliminated.

Alternative 5 is moderately favorable in providing long-term effectiveness by limiting DU 3 to industrial uses, minimizing human exposure, and by reducing exposure to ecological receptors. Alternative 5 will leave contaminated soil in place, and while the access of receptors to potential risks is reduced, it is not eliminated. The cap would require long-term maintenance and inspections.

Reduction in Toxicity, Mobility, and Volume through Treatment

DU Alternatives 1 and 2 are not favorable in reducing the volume of contaminants at the site because it would leave any contaminated soil in place, without further investigation or removal. Alternative 3 is moderately favorable in reducing the volume of contaminated soil at the site although, it may leave some contaminated soil in place at removal completion (e.g., removal is not to UU/UE conditions). Alternative 5 is not very effective for reduction of toxicity, mobility, and volume through treatment. Contaminated soil will remain at the site with no treatment or reduction of toxicity; however, the cap would reduce the mobility of site contaminants.

Short-Term Effectiveness

DU Alternative 1 is not favorable in meeting the short-term effectiveness criterion because although no time is needed to implement this alternative, soil RAOs will not be met. Alternative 2 is favorable in meeting the short-term effectiveness criterion because no significant work would be performed beyond the implementation of a UECA agreement; and the estimated time to meet the RAOs would be short. Alternative 3 is moderately favorable in meeting this criterion because significant work would be performed to minimize short-term impacts; the estimated time to meet the RAOs would be short. Alternative 5 provides short-term effectiveness as it would not take a long time to implement, and it is a relatively small area; short-term effectiveness is

affected as the environment would be adversely impacted during excavation activities.

Implementability
DU Alternative 1 is favorable in meeting the implementability (technical and administrative feasibility, and availability of materials and services) criterion in that there are no activities proposed. Alternative 1, however, would likely not be implementable due to inability to obtain regulatory approval for a No Action alternative. Overall, Alternatives 2 and 3 are favorable in meeting the implementability (technical feasibility and availability of materials and services) criterion. Alternatives 2 and 3 are technically feasible to implement an UECA agreement. The materials and services to implement these alternatives are readily available. The administrative feasibility is also favorable, as it is anticipated that the DLA and MDE would implement the UECA agreement.

DU Alternative 5 is considered technically and potentially administratively feasible. Technically, this alternative has been implemented at similar sites within the state and all required labor, equipment, and materials are readily available.

Cost
Overall, the total DU alternative costs are lowest for Alternative 2 ($2.7 million) (DU 1 and DU 2 only) than Alternative 3 ($6.8 million) (DU 1, DU 2, and DU 3 total). The cost of Alternative 5 (DU 3 only) would be added to the cost to remediate DU 1 and DU 2, so it is the highest cost alternative (since it costs more than Alternative 3 for DU 3). The present worth cost and capital cost of Alternative 1 is $0; however, if selected, costs will be incurred for Five-Year Reviews.

Modifying Criteria
The modifying criteria (state acceptance and community acceptance) will be addressed in the ROD after public comments on the PP have been received and responses have been prepared.

MDE supports the preferred remedial alternative as necessary to adequately and cost-effectively protect human health and the environment. The comparative analysis of the remedial alternatives for arsenic and manganese in soil is summarized in **Table 10**.

Table 10. Comparative Analysis Summary of Site-Wide Arsenic and Manganese in Soil Remedial Alternatives

Criteria	Alternative 1 No Action	Alternative 2 Land Use Controls (DU 1, DU 2)	Alternative 3 Partial Soil Removal with Land Use Controls	Alternative 5 Capping with Land Use Controls (DU 3 only)
Overall Protection of Human Health and the Environment	○	•	•	•
Compliance with ARARs	○	•	•	•
Long-Term Effectiveness and Permanence	○	•	•	◊
Reduction of Toxicity, Mobility, or Volume Through Treatment	○	○	◊	◊
Short-Term Effectiveness	○	•	◊	◊
Implementability	◊	•	•	•
Total Cost (30-year present worth) **	$0 -$81,000*	**$2,716,000**	**$6,786,000**	**$4,230,000**
State Acceptance			Yes	
Community Acceptance	**	**	**	**

Notes:
* = The No Action alternative is included as a baseline for comparison with other alternatives. The present worth cost and capital cost of the No Action alternative is $0; however, if selected, costs will be incurred for Five-Year Reviews.
** = To be addressed during PP review and ROD preparation.
• = Favorable (Yes for threshold criteria)
◊ = Moderately Favorable (Partially meets threshold criteria)
○ = Not Favorable (No for threshold criteria)

6. PREFERRED ALTERNATIVES SUMMARY

The Preferred Alternatives for the combined Depot Action Sites is EC Alternative 4 (Soil Excavation and LUCs) along with site-wide arsenic and manganese in soil DU Alternative 3 (Partial Soil Excavation and LUCs). Soil Excavation and LUCs is a total Depot estimated cost of $8,259,000. Soil Excavation and LUCs is preferred because it provides protection equivalent to or better than the other alternatives and is cost effective. The Preferred Alternative provides protection for human health and the environment, through excavating soil that presents potential risk, and through LUCs to restrict site use. Soil Excavation and LUCs is effective in both the long- and short-term.

The Preferred Action Sites Alternative would also implement LUCs that would minimize the likelihood of exposure to soil remaining at levels unacceptable for UU/UE.

6.1 SOIL EXCAVATION

This alternative includes the excavation and off-site disposal of soil from the EC sites with metals and PAH concentrations exceeding the PRGs, as well as soil containing propellant grains associated with elevated nitrogen. The maximum depth of excavation is estimated to be approximately 0.5 ft bgs for EC-21, EC-57B, EC-28, and EC-36. At EC-21 and EC-52, where propellant grains are present, the estimated excavated depth is 0.25 ft bgs.

This alternative also includes the excavation and offsite disposal of soil from the DUs with arsenic and manganese concentrations exceeding the PRGs, the maximum concentration areas will be excavated. The maximum depth of excavation is estimated to be approximately 2.0 ft bgs in DU 1, DU 2, and DU 3. Additional soil sampling and analysis will be completed to verify that the concentrations of contaminants in the DUs soil result in a DU-wide 95% UCL that is less than the PRG; and to properly profile and dispose of the waste stream as either

RCRA hazardous (Subtitle C) or RCRA non-hazardous (Subtitle D).

The estimated volumes of soil to be excavated include approximately 2,922 CY from the EC sites and 24,383 CY from the DU Sites. The areas to be excavated in the EC and DU Sites are shown on **Figures 3** through **11**.

6.2 LAND USE CONTROLS

The Preferred Alternative would consist of the implementation of a site-wide LUC (such as an environmental covenant) to restrict land uses that would include children and adolescents (i.e., schools, daycares, camps, playgrounds) without further assessment of potential risk. The fencing around the entire Depot parcel would be maintained as an engineering control, and additional fencing would be required to restrict access to EC and DU Sites with unacceptable risk (under the current industrial scenario). LUCs would restrict future uses to only those compatible with the remedy. FYRs would be required to assess the continued protectiveness of the remedy.

6.3 SUMMARY STATEMENT

The DLA, the responsible agency, has retained the USACE to identify the remedial action. Based on the information currently available, the DLA believes the Preferred Alternative meets the threshold criteria and provides the best balance of trade-offs among the modifying criteria when compared to the other alternative presented. The DLA expects the Preferred Alternative to satisfy the following statutory requirements specified in Section 121(b) of CERCLA (42 U.S. Code § 9621(b)).

- Be protective of human health and environment;
- Comply with ARARs;
- Be cost-effective;
- Use 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 when justified.

Pursuant to Section 121(c) of CERCLA and the NCP at § 300.430(f)(5)(iii)(C), FYRs will be required as long as contaminants remain on the site above levels that allow for UU/UE.

The DLA would be responsible for implementing, maintaining, and enforcing the site-specific LUCs described in this PP. The details of the LUCs to be implemented would be specified in a remedial design document (LUC Implementation Plan). The remedial design would be prepared and submitted. As part of the DLA's inspection and reporting responsibilities, periodic reviews of the restrictions and objectives outlined above would be undertaken.

If GSA transfers a property addressed by this PP, they will need to make sure the receiving owner is aware of the land use controls and is capable of meeting the requirements.

MDE has reviewed the PP and supports the Preferred Alternative identified for Depot Action Sites soil; MDE will give its final concurrence after receipt of, and review of, the comments received during the public comment period. Based on new information that may become available or based on public comments received, the DLA and USACE, in consultation with MDE, may modify the Preferred Alternative outlined in this PP. Thus, the public is encouraged to comment on this plan.

7. COMMUNITY PARTICIPATION

The DLA, USACE, and MDE are soliciting input from the community on each of the proposed alternatives for soil. This comment period includes a hybrid (in-person and virtual) public meeting at which the DLA, USACE, and MDE will present the PP and accept both oral and written comments. The dates for the public comment period, the date, location, and time of the public meeting, and the locations of the Administrative Record files, are provided on the front page of this Proposed Plan. Comments on the PP will be summarized and responded to in the Responsiveness Summary Section of the ROD, which is the document that presents the selected remedy.

Further information is also available from the two RIs (EA 2021; ERT 2021) and the two FSs (EA 2022; ERT 2022) prepared for the Depot, as well as other related documents. These documents are contained within the Administrative Record at the DLA headquarters at Fort Belvoir, Virginia. These documents can be reviewed online at https://www.dla.mil/Installation-Management/Environmental-documents/ and at the Brooklyn Park Library or MDE (addresses provided earlier in this PP).

Written comments must be postmarked no later than the day before the last day of the public comment period.

To send written comments or obtain further information, contact any of the following representatives.

Restoration Division Chief
Environmental Management, DLA Installation Management, Defense Logistics Agency
[redacted] 8725 John J. Kingman Road
Fort Belvoir, Virginia 22060
[redacted]

Contracting Officer's Representative
USACE
2 Hopkins Plaza
Baltimore, Maryland 21201
[redacted]

Remedial Project Manager
Maryland Department of the Environment
Federal Assessment and Remediation Division
1800 Washington Boulevard, [redacted]
Baltimore, Maryland 21230
[redacted]

8. REFERENCES

Anne Arundel County, Maryland. 2019. http://annearundelmd.maps.arcgis.com/apps/webappviewer. Last accessed 18 December 2019.

EA Engineering, Science, and Technology, Inc., PBC (EA). 2011. *Final Environmental Survey and Analysis Report, U.S. Army Ordnance Depot, Curtis Bay Depot, Baltimore, Anne Arundel, Maryland*. November.

———. 2021. *Remedial Investigation Report, Former Curtis Bay Ordnance Depot, Anne Arundel County, Maryland*. February.

———. 2022. *Final Military Munitions Response Program and Installation Restoration Program Feasibility Study*. Former Curtis Bay Ordnance Depot Anne Arundel County, Maryland. May.

EPA. 1988. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA. October.

EPA. 2024. United States Environmental Protection Agency Regional Screening Level (RSL) tables. www.epa.gov/risk/regional-screening-levels-rsls. November.

ERT, Inc. (ERT). 2021. *Revised Final Remedial Investigation Report for Depot-Wide Remedial Investigation/Feasibility Study for Arsenic and Manganese in Soil at the Former Curtis Bay Ordnance Depot, Anne Arundel County, Maryland*. September.

———. 2022. *Final Feasibility Study for Depot-Wide Remedial Investigation/ Feasibility Study for Arsenic and Manganese in Soil at the Former Curtis Bay Ordnance Depot, Anne Arundel County, Maryland*. May.

USACE Baltimore District. 2020. TCLP Sampling at EC21 and EC52, Sites used to Store Bulk Propellants at the Former Curtis Bay Army Depot Memorandum for the Record. 20 May.

9. GLOSSARY OF TERMS

Administrative Record: This is the collection of documents that were referred to or relied upon to support a decision document or enforcement action, including information and reports generated during the site investigations. The administrative record is available for public review.

Applicable or Relevant and Appropriate Requirements (ARARs): Those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable. ARARs are requirements that must be met in the implementation of remedial alternatives unless a waiver is granted.

Carcinogenic Risk: Cancer risks are expressed as numbers reflecting the increased chance that a person will develop cancer if exposed to chemicals or substances. For example, the EPA's acceptable risk range for Superfund sites is 1.0×10^{-6} to 1.0×10^{-4}. This means the probability of an individual contracting cancer as a result of exposure to site-related contamination should not be greater than a 1 in 1,000,000 chance to a 1 in 10,000 chance.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): A federal law that was passed in 1980 that is commonly referred to as the "Superfund Law." 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 or the environment.

Exposure Pathway: Describes the course a chemical or physical agent takes from the source to the exposed individual. Elements of the exposure pathway are: (1) the source of the chemical release, (2) the medium (i.e., soil), (3) a point of contact with the medium, and (4) an exposure route (i.e., ingestion, inhalation) at a contact point.

Feasibility Study (FS): This provides a detailed analysis of remedial alternatives for a site. This analysis supports a risk management decision to select an appropriate remedy.

Five-Year Review (FYR): "FYRs generally are required by CERCLA or program policy when hazardous substances remain on site above levels that permit unlimited use and unrestricted 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. Generally, reviews take place five years following the start of a CERCLA response action, and are repeated every succeeding five years so long as future uses remain restricted. ..."

Hazard Index (HI): The HI provides a measure of the magnitude of the non-carcinogenic hazard posed to an exposed individual by contaminants present at a site. The HI represents the sum of more than one hazard quotient for multiple substances and/or multiple exposure pathways. The HI is calculated separately for chronic, subchronic, and shorter-duration exposures, and only hazard quotients for constituents with the same target organ or effect should be summed to obtain an HI. The potential for effects to exposed individuals increases with the magnitude of the hazard quotient and/or HI.

National Contingency Plan (NCP): The "National Oil and Hazardous Substances Pollution Contingency Plan" are regulations that give the federal government the authority to respond to the problems of abandoned or uncontrolled hazardous waste disposal sites, as well as to certain incidents involving hazardous wastes.

Proposed Plan (PP): This document presents the preferred cleanup alternative and requests public input regarding the remedial alternatives analyzed.

Record of Decision (ROD): The ROD provides the cleanup action or remedy selected for a site, the basis for selecting that remedy, public comments on alternative remedies, responses to comments, and the cost of the remedy.

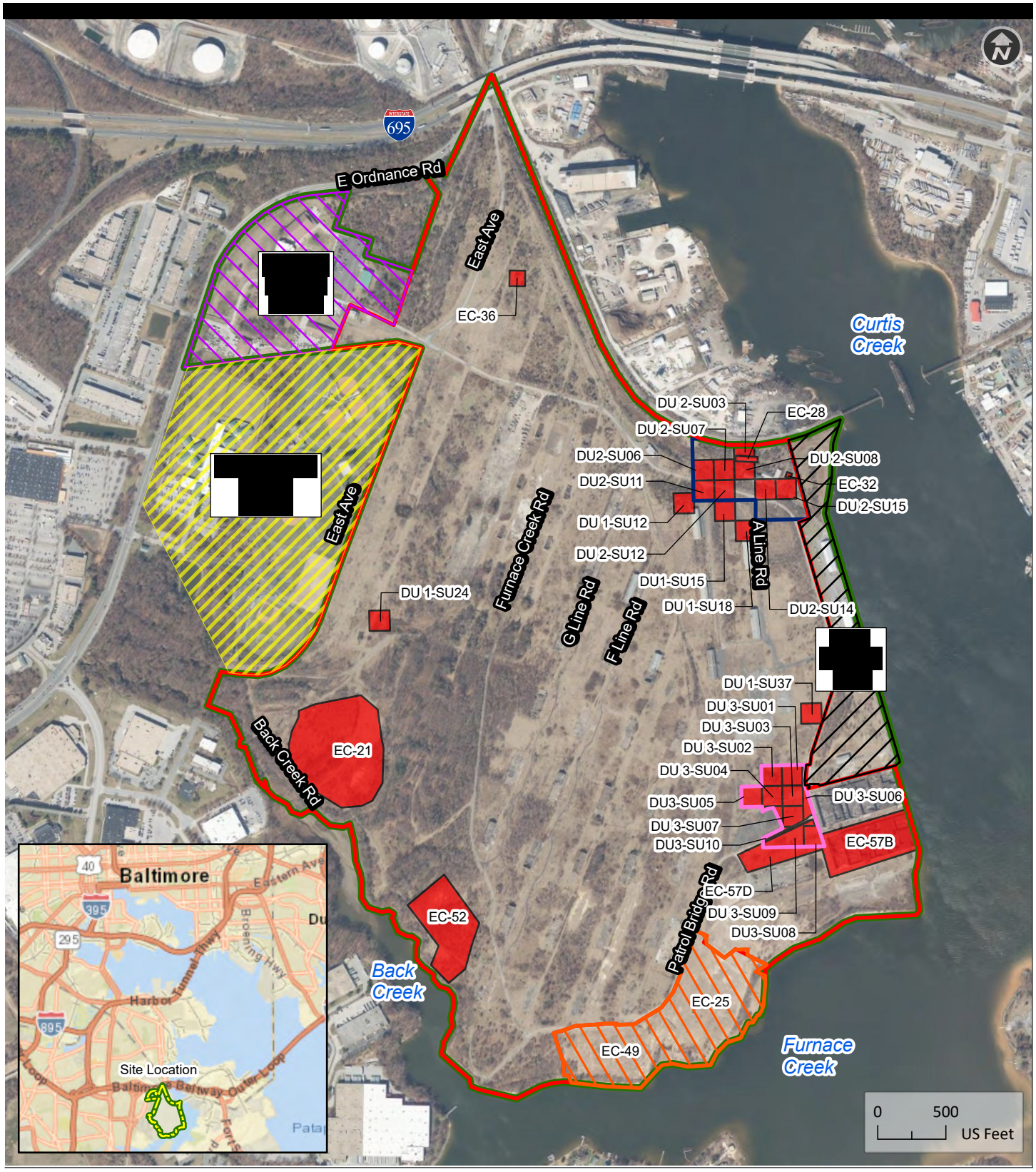
Remedial Action Objectives (RAOs): Medium-specific goals for protecting human health and the environment, which can be achieved by reducing exposure (e.g., limiting access) as well as reducing the level of constituents of concern.

Remedial Investigation (RI): The purpose of an RI is to characterize contamination at a site and to identify sites that may require remedial action.

Resource Conservation and Recovery Act (RCRA): An act, enacted in 1976, which established the first comprehensive federal regulatory program for controlling hazardous waste at active sites. This act also provided grants and technical assistance to the states to help improve their waste management techniques.

Unlimited Use and Unrestricted Exposure (UU/UE): This term denotes the land use condition under which no limitations are required to be placed on the use of any media (e.g., soil) at the site as a result of contaminants present at the site.

Figures



Legend

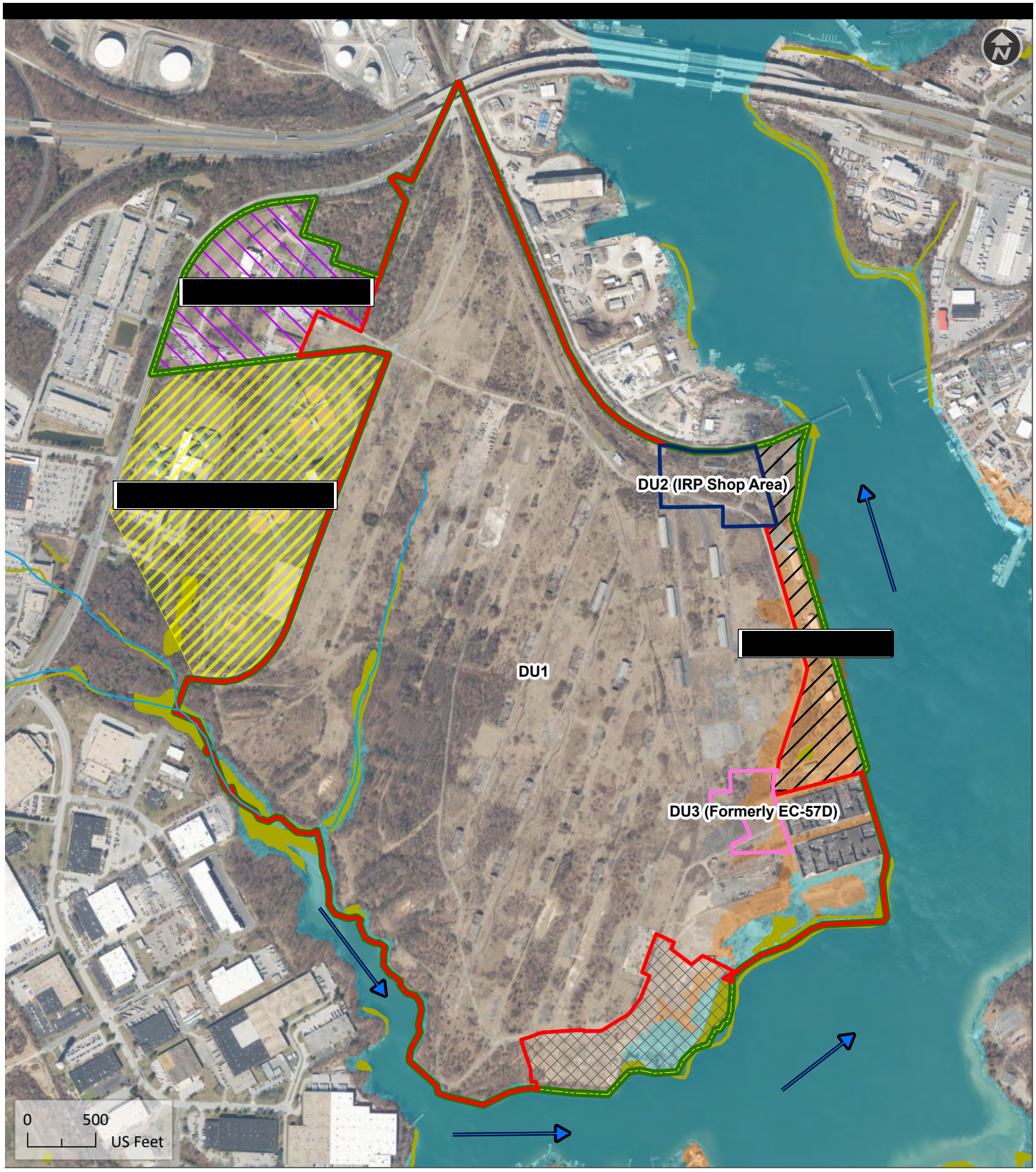
- Action Site
- EC-25 & EC-49 MRS Boundary
- DU 1
- DU 2 (IRP Shop Area)
- DU 3 (Formerly EC-57D)
- [redacted]
- [redacted]
- [redacted]
- Curtis Bay Ordnance Depot Boundary

Former Curtis Bay Ordnance Depot

Baltimore, Maryland

Action Sites

Figure 1



Legend

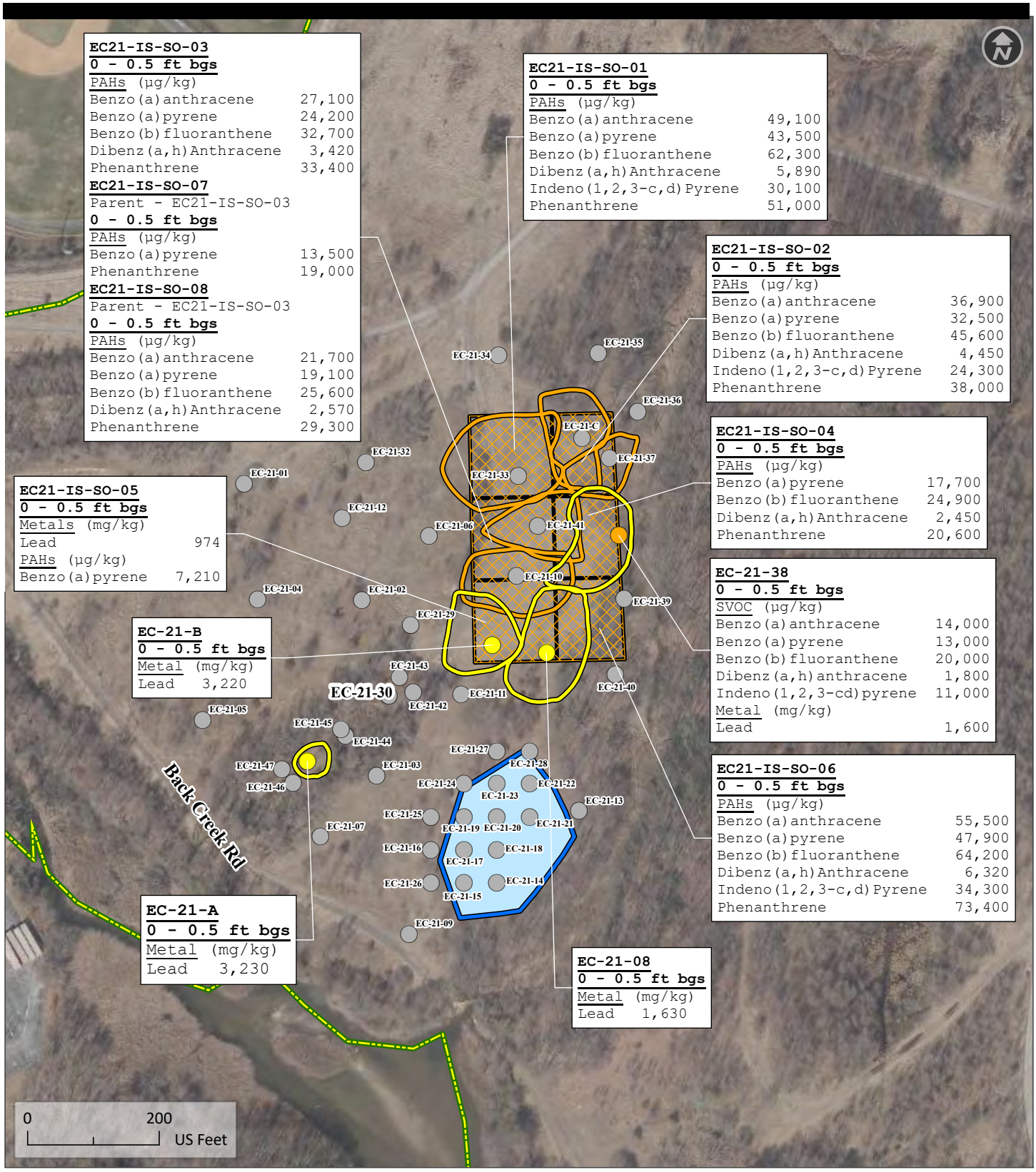
- Flow Direction
- Stream
- DU 1
- DU 2 (IRP Shop Area)
- DU 3 (Formerly EC-57D)
- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Wetland
- NTCRA and RA Area
- [redacted]
- [redacted]
- Curtis Bay Ordnance Depot Boundary
- [redacted]

Former Curtis Bay Ordnance Depot

Baltimore, Maryland

Decision Unit (DU) Sites

Figure 2



Legend

- Lead concentration above 550 mg/kg MDE soil screening level for commercial land use and 1,050 mg/kg for industrial land use
- Discrete sample concentration that exceeds Human Health PRG for PAHs (at least one of the following: benzo(a)anthracene 20,600 ug/kg; benzo(a)pyrene 2,100 ug/kg; benzo(b)fluoranthene 21,100 ug/kg; dibenz(a,h)anthracene 2,100 ug/kg or indeno (1,2,3-c,d)pyrene 21,100 ug/kg for Site Workers
- Discrete sample concentration less than the PRG
- Estimated Lead-Impact Area
- Estimated PAH-Impact Area
- Estimated Propellant-Impact Area, Surface Soil Excavation (0-0.25) ft bgs
- ISM sample concentration that exceeds Human Health PRG for PAHs (at least one of the following: benzo(a)anthracene 20,600 ug/kg; benzo(a)pyrene 2,100 ug/kg; benzo(b)fluoranthene 21,100 ug/kg; dibenz(a,h)anthracene 2,100 ug/kg or indeno (1,2,3-c,d)pyrene 21,100 ug/kg for Site Workers
- ISM Grid
- Curtis Bay Ordnance Depot Boundary

Former Curtis Bay Ordnance Depot

Baltimore, Maryland

Environmental Concern (EC) Area EC-21

Figure 3

Legend

Estimated Propellant-Impact Area

Curtis Bay Ordnance Depot Boundary

Former Curtis Bay Ordnance Depot

Baltimore, Maryland

Environmental Concern (EC) Area EC-52

Figure 4

Legend

- Discrete sample concentration that exceeds the Ecological PRG for Zinc
- Discrete sample concentration less than the Ecological PRG for Zinc
- Estimated Zinc-Impact Area
- Curtis Bay Ordnance Depot Boundary

Former Curtis Bay Ordnance Depot

Baltimore, Maryland

Environmental Concern (EC) Area EC-57

Figure 5

Legend

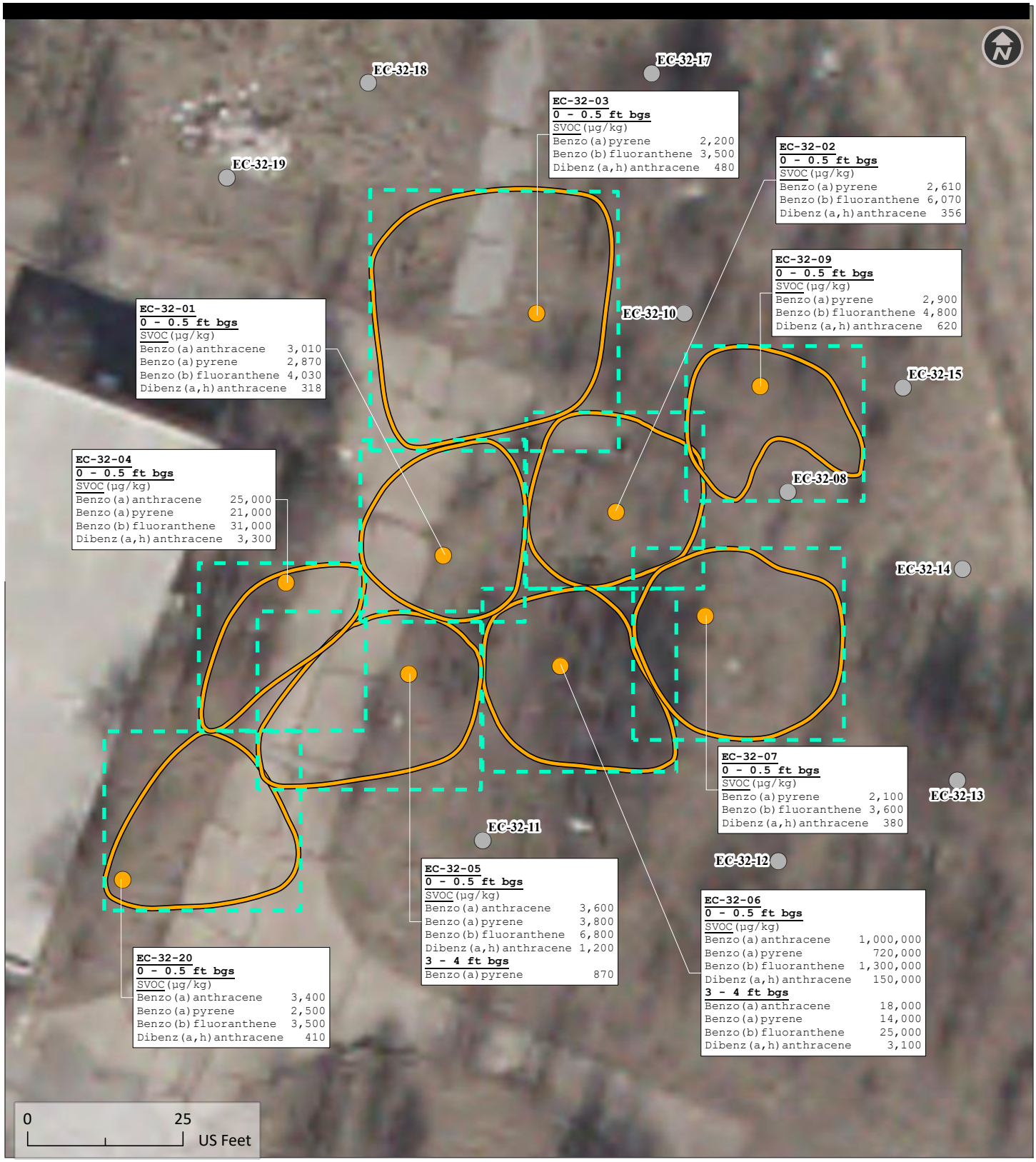
- Discrete sample concentration that exceeds the Ecological PRG for Lead (124 mg/kg)
- Discrete sample concentration less than the Ecological PRG for Lead (124 mg/kg)
- Estimated Lead-Impact Area
- Estimated Lead Excavation Area
- Curtis Bay Ordnance Depot Boundary

Former Curtis Bay Ordnance Depot

Baltimore, Maryland

Environmental Concern (EC) Area EC-28

Figure 6



Legend

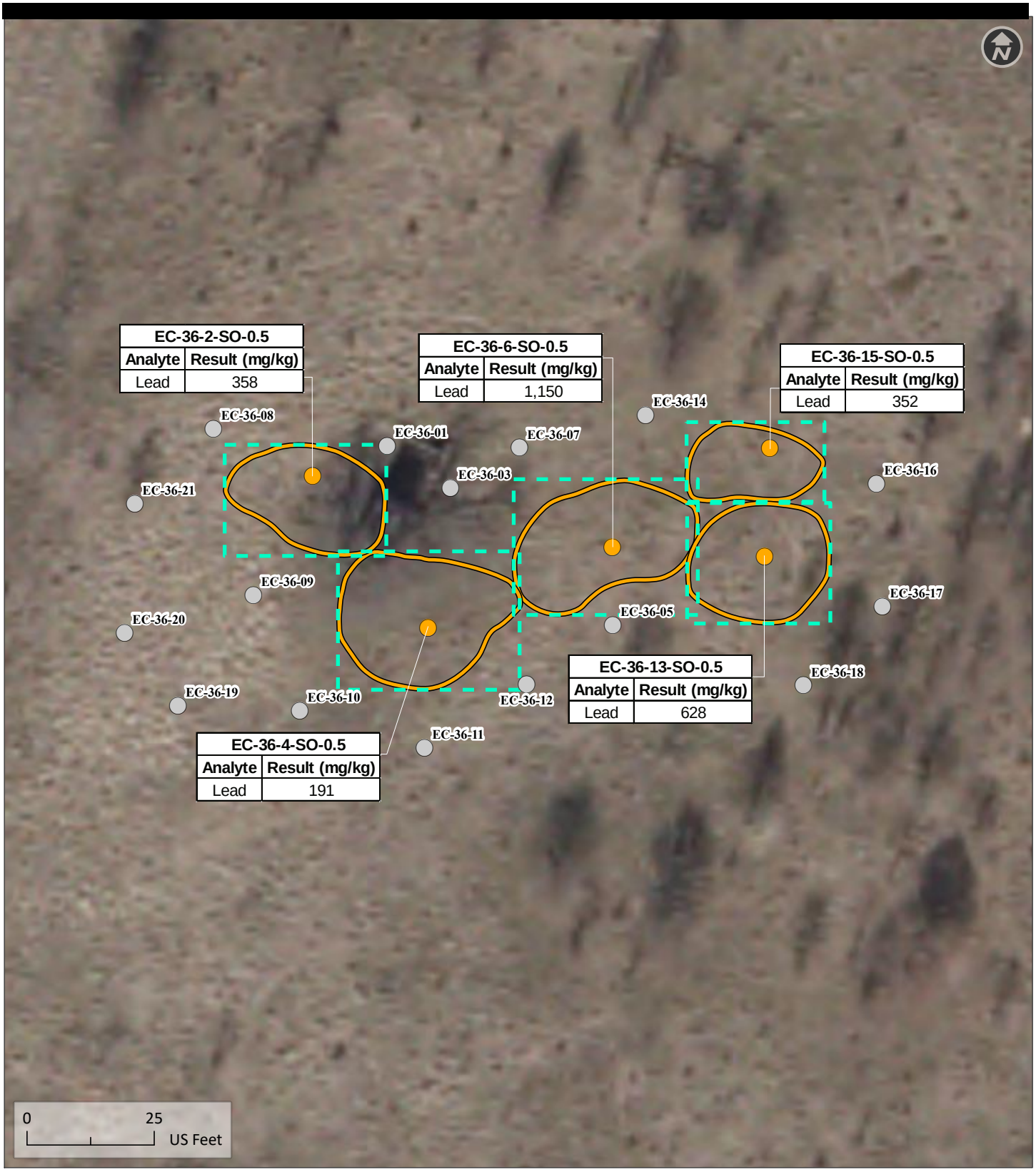
- Discrete sample concentration that exceeds the Human Health PRG for PAHs (at least one of the following: benzo(a)anthracene 20,600 mg/kg; benzo(a)pyrene 2,100 mg/kg; benzo(b)fluoranthene 21,100 mg/kg; dibenz(a,h)anthracene 2,100 mg/kg or indeno(1,2,3-c,d)pyrene 21,100 mg/kg) for Site Workers
- Discrete sample concentration less than the PRG
- Estimated PAH-Impact Area
- Estimated PAH-Impact Excavation Area
- Curtis Bay Ordnance Depot Boundary

Former Curtis Bay Ordnance Depot

Baltimore, Maryland

Environmental Concern (EC) Area EC-32

Figure 7



Legend

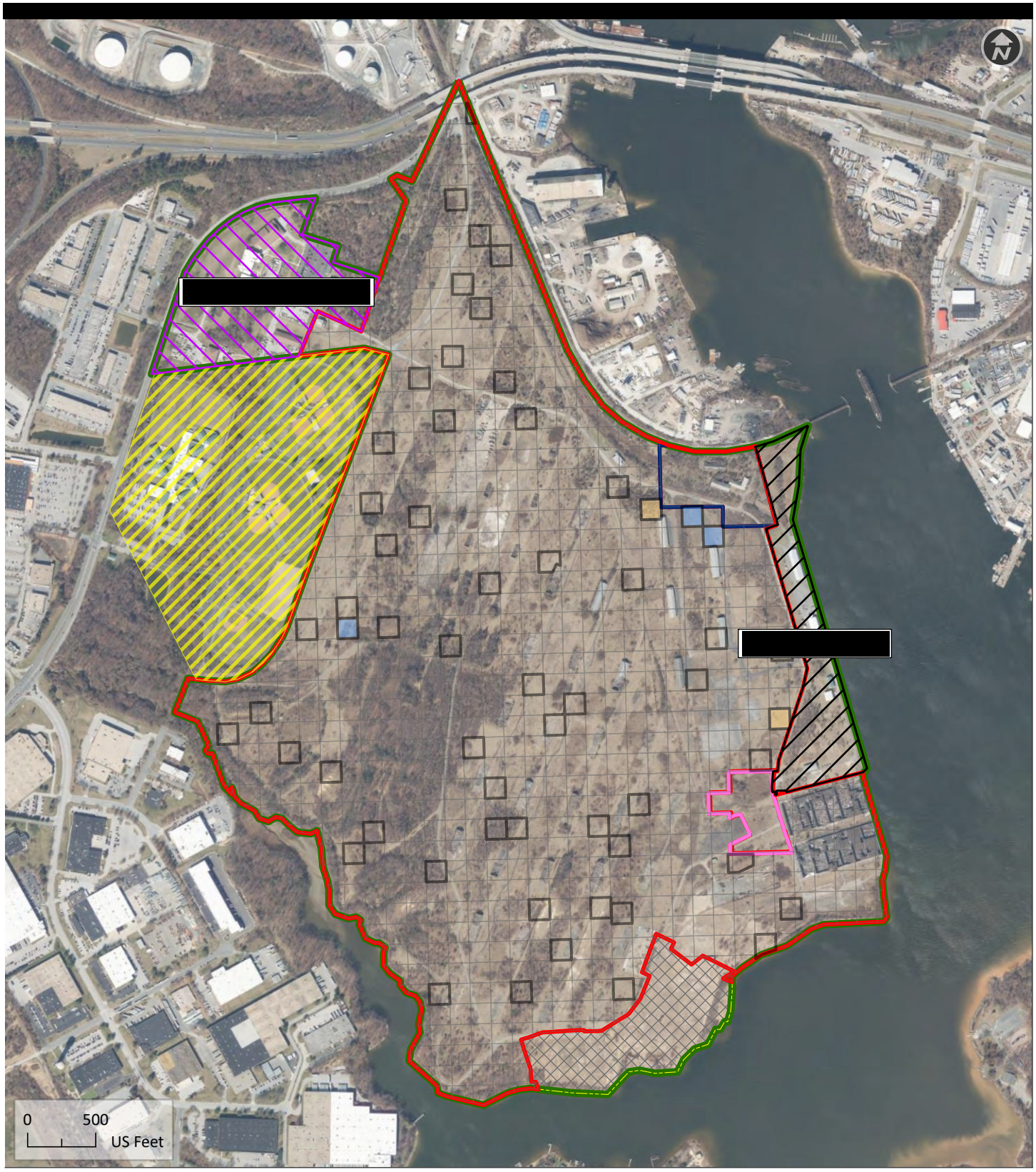
- Discrete sample concentration that exceeds the Ecological PRG for Lead (124 mg/kg)
- Discrete sample concentration less than the Ecological PRG for Lead (124 mg/kg)
- Estimated Lead-Removal Area
- Estimated Lead-Impact Excavation Area
- Curtis Bay Ordnance Depot Boundary

Former Curtis Bay Ordnance Depot

Baltimore, Maryland

Environmental Concern (EC) Area EC-36

Figure 8



Legend

Sampling Units (SUs)

- No Excavation
- Surface Soil Excavation (0-1 ft bgs)
- Surface and Subsurface Soil Excavation (0-2 ft bgs)
- DU 1 Potential SUs (Not Sampled)

Decision Unit (DU)

- DU 1
- DU 2 (IRP Shop Area)
- DU 3 (Formerly EC-57D)
- NTCRA and RA Area
- [redacted]

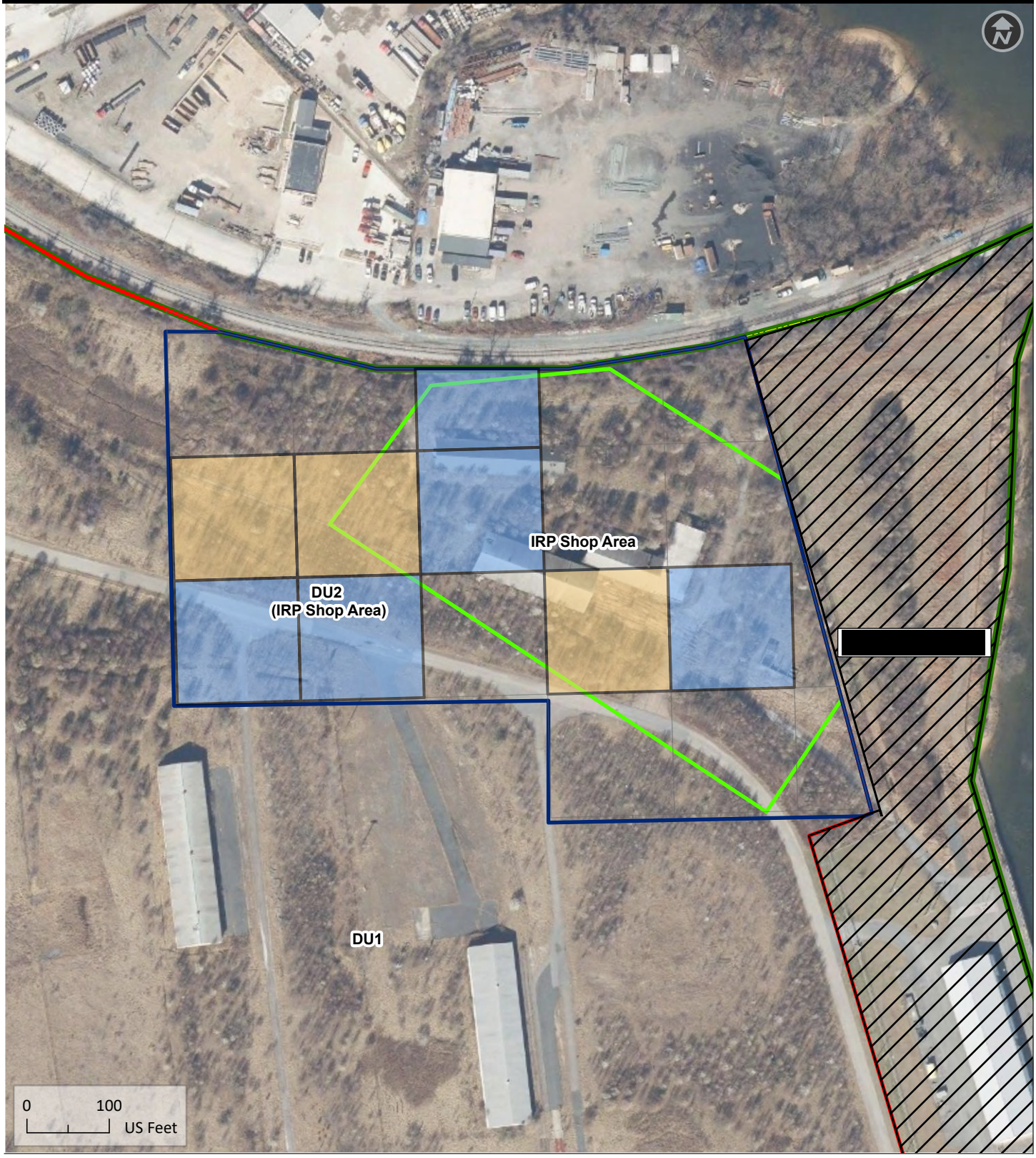
- [redacted]
- Curtis Bay Ordnance Depot Boundary

Former Curtis Bay Ordnance Depot

Baltimore, Maryland

Alternative 3: Partial Soil Removal with LUCs for Decision Unit 1

Figure 9



Legend

Sampling Units (SUs)

- Surface Soil Excavation (0-1 ft bgs)
- Surface and Subsurface Soil Excavation (0-2 ft bgs)
- DU 1 Potential SUs (Not Sampled)

Decision Units (DUs)

- DU 1
- DU 2 (IRP Shop Area)
- EC-57D Boundary
- [redacted]
- Curtis Bay Ordnance Depot Boundary

Former Curtis Bay Ordnance Depot

Baltimore, Maryland

Alternative 3: Partial Soil Removal with LUCs for Decision Unit 2

Figure 10

Legend

Sampling Units (SUs)

- No Excavation
- Surface Soil Excavation (0-1 ft bgs)
- Surface and Subsurface Soil Excavation (0-2 ft bgs)

Decision Units (DUs)

- DU 1
- DU 3 (Formerly EC-57D)
- EC-57D Boundary
- [redacted]
- Curtis Bay Ordnance Depot Boundary

Former Curtis Bay Ordnance Depot

Baltimore, Maryland

Alternative 3: Partial Soil Removal with LUCs for Decision Unit 3 (EC-57D Area)

Figure 11