



**RECORD OF DECISION
FOR SITE 31/101 (PICA 072) SOIL**

**PICATINNY ARSENAL
NEW JERSEY**

FINAL

NOVEMBER 2008

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LIST OF ACRONYMS AND ABBREVIATIONS

AA	Area of Attainment	mg/kg	Milligrams per kilogram
ARAR	Applicable or Relevant and Appropriate Requirement	NAAQS	National Ambient Air Quality Standard
ARDEC	Armament Research Development and Engineering	NCP	National Oil and Hazardous Substances Pollution Contingency Plan
AST	Above-Ground Storage Tank	NJAC	New Jersey Administrative Code
bgs	Below Ground Surface	NJDEP	New Jersey Department of Environmental Protection
BTEX	Benzene, toluene, ethylbenzene, and xylenes	NJPDES	New Jersey Pollutant Discharge Elimination System
CAA	Clean Air Act	NPL	National Priorities List
CEA	Classification Exception Area	NRDCSCC	Non-Residential Direct Contact Soil Cleanup Criteria
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	O&M	Operation and Maintenance
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System	OSWER	Office of Solid Waste and Emergency Response
CFR	Code of Federal Regulations	PAERAB	Picatinny Arsenal Environmental Restoration Advisory Board
cm/sec	centimeter per second	PAH	Polycyclic Aromatic Hydrocarbon
COC	Contaminant of Concern	PCB	Polychlorinated Biphenyl
COPC	Contaminant of Potential Concern	pg/g	pica grams per gram
CWA	Clean Water Act	PP	Proposed Plan
CY	Cubic yards	p,p-DDT	p,p-Dichlorodiphenyltrichloroethane
DA PAM	Department of the Army Pamphlet	PRG	Preliminary Remediation Goal
DNT	Dinitrotoluene	RAO	Remedial Action Objective
DOD	Department of Defense	RBC	Risk-Based Concentration
DOT	Department of Transportation	RCRA	Resource Conservation and Recovery Act
DRMO	Defense Reutilization Marketing Office	RD	Remedial Design
DSERTS	Defense Site Environmental Restoration Tracking System	RDA	Recommended Daily Allowance
EAD	Environmental Affairs Division	RG	Remediation Goal
ecoCOC	Ecological Contaminants of Concern	RI	Remedial Investigation
ELCR	Excess Lifetime Cancer Risk	ROD	Record of Decision
EP	Engineering Pamphlet	RPM	Remedial Project Manager
EPIC	Environmental Photographic Interpretation Center	SARA	Superfund Amendments and Reauthorization Act
EOD	Explosive Ordnance Disposal	SCC	Soil Cleanup Criteria
ERA	Ecological Risk Assessment	SCL	Site Cleanup Level
ER,A	Environmental Restoration, Army	SPLP	Standard Protocol Leaching Procedure
FS	Feasibility Study	SSL	Soil Screening Level
FFS	Focused Feasibility Study	sq/ft	square feet
ft	Feet	STD	Standard
GIS	Geographic Information System	TBC	To Be Considered
GPB	Green Pond Brook	TAPP	Technical Assistance for Public Participation
gpm	Gallons per minute	TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
GSD	Geometric Standard Deviations	TCLP	Toxicity Characteristic Leaching Procedure
HHRA	Human Health Risk Assessment	TEQ	Toxicity Equivalent
HI	Hazard Index	THQ	target hazard quotient
HpCDD	1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin	TM	Technical Manual
HQ	Hazard Quotient	TPH	Total petroleum hydrocarbons
ICFKE	ICF Kaiser Engineers	TSCA	Toxic Substances Control Act
IGW	Impact to Groundwater	ug/L	microgram per liter
IRBC	Industrial Risk-Based Concentrations	USACE	United States Army Corps of Engineers
IRP	Installation Restoration Program	USEPA	United States Environmental Protection Agency
LOC	Level of Concern	USGS	U.S. Geological Survey
LUC	Land Use Control	USTs	Underground Storage Tanks
LUCRD	Land Use Control Remedial Design	WWI	World War I
MEC	Munitions and Explosives of Concern	WWII	World War II
MMRP	Military Munitions Response Program		
msl	Mean Sea Level		

1.0 PART 1: DECLARATION

1.1 SITE NAME AND LOCATION

Picatinny Arsenal is formally designated as U.S. Department of the Army (Army), Installation Management Agency, Northeast Regional Garrison Office. It is located in north central New Jersey (NJ) in Morris County near the city of Dover. The facility was included on the National Priorities List (NPL) in March of 1990 and assigned a Comprehensive Environmental Response, Compensation and Liability Identification System (CERCLIS) number of NJ3210020704.

This Record of Decision (ROD) specifically addresses soil contamination at Site 31/101 (PICA 072), Former Defense Reutilization Marketing Office (DRMO) Yard and Former Gas Station (herein referred to as Site 31/101 [PICA 072]) at Picatinny Arsenal (Picatinny), Rockaway Township, New Jersey (see Figure 1). Groundwater issues at Site 31/101 (PICA 072) are being addressed separately in the decision documents for Mid-Valley Groundwater, and sediment/surface water issues are being addressed as part of Green Pond and Bear Swamp Brooks. Additionally, in the Feasibility Study (FS) for Site 31/101 (PICA 072), a response action recommendation was made for an apparently isolated soil deposit located on the eastern bank of Green Pond Brook (GPB), opposite Building 314 (former DRMO office). This sample location (31GR-S18) and surrounding area will be investigated in the future as a new Installation Restoration Program (IRP) site or as part of the Military Munitions Response Program (MMRP). Munitions and Explosives of Concern (MEC) at Site 31/101 (PICA 072) will be addressed under the MMRP, as PICA-007-R-03. Particularly, due to the discovery of improved conventional munitions during pre-construction delineation sampling, approximately half of an acre within Area of Attainment SS₁ is excluded from this ROD. Improved conventional munitions, or submunitions, present a unique hazard to personnel as they are extremely sensitive. Due to this hazard, the Army is pursuing all required waivers and approvals to address these submunitions at some point in the future. Upon receipt of the necessary approvals, both MEC and coincidental chemical contamination within this half acre area will be addressed under the MMRP. The excluded area is depicted on Figure 8 (Selected Remedial Alternatives for Soil).

Both Site 31 (former DRMO) and Site 101 (former gas station) are located in Area G adjacent to GPB at Picatinny. Site 31 is located along 11th Avenue, south of the intersection of 6th Street and Reilly Road. Site 101, located immediately north of Site 31, encompasses former Building 311 (Gas Station), Building 319 (currently known as Safety, Surety, and Environmental Office), and the paved area to the south of these buildings. Former Building 311 and Building 319 are located between 11th Avenue and GPB, in the northeastern portion of Area G. The location maps of Site 31/101 (PICA 072) are shown on Figure 1.

1.2 STATEMENT OF BASIS AND PURPOSE

This ROD presents the Selected Response Action for Site 31/101 (PICA 072) located at Picatinny Arsenal in Rockaway Township, NJ. The response action is selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and, to the greatest extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The information supporting the decisions on the selected response action is contained in the administrative record file for the site. These decisions have been made by the Army and the U.S. Environmental Protection Agency (USEPA). Comments received from the NJ Department of Environmental Protection (NJDEP) were evaluated and considered in selecting the final response action. NJDEP concurs with the selected response action.

1.3 ASSESSMENT OF THE SITE

The response action selected in this ROD is necessary to protect public health and welfare and the environment from actual or threatened releases of hazardous substances in the environment.

1.4 DESCRIPTION OF THE SELECTED RESPONSE ACTION

The Response Action for Site 31/101 (PICA 072), pursuant to this ROD, is part of a comprehensive environmental investigation and remediation process currently being performed at Picatinny. The

remaining areas in Picatinny are being considered separately and remedies for these areas are presented in separate documents. A site layout map for Picatinny is presented as Figure 1.

The Selected Response Action that has been chosen for Site 31/101 (PICA 072) consists of the following:

- Excavation and off-site disposal of soil with polychlorinated biphenyl (PCB) concentrations greater than 160 milligrams per kilogram (mg/kg);
- Excavation and off-site disposal of hazardous level of lead-contaminated soil adjacent to GPB;
- Installation of an asphalt cap; and
- Implementation of land use controls (LUCs) to ensure protectiveness of the Selected Response Action.

The response action presented in this ROD is intended to eliminate the potential for human or ecological contact with contaminant concentrations that could cause unacceptable risks to human health or the environment at Site 31/101 (PICA 072). The response action will be considered complete upon agreement between the USEPA and U. S. Army.

1.5 STATUTORY DETERMINATIONS

The Selected Response Action is protective of human health and the environment and complies with Federal and State laws and regulations that are applicable or relevant and appropriate requirements (ARARs).

The Selected Response Action does not address Sites 31/101 (PICA 072) through the use of active treatment technologies. As concluded in the Risk Assessment, none of the contaminants that exceeded levels of concern (LOCs) at Sites 31/101 (PICA 072) meet the criteria of principal threat waste under the current and reasonably anticipated future use. In addition, groundwater itself is not a principal threat because it is considered a non-source material. Additionally, the Selected Response Action provides an optimal balance of controlling human health and ecological risks at an acceptable level with minimal intrusive activities and an effective use of funding. Therefore, the Selected Response Action is easier to implement and is much more cost effective than technologies that do utilize treatment.

Because this response action will result in contaminants remaining on site at concentrations greater than levels that allow for unlimited use and unrestricted exposure, five-year reviews will be conducted in compliance with CERCLA and NCP to ensure that the Response Action is and will be protective of human health and the environment.

1.6 DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary (Section 2.0) of this ROD. Additional information can be found in the Administrative Record for this site.

Criterion	Section	Page Number
Contaminants of concern and their respective concentrations	Table 6	NA
Baseline risk represented by the contaminants of concern	2.8.1	2-8
Cleanup levels established for contaminants of concern and the basis for these levels	2.8.4	2-11
How source materials constituting principal threats will be addressed	2.12	2-22
Current and reasonably anticipated future land use assumptions used in baseline risk assessment and ROD	2.7 and 2.8	2-7 and 2-8
Potential land and groundwater use available as a result of the Selected Response Action	2.13.2.1	2-23
Estimated capital, annual operation and maintenance (O&M) and total present worth costs, discount rate, and the number of years over which the response action cost estimates are projected	2.13.3	2-24
Key factors leading to selection of Selected Response Action	2.13.1	2-22

NA – Not Applicable

1.7 AUTHORIZING SIGNATURE

Maria R. Gervais

Colonel Maria R. Gervais
Commander, U.S. Army Environmental Command

5 DEC 08

Date

John Fugio

John Walter E. Mugdan, Director
Emergency and Remedial Response Division
United States Environmental Protection Agency, Region 2

6/9/09

Date

2.0 PART 2: DECISION SUMMARY

2.1 SITE NAME, LOCATION, AND DESCRIPTION

This ROD describes the Selected Response Action at Site 31/101 (PICA 072) located at the Picatinny Arsenal in Rockaway Township, Morris County, New Jersey. Picatinny is a National Priorities List (NPL) site and is registered under the Comprehensive Environmental Compensation, Response, and Liability Information System number NJ3210020704. The Army is the lead agency for CERCLA actions at these sites, and USEPA Region 2 is the support agency with oversight responsibilities. Plans and activities are also being coordinated with appropriate state agencies including NJDEP.

Picatinny Arsenal is a 6,500 acre government-operated munitions research and development facility located in Morris County, New Jersey, approximately 40 miles west of New York City and 4 miles northeast of Dover, New Jersey. The Arsenal sits in the Highlands of the state of New Jersey (Figure 1).

Site 31/101 (PICA 072) is identified in the Defense Site Environmental Restoration Tracking System (DSERTS) as Site Number PICA-072. Site 31/101 (PICA 072) is located in Area G adjacent to GPB. Area G is an area of approximately 40 acres and is located in the central valley of Picatinny, southwest of Picatinny Lake. Area G is bounded by GPB to the east, Area I to the north, Area H to the west, and Area D to the south.

Site 31, the former DRMO yard, is located along 11th Avenue, south of the intersection of 6th Street and Reilly Road. Site 31 is a fenced-in area that currently contains five buildings. While operational, all five of these buildings were associated with the DRMO operation. Currently all five of the buildings are in relatively good condition, and some of the buildings are used for inert storage. Much of the area within the fence line is paved. Some of the pavement is in poor condition.

Site 101, located immediately north of Site 31, encompasses former Building 311 (Gas Station), Building 319 (currently known as Safety, Surety, and Environmental Office), and the paved area to the south of these buildings. Former Building 311 and Building 319 are located between 11th Avenue and GPB, in the northeastern portion of Area G. A map depicting the location of Site 31/101 (PICA 072) is provided on Figure 1.

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

2.2.1 Picatinny Arsenal Background

Picatinny Arsenal was established in 1880 by the U.S. War Department as a storage and powder depot. Later it was expanded to assemble powder charges for cannons and to fill projectiles with maximate (a propellant). During World War I (WWI), Picatinny Arsenal produced all sizes of projectiles. In the years following WWI, Picatinny Arsenal began projectile melt-loading operations and began to manufacture pyrotechnic signals and flares on a production basis. During World War II (WWII), Picatinny Arsenal produced artillery ammunition, bombs, high explosives, pyrotechnics, and other ordnance. After WWII, Picatinny Arsenal's primary role became the research and engineering of new ordnance. However, during the Korean and Vietnam conflicts, Picatinny Arsenal resumed the production and development of explosives, ammunition and mine systems.

In recent years, Picatinny Arsenal's mission has shifted to conducting and managing research development, life-cycle engineering, and support of other military weapons and weapon systems. The facility has responsibility for the research and development of armament items. The Base Realignment and Closure process in 2005 resulted in Picatinny being designated to remain open and take on an expansion in mission.

2.2.2 Site 31/101 (PICA 072) Background

Site 101

Building 311 was built in 1941 and used as a gasoline station until December 1991. The gasoline station consisted of several gasoline pumps and a computer-operated dispensing unit. The gasoline pumps were removed from service in June 1991.

Available documents indicate that at least five underground storage tanks (USTs) were affiliated with Building 311. Two of these tanks were used between 1961 and 1993, when the USTs were officially closed. Documentation of the other three USTs, reportedly used prior to 1961, is not available; although Picatinny interoffice correspondence indicates Tank 18, installed in 1980, replaced an older tank excavated from the same location.

Tank 17 (10,000 gallons), was located northwest of Building 311 and was installed in December 1965. During its operation, Tank 17 was used for the storage of leaded gasoline. In 1989, in accordance with new state and Federal requirements, all USTs at the base over 25 years old were to be closed, upgraded, replaced, and/or monitored. Accordingly, in December 1989, Picatinny stopped using Tank 17. Tank 17 was removed in March 1990. All associated pipelines removed during the excavation, along with the tank, were transferred to the DRMO facility (Site 31) and were disposed of at an approved location off-site by Picatinny.

The second UST, designated as Tank 18, had a capacity of 10,500 gallons and was installed in August 1980. Although this tank was designed to be an aboveground storage tank (AST), it was installed as a UST southwest of Building 311. This tank was not equipped with any monitoring devices or instruments for the measurement of volume. Between 1980 and 1990, Tank 18 was used for storage of unleaded gasoline. After that time, in accordance with the new state and Federal regulations, the Army upgraded Tank 18. After the upgrade, the tank was used for the storage of diesel fuel. The tank was used for this purpose from January 1990 until its closure in December 1993 due to the construction of a new gas station approximately 2,000 feet (ft) away. As a part of the closure activity, the tank was excavated and confirmatory soil samples were collected from the excavated soil. No detectable levels of benzene, toluene, ethylbenzene, and xylenes (BTEX) or total petroleum hydrocarbons (TPH) were present in the soil samples collected during the closure activities.

Constructed in 1909, the original Building 319 was used as a storehouse for sodium nitrate. This building was destroyed in an explosion that destroyed many buildings on Picatinny but was rebuilt in 1926 to its current expanded and modified size. Building 319 (with an area of approximately 5,500 square feet) is constructed of brick (walls and floors) and is built on a concrete foundation. The building has a gable roof covered with corrugated galvanized iron sheets. Building 319 was reportedly utilized in the production of explosives during WWI and WWII and for the storage of gasoline products.

According to Picatinny personnel, the north and south portions of Building 319 were used as a vehicle dispatcher's office and for the storage of automobile tires from the early 1960s until the late 1970s. Picatinny personnel also indicated that, prior to the 1960s, this building might have also been used as a horse stable. Since the late 1980s, Building 319 has been used for administrative purposes.

Site 31

Presently, most of the former DRMO yard area is paved and fenced, but historical records indicate that the DRMO yard was originally a marsh area adjacent to GPB. It is believed that the marsh area was covered with fill material to bring the area up to grade. It is suspected that building debris from the 1926 explosion was used as fill material to cover the marshlands. This fill material is littered with metallic debris including ordnance-related items such as discarded casings.

Until July 1998, Site 31 had been used as a storage yard for the disposal, salvage, and sale of excess materials. Items stored at the site have included the following: scrap material, used batteries, potential PCB-containing transformers, vehicles, motors, generators, and materials used in the manufacturing of explosives, pyrotechnics, and munitions. A partially filled area exists between Buildings 314 and 314D. A waste pile is located in the western portion of this filled area. The waste pile consists of plastic, metal, wood, and insulation debris. Dumpsters containing flashed and unflashed shells were located on the

east side of Building 314. In addition, the gravel platform located in the northern portion of the site was used for the storage of machine presses. During the 1930s, the site was used as a burning ground. The DRMO yard was closed in the mid-1990s, and currently the site is inactive. The majority of the former DRMO is surrounded by a chain-link fence.

As a result of these operations, environmental media became contaminated. The majority of the contamination came from leaks and spills directly onto the ground during storage activities at the former DRMO. The storage of lead-acid batteries resulted in high levels of lead in surface and subsurface soil. Storage of transformers and machine presses resulted in petroleum and PCB contamination of surface and subsurface soil. Storage of ordnance items and metal scraps resulted in metals contamination of surface and subsurface soil. Although much of the contaminated soil is already covered with asphalt pavement, some of the soil contamination is in unpaved areas or in areas where the pavement is old and failing. The sediments of Green Pond Brook have also become contaminated as a result of site activities: either from direct dumping or erosion of contaminated soils into the brook. Because the majority of the contaminants at this site do not lend themselves to groundwater leaching, contamination has not had a significant impact on site groundwater.

The material stored at the former DRMO included munitions. It is likely that the munitions stored at the site were inert; however, because the storage was not documented, it is possible that loaded items were stored/disposed of here. When the stretch of GPB adjacent to the former DRMO was dredged, munitions items in the area of the stream bank were removed. To date, there have been no other cleanup actions at the site.

Previous Site Investigation

A number of investigations were previously conducted at Site 31/101 (PICA 072) and are summarized in Table 1. A detailed summary of previous investigations performed at Site 31/101 (PICA 072) is presented in the FS (Shaw, 2005). The FS was prepared based upon the compilation of data from previous investigations conducted at Site 31/101 (PICA 072), including the *Phase I Remedial Investigation (RI)* (Dames and Moore, 1998), the *Additional Site Investigations RI Report, Sites: 3, 31, 192 & 199* (Shaw, 2004), the *Phase I 2A/3A Sites RI Report* (Shaw, 2003), and subsequent investigational activities performed at Site 31/101 (PICA 072).

Surface soil, subsurface soil, soil gas, sediment, and groundwater samples have been collected at Site 31/101 (PICA 072) as part of several investigations. Groundwater contamination in Area G is being addressed as part of the Mid-Valley Groundwater. Additionally, sediment and surface water contamination in GPB, adjacent to Site 31/101 (PICA 072) is being addressed as part of Green Pond Brook.

2.2.3 Enforcement Activities

No formal enforcement activities have occurred at Site 31/101 (PICA 072). Picatinny is working in cooperation with the USEPA and NJDEP to apply appropriate remedies that will preclude the necessity of formalized enforcement actions, such as Notices of Violation.

2.3 COMMUNITY PARTICIPATION

Site 31/101 (PICA 072) has been the topic of presentations at the Picatinny Arsenal Environmental Restoration Advisory Board (PAERAB). PAERAB members have provided comments regarding the Selected Response Action. A courtesy copy of the Proposed Plan was given to the PAERAB's co-chair and a complimentary copy was offered to any PAERAB member who requested it. A final Proposed Plan for Site 31/101 (PICA 072) was completed and released to the public in September 2007 at the information repositories listed below:

Picatinny Arsenal
INCOM-NERO-PIC-PWE
Building 319
Picatinny Arsenal, New Jersey 07806

Rockaway Township Library

61 Mount Hope Road
Rockaway Township, New Jersey 07866

Morris County Library
30 East Hanover Avenue
Whippany, New Jersey 07981

Multiple newspaper notifications were made to inform the public of the start of the Proposed Plan comment period, solicit comments from the public, and announce the public meeting. The notification was run in the Daily Record on September 12, 2007 and in the Star Ledger on September 13, 2007. A public comment period was held from September 20, 2007 to October 20, 2007, during which comments from the public were received. A public meeting was held on September 20, 2007 to inform the public about the Selected Response Action for Site 31/101 (PICA 072) and to seek public comments. At this meeting, representatives from the U.S. Army, NJDEP, USEPA, and the U.S. Army Corp of Engineers (USACE) were present to answer questions about the site and Response Actions under consideration.

2.4 SCOPE AND ROLE OF THE RESPONSE ACTION

This ROD addresses the selection of the response actions for soil at Site 31/101 (PICA 072). The Selected Response Action will address the contaminants of concern (COCs), which were identified in surface and subsurface soils. The COCs are discussed in further detail in Section 2.8.4. The selected Response Actions for Site 31/101 (PICA 072) are designed to provide protection of human health and the environment.

The Selected Response Action is a combination of: Response Actions S-3B (Excavation and Off-Site Disposal of Soil with PCB Concentrations Greater than 160 mg/kg); S-4B (Excavation and Off-Site Disposal of Lead-Contaminated Soil Adjacent to Green Pond Brook); and S-7 (Installation of an Asphalt Cap). Because contamination would remain in place under this response action, LUCs to ensure human health protectiveness are required. The Selected Response Action has been designed to achieve the site-specific RAOs. The Selected Response Action for Site 31/101 (PICA 072) does not address munitions that may be buried at the site. The MMRP will address the potential for buried munitions at the site in the future. Site 31/101 (PICA 072) has been assigned number PICA-007-R-01 under the MMRP.

The chronology of remediation will be as follows:

- All PCB soils with PCB concentrations greater than 160 mg/kg will be excavated and disposed off-site.
- All soils within 20 feet of GPB and at sample location 31GR-Z7 will be excavated and disposed of off-site or on-site based on the characterization sampling identified in Section 2.10.6. The excavated soil will be characterized using the Toxicity Characteristic Leaching Procedure (TCLP). Any soils exhibiting hazardous concentrations will be disposed of off-site. The remaining non-hazardous soils will be characterized using the Standard Protocol Leaching Procedure (SPLP). Any soils exceeding the site-specific impact to groundwater criteria (IGW) will be consolidated beneath an asphalt cap (See Response Action S-7). Any soils not exceeding the site-specific IGW criteria will be consolidated beneath a vegetated soil cap or capped in place.
- Following this initial excavation all remaining soils that exceed Site Cleanup Levels (SCLs) will be capped in place or excavated and consolidated on-site, as appropriate based on the final limits of the cap which will be presented in the Remedial Design.
- Finally, LUCs will be implemented to control current and future activities that could cause exposure to environmental contaminants resulting in unacceptable risk to human health.

2.5 DOCUMENTATION OF SIGNIFICANT CHANGES

Since completion of the Feasibility Study (FS), the off-site disposal level for PCB soils has been revised from 100 mg/kg to 160 mg/kg following discussion between the USEPA, the Army, and the NJDEP. The new level is risk based (to be protective of human health), is consistent with CERCLA and TSCA policy, and removes soils from the site that exceed the cancer risk-based threshold of 1×10^{-4} .

The Proposed Plan presented the same preferred response action as this ROD, including the revised off-site disposal level for PCB soils of 160 mg/kg. No significant changes have been made.

2.6 SITE CHARACTERISTICS

2.6.1 Physical Characteristics

2.6.1.1 Topography and Surface Water Hydrology

Site 31 is characterized by relatively flat, reworked floodplain terrain surrounded by swampy areas that have little to no topographic relief. The northwestern portion of the site is filled and unpaved, and surface water runoff is minimal tending to pool before soaking into the soil. However, because the northeastern part of the site and most of the outdoor storage area near Building 314 is paved with asphalt; surface water runoff is significant in the northeastern and southern portions of the site. Runoff from the asphalt flows towards GPB. Surface water runoff in the western portion of the site flows to the west toward a drainage ditch, located northwest of Building 314. The drainage ditch eventually flows to GPB. Along the eastern portion of the site, runoff flows into GPB.

Extensively modified as a result of land development, the topography of Site 101 is gently sloping to the southeast toward GPB with site elevations ranging from 705 ft above mean sea level (msl) near Building 319 to 695 ft above msl at GPB. Surface water runoff at Site 101 is to the southeast toward GPB. The area on the eastern side of Building 319 is an asphalt-paved parking lot. There is a grassy slope between the upper parking lot near Building 319 and the lower paved area to the southeast as indicated by the steps shown in the site figures. The area west of Building 319 is also paved, and an inactive railroad track runs along this section. Much of the former rail line has been paved. Surface water runoff is significant along the paved areas along the eastern side of former Building 311 and Building 319. During excessive precipitation events, surface water runoff along portions of the site enter storm drains located northeast of Building 319 and ultimately discharge into GPB.

2.6.1.2 Geology and Hydrogeology

The thickness of overburden in the vicinity of Site 31/101 (PICA 072) is estimated at around 100 feet. This overburden consists of glacial deposits comprised mainly of dark yellowish-brown boulders, cobbles, and pebbles with a fine silty sand matrix. The immediate subsurface encountered at the Site contains manmade contaminants of lumber fragments and plastic debris and is classified as fill. A two to three-foot layer of peat in the vicinity of GPB underlies the fill (Dames and Moore, 1998).

Site 101 is underlain by approximately four to five feet of fill material composed of dark brown to yellowish-red silts and sands (Dames and Moore, 1989). Fill material in the tank fields area extends to a depth of 10 ft below ground surface (bgs), and is underlain by the upper glacial sequence to a depth of 40 ft bgs followed by an underlying lower glacial sequence. The thickness of the upper sequence is fairly uniform across Site 101. Large boulders are commonly encountered in the lower sequence of glacial sediments. This sequence increases in thickness from 40 ft along the northwestern boundary of Site 101 to 53 ft along the southwestern boundary along GPB.

Three aquifers were identified at Site 31/101 (PICA 072) based on the geologic data. They are as follows: an unconfined glacial aquifer (also referred to as the water table aquifer), a lower semi-confined glacial aquifer, and a bedrock aquifer. GPB in this area is believed to be influenced by pumping at production well 302D. GPB is a losing system (i.e., GPB loses water to the underlying aquifer) during pumping at 302D, which is located approximately 1,000 ft southwest of Site 31 and GPB. Under non-pumping conditions, GPB is a gaining system. Depth to groundwater within the unconfined glacial aquifer at Site 31 ranges from 4 ft bgs in the marshy western portion of Site 31 to approximately 7 ft bgs near GPB. Groundwater in the unconfined glacial aquifer flows southeast, toward GPB. Groundwater is being handled separately under the Mid-Valley study area.

2.6.1.3 Climate

Northern New Jersey has a continental temperate climate controlled by weather patterns from the continental interior. Prevailing winds blow from the northwest from October to April and from the southwest from May to September. The average monthly temperature ranges from a high of about 72°F in July to a low of about 27°F in January and February. The average date of the last freeze is May 2, and

the first freeze is October 8. Average annual precipitation at the Boonton monitoring station located approximately 5 miles east of Picatinny is 48 inches and is evenly distributed throughout the year.

2.6.2 Summary and Findings of Site Investigations

Table 1 summarizes the environmental investigations and reporting that have been conducted at Site 31/101 (PICA 072). The extent of contamination in surface soil and subsurface soil is summarized below.

2.6.2.1 Extent of Surface Soil Contamination

Studies have shown various contaminants present in surface soils at the site at concentrations exceeding Levels of Concern (LOCs). The primary criteria for the LOCs are the lower of the NJDEP Non-Residential Direct Contact Soil Cleanup Criteria (NRDCSCC) and Impact to Groundwater (IGW) soil cleanup criteria (SCC). In the cases where these state criteria are not available, the USEPA Region III Industrial (1×10^{-6}) Risk-Based Concentrations (IRBCs) for soil were selected as LOCs. LOCs and contaminants were compared to background thresholds previously established for Picatinny Arsenal. All LOCs established for surface soil exceed background thresholds. A total of 20 contaminants exceeded their LOCs in surface soil at Site 31/101 (PICA 072). These contaminants include eight polycyclic aromatic hydrocarbons (PAHs), three PCBs, one dioxin, and eight metals. A summary of these contaminants is provided in Table 2.

Polycyclic Aromatic Hydrocarbons

The eight PAHs that exceeded LOCs are benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene, and pyrene. The majority of PAH exceedances were detected in soil collected from two locations. Six soil samples collected from the southern region of Site 101 contained PAH exceedances above LOCs (Figure 2). At Site 31, another six samples that exceeded LOCs for PAHs were located in the region identified as the former burning ground (Figure 3). Three additional samples had PAH exceedances above LOCs. Benzo(a)pyrene was detected in samples 31GR-J6 and 31GR-W7 at concentrations of 1.5 mg/kg and 0.68 mg/kg, respectively. Sample 31GR-J6 is located in an area in which several samples have exceeded LOCs for PCBs. Sample 31GR-W7 is located in an area in which several samples have exceeded LOCs for metals, primarily lead. Dibenz(a,h)anthracene was detected at a concentration of 2.0 mg/kg in sample SS31-1, which is located in an area where high metals concentrations have been detected.

Dioxin

The dioxin congener 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD, further referred to in this report as HpCDD) was detected at a concentration greater than its LOC in two samples located in the former burning ground at Site 31.

Polychlorinated Biphenyls

The majority of PCB contamination in surface soil is located in the marshy area north of Building 314D, to the west of Building 314. PCB contamination is greatly reduced at a depth of 2 to 3 feet bgs (5,100 mg/kg versus 110 mg/kg). A total of 18 samples collected from this area exceeded the LOC for total PCB concentration of 2 mg/kg. Seven samples containing PCB concentrations in excess of the LOC are located along the bank of GPB, where selected metals (primarily lead) have also been detected at concentrations above LOCs. Two samples from adjacent grid points in the former burning ground contained PCB concentrations at or above the LOC. PCBs were also detected at the northern end of Site 31 at the boundary with Site 101 in an area where lead was detected at concentrations above LOCs in several samples. Sample SS31-7, collected on April 11, 1988, identified PCB concentrations above the LOC in the central part of Site 31, near monitoring wells MW-3 and 101MW-6. However, in an attempt to verify the sample result, PCBs were not detected in sample 31GR-S9, sampled on March 6, 2000.

Metals

Numerous exceedances of metals LOCs were detected throughout Site 31/101 (PICA 072). The majority of these were detected in three areas: along the bank of GPB, at the northern end of Site 31 extending into the southern portion of Site 101, and in the vicinity of Building 314D. The most prominent metals

detected at concentrations above LOCs were lead, arsenic and copper, detected at elevated concentrations in a total of 20, 18 and 16 samples, respectively. Other areas in which metals were detected at concentrations exceeding LOCs include the vicinity of former Building 311. Copper and thallium were detected at concentrations exceeding LOCs near the former gas station site. The only other metal detected at a concentration exceeding its LOC was beryllium at sample location SS31-9 located between Buildings 314 and 314D, near the majority of the exceedances for PCBs.

2.6.2.2 Extent of Subsurface Soil Contamination

Subsurface soil samples were collected from Site 31/101 (PICA 072) through multiple rounds of sampling. Subsurface soil LOCs are the same as those for surface soil. Subsurface soil LOCs and contaminants were compared to background thresholds previously established for Picatinny Arsenal. All LOCs established for subsurface soil exceed background thresholds. Twelve contaminants, including six PAHs, one PCB, one explosive compound, and four metals, exceeded their LOCs in subsurface soil. A summary of these contaminants is provided in Table 3.

Polycyclic Aromatic Hydrocarbons (PAHs)

Exceedances of PAH LOCs were detected in a total of eight samples, primarily at Site 101. Two samples collected from test pit 101TP-8, just south of the former tank location identified at Site 101, contained PAHs at concentrations above criteria. Two samples collected from the sewer line excavation also exceeded PAH criteria. An additional two samples, collected from the southern portion of Site 101, just north of the Site 31 sampling grid, contained benzo(a)pyrene at concentrations exceeding the LOC. The remaining two exceedances of PAH criteria in subsurface soil were detected at Site 31. Sample 31GR-W7B, located in the northern portion of the site where metals were identified at concentrations above LOCs for surface soil, contained benzo(a)pyrene in excess of screening criteria; and sample 31GR-S5B, which is located in the area identified as the former burning ground, exceeded the criteria for four PAH compounds. Exceedances of surface soil criteria for PAHs were also detected in the former burning ground.

Polychlorinated Biphenyls (PCBs)

The PCB Aroclor 1260 was detected at a concentration above its LOC in five subsurface soil samples, four of which are located in the vicinity of Building 314D, where PCBs were detected at levels above criteria in numerous surface soil samples. The remaining sample was collected in the northern portion of Site 31 (just north of the DRMO yard fence). This area was identified as having concentrations of several metals, as well as scattered PCB concentrations, in excess of surface soil criteria.

Explosives

The explosive compound 2,4-dinitrotoluene was detected in one sample, 101TP-8A, south of the former tank location identified at Site 101.

Metals

The four metals detected at concentrations above LOCs were arsenic, copper, lead, and zinc. The majority of elevated metals concentrations in subsurface soil were identified along the bank of GPB. In each of the additional samples containing exceedances of metals criteria, only one compound exceeded LOCs. Arsenic was detected at concentrations exceeding its LOC in samples 31SB-11C and 31SB-F6C, located near Building 314D (the area identified for elevated PCB concentrations). Copper was detected at a concentration exceeding its LOC in samples SB101-2C, located in a region identified for copper and thallium exceedances in surface soil, and 31GR-S5B, located in the former burning ground where PAHs were identified above LOCs in surface and subsurface soil.

2.7 CURRENT AND POTENTIAL FUTURE LAND AND WATER USES

Since the late 1980s, Building 319, located within Site 101, has housed the administrative offices of the Environmental Division. The DRMO yard, Site 31, was closed in the mid-1990s and is currently inactive. Buildings 314, 314B, 314C, 314D and 314E are all currently unused or used intermittently for storage and light industrial activity. There are no changes planned for the use of either site. The Picatinny Land Use

Map has this area designated for administrative support, and Picatinny's Master Plan indicates the future use of the area will be for industrial activities. The Picatinny Master Plan was updated in February 2007.

Site 31/101 (PICA 072) is within a NJDEP-approved Classification Exception Area (CEA), as described in a letter dated July 29, 2002, to the NJDEP, for the consolidated and unconsolidated aquifers. An updated CEA was submitted to NJDEP in January 2008. The Picatinny CEA mandates that any proposed groundwater use within the CEA will require NJDEP review and approval to ensure that modifications would be protective of any impacts from the identified contaminants for the duration of the CEA. More information regarding the remediation and future use of groundwater will be detailed in the Mid-Valley Groundwater decision documents.

2.8 SUMMARY OF SITE RISKS

As part of the RI/FS, human health and ecological baseline risk assessments were conducted for Site 31/101 (PICA 072) to determine the current and future effects of contaminants on human health and the environment. The risk assessment evaluated the site for industrial land use scenarios. Evaluated exposure scenarios included current/future industrial research workers, current/future construction/excavation workers, and current/future on-site youth visitors (Site 101). The baseline risk assessment estimates what risks the sites pose if no action were taken. As part of the baseline risk assessment, estimates of excess cancer risk and noncarcinogenic health hazards are calculated. A summary of the results of the human health and environmental risk assessments is presented in the following sections.

2.8.1 Human Health Risk Assessment

For Site 101, a baseline human health risk assessment (HHRA) was conducted by Dames and Moore during the Phase I RI (1998). Because a significant amount of new data was collected at Site 31 after the Phase I RI was completed, the baseline HHRA for this site was conducted later. The results of this risk assessment were reported in the final RI Report for Sites 3, 31, 192, and 199 (Shaw, 2004). The following sections summarize the risk assessment process and results.

2.8.1.1 Contaminants of Potential Concern

Contaminants of potential concern (COPCs) were identified by comparing the maximum detected concentration of an individual contaminant to its LOCs. This comparison, or screening, is a tool used as follows: 1) to identify and define contaminants that require further inspection; 2) to focus the scope and scale of future sampling and analysis or remedial activities; and/or 3) to focus the risk assessment on specific areas, contaminants, and pathways. The identification of COPCs is conservatively biased to ensure that the screening process retains all contaminants that might pose an unacceptable risk. However, the identification of a contaminant as a COPC does not indicate that an unacceptable risk actually exists, but only that further analysis is required. Whether or not the COPCs are addressed qualitatively or quantitatively in the risk assessment is dependent on the result of the comparison to background values and the availability of contaminant-specific toxicity information.

COPCs selected for surface soils at Site 31/101 (PICA 072) include benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd-pyrene), pyrene, Aroclor 1248, Aroclor 1254, Aroclor 1260, HpCDD, antimony, arsenic, beryllium, copper, lead, mercury, thallium and zinc.

COPCs selected for subsurface soils at Site 31/101 (PICA 072) include benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd-pyrene), Aroclor 1260, 2,4-dinitrotoluene, arsenic, copper, lead and zinc.

2.8.1.2 Exposure Assessment

Exposure pathways were identified based on the site characterization information, the fate and transport properties of the COPCs, and likely points where human receptors may come in contact with affected media under current or potential future conditions at the site. An exposure pathway is defined by the following four elements:

- 1) A source and mechanism of contaminant release to the environment;

- 2) An environmental transport medium for the released contaminant;
- 3) A point of potential contact with the contaminated medium (the exposure point); and
- 4) An exposure route at the exposure point.

Exposure can occur only when the potential exists for a receptor to contact released contaminants directly, or when there is a mechanism for released contaminants to be transported to a receptor. Without exposure there is no risk; therefore, the exposure assessment is a critical component of the risk assessment. Based on these criteria, the human health risk assessment focused on several current and hypothetical future exposure scenarios.

Estimated risks and hazards were calculated for the following receptor populations for Site 31:

- Current exposed populations: industrial research worker, construction/excavation worker (soil), and on-site youth visitor; and
- Future exposed populations: industrial research worker, construction/excavation worker (soil), and on-site youth visitor.

Estimated risks and hazards were calculated for the following receptor populations for Site 101:

- Current exposed populations: industrial research worker (surface soil), construction/excavation worker (total soil), and on-site youth visitor; and
- Future exposed populations: industrial research worker (surface soil), construction/excavation worker (total soil), and on-site youth visitor.

2.8.1.3 Risk Characterization

Potential risks to human health are evaluated quantitatively by combining calculated exposure levels and toxicity data. A distinction is made between noncarcinogenic and carcinogenic endpoints, and two general criteria are used to describe risk: the hazard quotient (HQ) for noncarcinogenic effects and excess lifetime cancer risk (ELCR) for contaminants evaluated as human carcinogens. The HQs are summed to calculate the hazard index (HI). The regulatory benchmark for noncancer health effects is 1. An HI less than or equal to 1 indicates that health effects should not occur; an HQ or HI that exceeds 1 does not imply that health effects will occur, but that health effects are possible. The USEPA considers an ELCR within the target risk range of 10^{-6} to 10^{-4} as generally acceptable cancer risk. If the ELCR exceeds the 1×10^{-4} target risk level, site-specific remedial goal options will be derived for the relevant contaminants and exposure scenarios.

Health effects were evaluated for current and future industrial research workers, construction/excavation workers, and on-site youth visitors. The HI is the sum of all the HQs for all COPCs that affect the same target organ, or that act through the same mechanism of action within a medium, to which a given individual may reasonably be exposed. An HI of less than 1 indicates that toxic noncarcinogenic effects from all COPCs are unlikely. Based on the HHRA results, non-carcinogenic hazards at Site 31 exceeded the HI criterion of 1 for industrial research workers with an HI of 3.1. The majority of the risk was due to Aroclor 1254 in site surface soil.

Noncarcinogenic hazards at Site 101 exceeded the HI criterion for construction/excavation workers with an HI of 6.2. The elevated hazards in total soil were almost exclusively a result of exposure to manganese; however, a review of the assumptions used in the HHRA showed that the manganese hazard was overestimated. A revised HI of 0.1 was calculated in Section 2.5.1 of the FS based on a revised exposure point concentration, dust loading factor and exposure frequency (Shaw, 2005). The re-evaluation concluded that manganese does not pose a health concern.

Under the NCP, the risk range for the individual is 1×10^{-4} (one in ten thousand) to 1×10^{-6} (one in a million). USEPA uses this target risk range to manage risks as part of the NPL Cleanup. Furthermore, when excess lifetime cancer risks fall within this range, a decision about whether or not to take action is a site-specific determination (USEPA, 1989).

For Site 31, using data obtained during the 1998 Phase I RI and 2004 Final RI, the carcinogenic risk exceeded the NCP range at 8.2×10^{-4} for the current industrial research worker, but fell within the NCP range for the construction/excavation worker at 2.3×10^{-5} . The majority of the risk was due to surface soil concentrations of Aroclors 1260, 1248, and 1254; benzo(a)pyrene; arsenic; and 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) toxicity equivalence, which is a measure of the combined toxicity resulting from a wide range of dioxin and furan compounds expressed as an equivalent TCDD concentration. For Site 101, using data obtained during 1998 Phase I RI and Phase I 2A/3A RIs, carcinogenic risks at Site 101 fell within the NCP target risk range of 1×10^{-4} to 1×10^{-6} for all three receptor populations, ranging from 4.0×10^{-6} for the on-site youth visitor to 1.1×10^{-5} for the industrial research worker. Human health risk drivers were benzo(a)pyrene and arsenic. A table summarizing the results of the HHRA is provided as Table 4.

The lead hazards were also quantified for Site 31/101 (PICA 072). A range of preliminary remediation goals (PRGs) is presented, as two different geometric standard deviations (GSDs) for blood lead are used in the model (i.e., 1.8 and 2.1). The GSD is a measure of the inter-individual variability in blood lead concentrations in a population. The USEPA recommends a plausible GSD range of 1.8 to 2.1 for heterogeneous populations. While the Picatinny receptor population may be characterized for current receptors, based on racial, ethnic, cultural, and socioeconomic factors, the makeup of future receptor populations is unknown.

The adult lead model results indicate lead concentrations were a concern in surface soil at Site 31 for the industrial research worker, as the average lead concentration exceeded the lead model-derived preliminary remediation goals for heterogeneous receptor populations. The results of the adult lead model are summarized in Table 5.

The 2004 HHRA also evaluated a residential exposure scenario. This exposure scenario is not expected at Site 31 or 101, as the current and reasonably anticipated future use is industrial. Remedial decisions are made on the basis of the reasonable anticipated future use; therefore these results are included here for comparison purposes only. The excess cancer risks calculated for Site 31 were 1.7×10^{-3} for the adult resident, 1.1×10^{-3} for the child resident, and 2.8×10^{-3} for the adult/child resident. The noncarcinogenic hazards at Site 31 exceeded the HI of 1 for the child resident with an HI of 25 and the adult resident with an HI of 9.1.

2.8.2 Ecological Risk Assessment

An ERA was not performed specifically at Site 31 due to limited habitat at Site 31 and a lack of samples collected during the Phase I RI as a result of the ongoing Weston Environmental Removal Action Investigation (due to munitions and explosives of concern [MEC] discovery). A portion of Site 31 was subsequently included in the assessment area for an ERA performed at adjacent Site 101. A small marshy strip of land (0.32 acres) exists along the eastern boundary of the site adjacent to GPB. The highly disturbed nature of this assessment area offers little habitat for wildlife. Site 31 has very low habitat value; however, if land use changes and impacted portions of this site are allowed to return to usable habitat, this site could pose significant ecological risks. Both sites are characterized by relatively impervious surfaces of artificially compacted fill and asphalt. There is minimal vegetation cover. Surface water and sediment samples were obtained from this assessment area as were mouse and plant tissues, observational data regarding small populations and plant community structure, and soil for earthworm bioassays.

Results of the ERA (Dames and Moore, 1998) indicate modeled hazards to the woodcock at Site 101 were primarily due to several metals. Levels of three metals and seven organic compounds were elevated in plant tissue. Soils within the site may potentially impact soil invertebrates as evidenced by a total mortality in earthworms of 91 percent. However it should be noted that the test species is not found at Site 101. The veery may also be at risk due to exposure to several metals; however, all HQs for the veery were less than 10. Based on modeled exposures, the barred owl may also be at risk primarily due to exposure to p,p-Dichlorodiphenyltrichloroethane (p,p'-DDT). Given the size of this site (0.32 acres of potential habitat) relative to the home range of the species, these risks are considered extremely conservative. The home range of the barred owl is approximately 570 acres (Johnsgard, 1988). Thus, the potential habitat in which exposure to p,p'-DDT would be a concern represents less than 0.1% of the barred owl's home range.

2.8.3 Munitions and Explosives of Concern

Munitions and Explosives of Concern (MEC) have been discovered at Site 31/101 (PICA 072). These items included the 6 inch, high capacity, Mark 34 projectile discovered during the test pit investigations conducted in December 1993. The need for any MEC assessment and/or clearance at Site 31/101 (PICA 072) would be evaluated under the MMRP. Recent activities performed in support of the MMRP included the completion of a Historical Records Review and the implementation of a Picatinny Site Inspection, which concluded that Site 31/101 (PICA 072) would enter into the Remedial Investigation Stage.

Currently, consistent with Army and Picatinny regulations, MEC hazards are controlled by the Picatinny Safety Program. This program includes coordination with the Picatinny Safety Office, soil excavation restrictions, MEC clearance procedures, and hunter MEC identification training. These controls are in place to protect hunters and construction workers.

Clearance of MEC coincidentally located with site contaminants will likely be required since excavation, an intrusive activity, has been selected as part of the remedy.

2.8.4 Risk Assessment Conclusions and Establishment of Site Cleanup Levels

COCs in surface and subsurface soil were identified in the Final Site 31/101 Feasibility Study (Shaw, 2005).

As part of the Site 31/101 (PICA 072) FS, the contaminants detected in surface and subsurface soil were screened to identify COCs. COCs are defined as contaminants that:

- 1) Contribute to the majority of site-specific human health or ecological risk (Risk-Driver COCs); and
- 2) Exceed the NJDEP NRDCSCC or NJDEP IGWSCC, (Non-Risk-Driver COCs).

A complete list of all final COCs and SCLs is provided in Table 6. Development of the final COCs and SCLs for each environmental media is discussed below.

2.8.4.1 Surface Soil

The starting point for the development of the list of COCs in surface soil was the entire list of contaminants that were detected in samples collected from Site 31/101 (PICA 072). Below is a summary of the screening process used to identify COCs in surface soil:

- If the highest concentration detected was above the LOC, then the detected contaminant was included as a COPC. Derived from the baseline HHRA, it was determined which COPCs contributed to the majority of carcinogenic risk of 1×10^{-6} (one in a million) or the majority of the noncarcinogenic hazard of 1; these compounds were considered Risk-Driver COCs.
- Compounds identified as COCs in the HHRA and ecological contaminants of concern (ecoCOCs) in the evaluation of surface soil ecological risk drivers were included as Risk-Driver COCs.
- Any compound included as a COPC because it exceeded the NJDEP criterion, but did not contribute to a major portion of the risk identified in the site-specific risk assessment was included as a Non Risk-Driver COC.

Twenty contaminants in surface soil were identified as a human health risk or exceeded NRDCSCC: 2,3,7,8-TCDD Toxicity Equivalent (TEQ), Aroclor-1248, Aroclor-1254, Aroclor-1260, antimony, arsenic, beryllium, copper, lead, mercury, thallium, zinc, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and pyrene. Beryllium was detected at concentrations exceeding the NRDCSCC in only one sample and was not found to pose any unacceptable risks. Following the NJDEP protocol for compliance averaging, beryllium was eliminated as a COC. The final list of COCs for surface soils for Site 31/101 (PICA 072) are those that 1) exceed the NRDCSCC, and 2) pose a human health risk based on the site-specific risk assessment. The final site cleanup levels for Site 31/101 (PICA 072) surface soils are presented in Table 6.

2.8.4.2 Subsurface Soil

Contaminants that exceeded the LOCs in subsurface soil were identified in the FS. The LOCs were adapted from NJDEP IGW values, NJDEP NRDCSCC values, or if not available from either of these sources, from USEPA Region III Industrial Soil RBCs.

It should be noted that if a COC is not a risk driver, the cleanup level may be achieved by inclusion with a risk driver COC area of attainment, or by averaging across the contaminated area (N.J.A.C. 7:26E-4.8). In addition, compliance may be achieved by the establishment of institutional or engineering controls that limit exposure to COCs in subsurface soil, such as construction/excavation worker clothing requirements (e.g., long-sleeve shirts, long pants, gloves), no-dig areas, or area paving.

All subsurface soil data were examined to determine if there was the potential for impact to groundwater from soil contamination. Groundwater and subsurface soil data from the site were examined to determine if there was a link between contaminants seen in subsurface soil and contaminants seen as a plume in groundwater. This examination concluded that cadmium and lead are the recommended COCs in subsurface soil based on potential to impact groundwater.

Thirteen COCs were identified based on human health risks, exceedance of NRDCSCC and IGW concerns: Aroclor-1260, arsenic, cadmium, copper, lead, zinc, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and 2,4-dinitrotoluene. For the subsurface soil COCs, the NJDEP NRDCSCCs were used as the cleanup levels except for cadmium in which the leaching to groundwater soil screening level (SSL) value was used. The final site cleanup levels for Site 31/101 (PICA 072) subsurface soil are presented in Table 6.

The SCL for total PCBs in both surface and subsurface soil is 2 mg/kg based on the NRDCSCC. However, based on the evaluation of ARARs, additional requirements are specified by the Toxic Substances Control Act (TSCA) pertaining to PCBs. Although TSCA is not strictly applicable at sites under the jurisdiction of CERCLA, it is considered relevant and appropriate to PCB concentrations detected at Site 31/101 (PICA 072). TSCA provides cleanup and disposal options for PCB remediation waste, including self-implementing on-site cleanup and disposal of PCB remediation waste, and risk-based disposal approval (40 Code of Federal Regulations [CFR] 761.61). The self-implementing cleanup and disposal option has been selected for Site 31/101 (PICA 072). USEPA designed the self-implementing procedure for a general, moderately-sized site such as Site 31/101 (PICA 072) where there should be low residual environmental impact from remedial activities. The selection of the self-implementing cleanup and disposal option is a site-specific decision and may not be appropriate for larger or more complex sites.

2.8.5 Areas of Attainment

The area of attainment (AA) is defined as the area over which remedial action objectives are to be obtained. Cleanup levels should be achieved throughout the AA. Based on the list of COCs and RAOs, nine AAs were identified for surface and subsurface soil at Site 31/101 (PICA 072). A summary of the AAs are provided as Table 7.

2.9 REMEDIAL ACTION OBJECTIVES

The RAOs for Site 31/101 (PICA 072) are based on unacceptable risk to human health in compliance with CERCLA or address compliance with the Army position in the MG Van Antwerp and BG Geis memoranda. Such objectives are developed based on the criteria outlined in Section 300.430(e)(2) of the NCP and Section 12 of SARA.

The RAOs will be specific to surface and subsurface soils contaminated by sources originating from Site 31/101 (PICA 072), but are not so limited that the choice of remedial technologies is overly restricted.

The RAOs for Site 31/101 (PICA 072) are the following:

- 1) Prevent exposure to surface and subsurface soils which results in unacceptable risk to human and ecological receptors;
- 2) Prevent migration of COCs above SCLs in site soil to Green Pond Brook sediment; and

- 3) Prevent impact to groundwater by all site COCs above SCLs.

These objectives can be achieved by reducing or eliminating the pathway for exposure to soil or reducing levels of COCs in the soil. Specific COCs, SCLs and the standards or criteria on which the SCLs are based, are listed in Table 6.

2.10 DESCRIPTION OF THE RESPONSE ACTIONS

Site 31/101 (PICA 072) has undergone an RI and FS according to the CERCLA process. The RI phase is the mechanism for collecting data to characterize the site and assess potential human health and ecological risk. The FS phase involves the development, screening, and detailed evaluation of response actions. An FS was prepared to determine applicable treatment technologies and to assemble these technologies into response actions.

In order to address the soil contamination identified at Site 31/101 (PICA 072), numerous potential Response Actions were developed for soil contamination within Site 31/101 (PICA 072). The Response Action screening process generated the following actions to be considered in the detailed analysis. Each of the Response Actions, with the exception of “no action”, involves the maintenance and enforcement of LUCs. As such, LUCs are considered supplemental to each of the response action. Maintenance and enforcement of LUCs are also evaluated separately, as Response Action S-2.

- Response Action S-1: No action;
- Response Action S-2: Land Use Controls (LUCs);
- Response Action S-3: Excavation and off-site disposal of soil with PCB concentrations greater than 50 mg/kg;
- Response Action S-3B: Excavation and off-site disposal of soil with PCB concentrations greater than 160 mg/kg;
- Response Action S-4: Excavation and disposal of soil with lead concentrations above SCLs;
- Response Action S-4B: Excavation and disposal of lead contaminated soil adjacent to Green Pond Brook;
- Response Action S-5: Excavation of soil with concentrations of COCs that exceed SCLs with off-site disposal;
- Response Action S-6: Excavation of soil with concentrations of COCs that exceed SCLs and stabilization of the fraction exceeding hazardous waste characterization limits with off-site disposal;
- Response Action S-7: Installation of an asphalt cap.

2.10.1 Response Action S-1: No Action

Estimated Capital Cost: 0

Estimated O&M Cost Over 30 Years: 0

Estimated Present Worth Cost: 0

CERCLA and the NCP require that a No Action response action be evaluated at every site to establish a baseline for comparison with other response actions. Under this response action, all administrative controls would cease, no further site monitoring or oversight would be performed, and no remedial action would take place. Response Action S-1 provides no active control of exposure to the contaminated media that poses a human health risk, no reduction in risk to human health, and no reduction in risk to the environment.

2.10.2 Response Action S-2: Land Use Controls

Estimated Capital Cost: \$34,260

Estimated O&M Cost Over 30 Years: \$108,574

Estimated Present Worth Cost: \$142,834

Response Action S-2 involves the maintenance and enforcement of LUCs, such as land-use and access restrictions, including the existing fence around the former DRMO yard. LUCs are administrative measures put in place to affect human activity, in order to control exposure pathways that may lead to unacceptable risk. In the case of Site 31/101 (PICA 072), LUCs would be established to preclude activities that could lead to exposure to environmental contaminants resulting in unacceptable risk to human health. This ROD details the objectives of the LUC portion of this Response Action necessary to assure that land use remains consistent with the level of protection to human health afforded by the remedial action. To properly plan and implement LUCs for this site, a Land Use Control Remedial Design (LUCRD) will be incorporated into the remedial design document during the design stage of the project. This plan will contain sufficient detail such that adherence to the plan will ensure the protectiveness of the Response Action.

LUCs have been evaluated on a site-wide basis for contaminated media at Site 31/101 (PICA 072). This Response Action relies on the site-wide application of LUCs to meet RAOs. For the purpose of the FS, a 30-year timeframe was assumed in the cost estimate. The LUC objectives for the site are the following:

- Control excavation at the site through coordination with both Picatinny Environmental and the Safety Office;
- Prohibit the development and use of property for residential housing, elementary and secondary schools, child care facilities and playgrounds until it can be shown the site is suitable for unrestricted use and unlimited exposure; and,
- Maintain the integrity of the asphalt cap.

Risk from the presence of MEC will be evaluated under the MMRP and Picatinny Arsenal will continue to control the MEC hazards as outlined in Section 2.8.3, until a decision document for MEC is finalized.

By virtue of the fact that it is an active military installation, Picatinny has many LUCs in place (Site Clearance and Soil Management Procedures, MEC Clearance Procedures, Master Plan Regulations, Picatinny Base Access Restrictions, Picatinny Safety Program, and Army Military Construction Program) In addition, Picatinny Arsenal uses a Geographic Information System (GIS) as an information tool to assist with the implementation of LUCs. The GIS is a tool for the Army to document areas of contamination and restricted land use. The existing LUCs at Picatinny meet EPA's preference for LUCs being used in layers and/or series. All controls and restrictions would remain in place, even if the ownership or site use changes. Additionally, since the Army is the entity that would be instituting land use restrictions at Picatinny, the Army would ensure that the land use restrictions are incorporated into the transfer documents so they remain effective and in place after property transfer. A change in land use would include notifying the regulators and re-evaluating the cleanup requirements. The regulating and enforcing authority for LUCs on Picatinny is the Commanding Officer.

The LUCs described under this response action would be incorporated into Response Actions S-3 through S-7. These response actions specify active remedies that will contain, treat, or remove contamination exceeding non-residential standards. However, because some contamination above residential standards would remain at the site, LUCs will be required even after completing active remedies to control use of the site that may lead to unacceptable risk.

2.10.3 Response Action S-3: Excavation and Off-Site Disposal of Soil with PCB Concentration Greater than 50 mg/kg

Estimated Capital Cost: \$1,043,475

Estimated O&M Cost: \$0

Estimated Present Worth Cost: \$1,043,475

Response Action S-3 involves the excavation of PCB contaminated soil with concentrations greater than 50 mg/kg, and confirmatory sampling of the limits of excavation. The 50 mg/kg level is based on the TSCA self-implementing criteria for sites secured by a fence posted with proper safety placards. Excavated soil would be transported off-post for disposal in a hazardous-waste-permitted, or other TSCA-approved, landfill for PCB disposal. The excavation would then be backfilled with soil from an approved source and revegetated. Response Action S-3 does not address non-PCB COCs at Site 31 or Site 101.

This Response Action would involve excavation of approximately 1,257 cubic yards (CY) of contaminated soil. The timeframe for the completion of site activities under Response Action S-3 is approximately 15 weeks.

Design and Permitting

The RD would include, at a minimum, a site-specific work plan describing the remedial activities, quality assurance/control procedures, technical specifications, a soil erosion and sedimentation control plan, and a site health and safety plan. The design documents would be submitted for review and approval by the appropriate agencies prior to initiation of remedial activities.

The initial phases of the work would consist of the arrangement of the relevant permit equivalencies and preparation of a site-specific health and safety plan. Because the response action would be conducted under CERCLA, the substantive requirements of the permits, and permitting agencies, would be followed in lieu of obtaining formal permits for required activities. The health and safety plan would outline the physical and chemical hazards associated with the work to be performed at the site and would serve as the instrument of control for ensuring the health and safety of personnel at the site. The health and safety plan would also outline the air monitoring program that would be implemented during the excavation activities to ensure that a safe working environment is maintained. The health and safety plan will provide the action levels that will dictate the need for implementation of dust controls at the site.

Critical design elements and considerations would include work plan preparation, development of waste excavation and handling procedures, and design of erosion and sedimentation controls. Because this action would be performed under CERCLA, Picatinny is only required to file State and local permit equivalents.

Contractor and Material Procurement

Procurement activities would include preparation of bid packages for the remedial activities, solicitation of bids, bid review, and selection/award of subcontracts and contractor selection. Materials and equipment required to complete the remedial activities would also be selected and procured.

Mobilization and Site Preparation

The first phase of this Response Action would include mobilization of the required personnel, equipment, and facilities. Following mobilization, site preparation would occur.

Prior to the commencement of site clearing activities, the soil and sediment erosion controls that are required to meet applicable local, State, and Federal guidelines will be installed. These soil and sediment controls will be properly maintained during contaminated soil and sediment excavation, and will be removed once the disturbed areas have been restabilized. Clearing and grubbing will consist of the removal of trees, shrubs, brush, and debris from the proposed excavation areas, as well as from the areas where support facilities will be located.

MEC Screening Survey

The Picatinny Safety Office has indicated that an MEC safety survey for intrusive activities will be required. Based on the existing site use and a determination by the Picatinny Safety Office, there may be explosive ordnance disposal (EOD) activities associated with this Response Action. A 40-percent markup has been estimated to account for the MEC screening for certain construction activities, such as clearing, grubbing, excavation, and sampling. Safety distances may have to be established, implemented, and enforced during intrusive activities. The size of the safety zone “push back” would be determined by the size and type of the ordnance potentially expected at the site. “Push back” distances could potentially encompass on-site facilities, including roads and buildings, which could result in the restriction of some activities and workspace at Picatinny during implementation of this Response Action.

Contaminated Soil Excavation and Confirmatory Sampling

The excavation area for this Response Action is presented on Figure 4. Soil would be excavated using a backhoe or excavator and loaded directly into dump trucks to be transported to a hazardous waste landfill, or other TSCA-approved facility, for the disposal of PCB remediation waste at a concentration

greater than 50 mg/kg. Prior to commencing excavation activities, waste characterization samples would be collected and analyzed to ensure proper disposal.

Confirmatory samples will be collected to comply with the NJDEP Technical Requirements for Site Remediation set forth in N.J.A.C. 7:26E.

Backfill and Restoration

The excavated areas would be backfilled as soon as practicable with clean fill from an approved source. The excavated areas would be restored to the original contours. Run-off collection and retention would be considered during the design phase to comply with all location- and action-specific ARARs.

Site Cleanup and Demobilization

The final phase of the work would involve site cleanup and demobilization of all personnel, facilities, and equipment.

LUCs

Response Action S-3 would be implemented in conjunction with the maintenance and enforcement of LUCs (assumed to be a 30-year period for the purpose of cost analysis). Refer to the description of Response Action S-2 for the detailed description of LUCs. Response Action S-3 addresses only PCB concentrations in excess of 50 mg/kg, therefore; additional elements would need to be incorporated into the remedial design for Site 31/101 (PICA 072), such as maintenance of the existing fence at Site 31 and posting of appropriate signs or the installation of an approved cap.

2.10.4 Response Action S-3B: Excavation and Off-Site Disposal of Soil with PCB Concentrations Greater than 160 mg/kg

Estimated Capital Cost: \$804,295

Estimated O&M Cost: \$0

Estimated Present Worth Cost: \$804,295

Response Action S-3B involves the excavation of PCB contaminated soil with concentrations greater than 160 mg/kg, and confirmatory sampling of the limits of excavation. PCB concentrations between the SCL (2 mg/kg) and 160 mg/kg will be covered as discussed in Response Action S-7. Therefore, Response Action S-3B will be implemented in conjunction with Response Action S-7 (Installation of an Asphalt Cap). Excavated soil with PCB concentrations equal to or greater than 160 mg/kg would be transported off-site for disposal in a hazardous-waste-permitted, or other TSCA-approved, landfill for PCB disposal. The excavation would then be backfilled with soil from an approved source and either revegetated or capped depending on the concentration of PCBs remaining. Response Action S-3B does not address non-PCB COCs at Site 31/101 (PICA 072).

Under Response Action S-3B, the excavation would be reduced to approximately 743 CY of contaminated soil, with a timeframe of 14 weeks. The excavation area for Response Action S-3B represents a portion of AA_{S-1} (8,399 CY) and is presented on Figure 5. The other major elements of this Response Action are similar to Response Action S-3 (See Response Action S-3 for detailed discussion). Site samples with PCB results exceeding 160 mg/kg are all north of the building and limited to the top 3 feet. As there is the potential for PCB concentrations to exceed 160 mg/kg below Building 314D, sub-slab sampling was performed as part of the pre-design sampling activities. This data confirmed PCB concentrations beneath Building 314D are below 160 mg/kg.

The major elements of Response Action S-3B are as follows: Design and Permitting, Contractor and Material Procurement, Mobilization and Site Preparation, MEC Screening Survey, Contaminated Soil Excavation and Confirmatory Sampling, Backfill and Restoration, Site Cleanup and Demobilization, and LUCs.

2.10.5 Response Action S-4: Excavation and Off-Site Disposal of Soil with Lead Concentrations above SCLs

Estimated Capital Cost: \$2,779,179

Estimated O&M Cost Over 5 Months (30 Years LUCs): \$0

Estimated Present Worth Cost: \$2,779,179

Response Action S-4 involves the excavation of lead contaminated soil with concentrations greater than 600 mg/kg, and confirmatory sampling of the limits of excavation. Excavated soil would be transported off-site to an approved facility. A fraction of the excavated soil is assumed to require disposal in a hazardous waste permitted landfill and would be identified through waste characterization of the excavated soil. The excavation would then be backfilled with soil from an approved source and revegetated. Response Action S-4 does not address COCs other than lead at Site 31/101 (PICA 072).

Response Action S-4 would involve excavation of approximately 8,249 CY of soil with lead contamination exceeding the NRDCSCC (600 mg/kg). The excavation area for Response Action S-4 is presented on Figure 6. Estimated depths of excavation are 10 ft bgs for AA_{S-2}; and 2 ft bgs for the portions of AA_{S-1} and AA_{S-6} identified on Figure 6. The timeframe for the completion of site activities under Response Action S-4 is approximately 18 weeks. Many of the components of Response Action S-4 would be largely similar to those discussed for Response Action S-3, although the target COCs and areas differ. Please refer to the discussion of Response Action S-3 for details of Mobilization and Site Preparation, Design and Permitting, Contractor and Material Procurement, MEC Screening Survey, Backfill and Restoration, Site Cleanup and Demobilization, and LUCs.

Contaminated Soil Excavation and Confirmatory Sampling

Soil would be excavated using a backhoe or excavator and loaded directly into dump trucks to be transported to a Resource Conservation Recovery Act (RCRA) D permitted landfill. Prior to commencing excavation activities, waste characterization samples would be collected and analyzed to ensure proper disposal. It is assumed that the results of waste characterization sampling will necessitate that a fraction of the lead contaminated soil will require disposal in a hazardous-waste-permitted landfill. Standard dust control techniques would be used during the excavation activities to mitigate the potential for release of contaminated dust. Confirmatory sampling will be used to determine the limits of the excavation.

Confirmatory samples will be collected in accordance with the NJDEP Technical Requirements for Site Remediation set forth in N.J.A.C. 7:26E.

LUCs

Response Action S-4 would be implemented in conjunction with the maintenance and enforcement of LUCs (assumed to be a 30-year period for the purpose of cost analysis). Refer to the description of Response Action S-2 for the detailed description of LUCs.

2.10.6 Response Action S-4B: Excavation and Off-Site Disposal of Soil Adjacent to Green Brook Pond

Estimated Capital Cost: \$829,339

Estimated O&M Cost: \$0

Estimated Present Worth Cost: \$829,339

Response Action S-4B involves the excavation of soil adjacent to GPB with concentrations that exceed the NRDCSCC for lead (600 mg/kg), posing the greatest potential for migration of lead. Soil removal under this action addresses the highest concentrations of lead detected at the site, mitigating migration of lead through erosion and transport into adjacent GPB sediment as well as migration due to leaching of lead from soil to groundwater. The excavation of lead contaminated soil as part of the Response Action S-4B will also remove high concentrations of copper, arsenic, mercury, and zinc, as these contaminants are present within AA_{S-2}. In addition, post-excavation sampling will be conducted for all metals of concern. At the request of the NJDEP, the remedial design for the stream bank excavation, under Response Action S-4B, would include a “natural stream restoration,” with consideration given to appropriate vegetation and/or biologists.

Under Response Action S-4B, the excavation would be limited to the portion of AA_{S-2} within 20 ft of GPB and lead contaminated soils at sample location 31GR-Z7. The excavated soil will be characterized using the Toxicity Characteristic Leaching Procedure (TCLP). Any soils exhibiting hazardous concentrations will be disposed of off-site. The remaining non-hazardous soils will be characterized using the Standard Protocol Leaching Procedure (SPLP). Any soils exceeding the site specific IGW number will be consolidated beneath the asphalt cover (see Response Action S-7). Following consolidation, all remaining non-hazardous soils with concentrations of COCs exceeding the SCLs will be covered in place or consolidated to eliminate direct contact with the soils. It is estimated that the volume of excavated soil will be approximately 1,368 CY. Therefore, Response Action S-4B must be implemented in conjunction with Response Action S-7 (Installation of an Asphalt Cap). The timeframe for completion of site activities under Response Action S-4B is approximately six weeks. Many of the components of Response Action S-4B would be largely similar to those discussed for Response Action S-3, although the target COCs and areas differ. Please refer to the discussion of Response Action S-3 for details of Mobilization and Site Preparation, Design and Permitting, Contractor and Material Procurement, MEC Screening Survey, Backfill and Restoration, Site Cleanup and Demobilization, and LUCs.

Excavation of contaminated soil, confirmatory sampling and LUCs for Response Action S-4B are similar to Response Action S-4.

2.10.7 Response Action S-5: Excavation and Off-Site Disposal

Estimated Capital Cost: \$9,477,505

Estimated O&M Cost: \$0

Estimated Present Worth Cost: \$9,477,505

Response Action S-5 involves the excavation of all soil with COC concentrations exceeding SCLs and confirmatory sampling of the limits of excavation. Excavated soil would be transported off-site to an approved facility. A fraction of the excavated soil is assumed to require disposal in a hazardous-waste-permitted landfill and would be identified through waste classification sampling of the excavated soil. The excavation would then be backfilled with soil from an approved source and revegetated. As SCLs are based primarily on non-residential use criteria, Response Action S-5 would be implemented in conjunction with the maintenance and enforcement of LUCs (Response Action S-2).

This Response Action would involve excavation of approximately 30,817 CY of contaminated soil, comprising all soil containing COC concentrations exceeding SCLs. The excavation area for Response Action S-5 consists of all surface and subsurface soil AAs. The timeframe for the completion of site activities under Response Action S-5 is approximately 37 weeks (nine months). Many of the components of Response Action S-5 would be largely similar to those discussed for Response Action S-3, although the target COCs and areas differ. Please refer to the discussion of Response Action S-3 for details of Design and Permitting, Contractor and Material Procurement, Mobilization and Site Preparation, MEC Screening Survey, Contaminated Soil Excavation and Confirmatory Sampling, Backfill and Restoration, Site Cleanup and Demobilization, and LUCs.

2.10.8 Response Action S-6: Excavation and Stabilization of Hazardous Component with Off-Site Disposal

Estimated Capital Cost: \$11,087,888

Estimated O&M Cost: \$0

Estimated Present Worth Cost: \$11,087,888

Response Action S-6 involves the excavation of all soil with COC concentrations exceeding SCLs and confirmatory sampling of the limits of excavation. Excavated soil would be transported off-site to an approved facility. It is assumed, based on investigative sampling, that a fraction of the excavated soil would not meet RCRA D disposal requirements. That fraction, which would be identified based on waste classification sampling (or may be assumed to be hazardous), will be stabilized using Portland cement and activated carbon prior to disposal. It should be noted that soil containing greater than 50 mg/kg of PCBs will require disposal in a TSCA-approved facility, regardless of stabilization. The excavation would then be backfilled with soil from an approved source and revegetated. As SCLs are based primarily on non-residential use criteria, Response Action S-6 would be implemented in conjunction with the maintenance and enforcement of LUCs (Response Action S-2).

This Response Action would involve excavation of approximately 30,817 CY of contaminated soil, comprising all soil containing COC concentrations above SCLs. The excavation area for Response Action S-6 consists of all surface and subsurface soil AAs. The timeframe for the completion of site activities under Response Action S-6 is approximately 44 weeks (11 months). The components of Response Action S-6 would be the same as those discussed for Response Action S-5, with the exception that contaminated soil deemed hazardous would be stabilized in order to meet RCRA D disposal requirements. Please refer to the discussion in Response Action S-3 for details of Design and Permitting, Contractor and Material Procurement, Mobilization and Site Preparation, MEC Screening Survey, Contaminated Soil and Sediment Excavation and Confirmatory Sampling, Backfill and Restoration, Site Cleanup and Demobilization, and LUCs.

Stabilization of Hazardous Fraction of Excavated Soil

Excavated soil that does not meet RCRA D disposal criteria will be processed through a screening plant to remove rocks, boulders and debris greater than one inch in any dimension. Rocks and debris will be power washed on the vehicle decontamination pad and spread around the site (rocks) or disposed (debris). Soil will be stabilized and stockpiled for waste profile sampling prior to transportation for off-site disposal. The amendments are assumed to be Portland cement and activated carbon, at seven percent and three percent, respectively, by weight of excavated soil and will be mixed in batches using a 15 CY waste mixer.

2.10.9 Response Action S-7: Installation of an Asphalt Cap

Estimated Capital Cost: \$2,037,549

Estimated O&M Cost (30 Years LUCs): \$113,381

Estimated Present Worth Cost: \$2,150,930

Response Action S-7 involves the installation of an asphalt cap over selected AAs at Site 31/101 (PICA 072). The asphalt cap will prevent direct contact with COCs remaining at the site at concentrations exceeding NRDCSCC-based SCLs as well as prevent impact to groundwater from lead and cadmium in soil through infiltration of precipitation. The asphalt cap may encompass approximately two acres, but the limits will ultimately be determined during the Remedial Design phase and subsequent waste profile sampling. The FS assumed a six-acre cap for the purpose of cost analysis. The maximum approximate area for the cap is shown on Figure 7.

Due to both the nature and extent of the PCB contamination, as well as the close proximity to Green Pond Brook and other on-site marshy areas, the asphalt cap may include only specific AAs or portions thereof. In order to address risks posed by COCs in the AAs excluded from the proposed cap, any soil impacted with COCs exceeding SCLs would be excavated and placed under the asphalt cap. The excavation would be performed by trained MEC personnel, and potential EOD hazards would be properly disposed prior to placement of the excavated soil under the proposed cap. Additionally, AA_{S-7} is excluded from consolidation under the proposed cap as no risk driver or IGW COCs were identified in excess of SCLs in this AA. The existing asphalt at AA_{S-7} provides an effective existing engineering control preventing direct contact with contaminated soil. Maintenance of the asphalt at AA_{S-7} would be incorporated into the LUCs for Site 31/101 (PICA 072).

The cap design will be optimized to prevent infiltration and enhance surface durability. Due to the size of the area that will be capped, storm water management features will be incorporated as recommended or required by current local, State, and Federal guidance and best management practices for management of storm water associated with construction activities. The nature of construction and the size of the area of disturbance will trigger ARARs related to permitting for storm water associated with construction activity. Any wetlands impacted or disturbed would be appropriately restored or mitigated. If necessary, mitigation of off-site wetlands would be required to offset any loss of wetlands incurred by the installation of the asphalt cap. Final wetland mitigation requirements will be contingent upon the final cap limits and the corresponding impacts to wetlands.

Existing site conditions (such as buildings and existing pavement), topographic and geologic features also could have an impact on the final cap limits.

The timeframe for the completion of site activities under Response Action S-7 is approximately 29 weeks (seven months). Many of the components of Response Action S-7 would be the same as those discussed for Response Action S-3. Please refer to the discussion for Response Action S-3 for details of Design and Permitting, Contractor and Material Procurement, Mobilization and Site Preparation, MEC Screening Survey, Site Cleanup and Demobilization, and LUCs.

2.11 COMPARATIVE ANALYSIS OF RESPONSE ACTIONS

The U.S. Army and the USEPA selected the preferred response action by evaluating each of the response actions against nine criteria established by the USEPA. These criteria are described below.

The advantages and disadvantages of each of the response actions were compared using the nine CERCLA evaluation criteria established by the USEPA in Section 300.430(e) of the NCP. The detailed comparative analysis of all the response actions is provided in the FS for Site 31/101 (PICA 072); a summary of this comparison is provided in the following text.

2.11.1 Threshold Criteria

2.11.1.1 Protection of Human Health and the Environment

The detailed analysis revealed that all response actions, with the exception of Response Action S-1, provide protection of human health through restricting contact to media with COC concentrations exceeding NRDCSCC-based SCLs. Response Actions S-3, S-3B, S-4, and S-4B address only specific AAs and/or COCs and therefore do not address all potential risks at the site. The presentation of Response Actions is intended to allow evaluation of a single Response Action (such as Response Action S-6 which addresses all COCs at Site 31/101 [PICA 072]) or a combination of Response Actions to meet the RAOs for the sites. Response Action S-2 is supplemental to all active Response Actions as SCLs are based on a non-residential use scenario.

2.11.1.2 Compliance with Applicable or Relevant and Appropriate Requirements

Response Actions S-5 and S-6 meet the threshold of compliance with ARARs. Response Action S-3 and S-3B also address compliance with ARARs, although Response Action S-3B would require the installation of an approved cap, and neither addresses To Be Considereds (TBCs) for PCBs or other COCs at the site. Response Actions S-7, S-4, S-4B, and S-1 do not comply with ARARs and therefore would need to be implemented in conjunction with an additional Response Action. Response Action S-2 does not address TBCs for COCs, although Response Action S-2 meets the RAO to prevent exposure to contaminated soil above SCLs.

2.11.2 Primary Balancing Criteria (identify major trade-offs among Response Actions)

2.11.2.1 Long-term Effectiveness and Permanence

Response Actions S-5, S-6, and S-7 provide increased long-term effectiveness while Response Actions S-3 and S-4 provide marginally increased long-term effectiveness over Response Actions S-3B and S-4B, respectively.

2.11.2.2 Reduction in Toxicity, Mobility, or Volume through Treatment

Only Response Action S-6 provides reduction in toxicity, mobility, or volume through treatment. Response Actions S-5 and S-6 provide greater reduction of toxicity, mobility and volume (from the site) over other Response Actions. Response Action S-6 provides additional reduction of toxicity and mobility of COCs over Response Action S-5 through stabilization of soil exceeding hazardous criteria prior to disposal. Response Actions S-3 and S-4 provide marginal reduction of toxicity, mobility and volume over Response Actions S-3B and S-4B, respectively.

2.11.2.3 Short-term Effectiveness

Response Actions S-1 and S-2 pose no short-term risks to the community; however RAOs would not be achieved. Response Actions which are minimally intrusive (such as Response Actions S-3B, S-3, S-4B, and S-7) offer reduced short-term risks by reducing handling of contaminated soil and potential for MEC discovery. Response Actions S-4, S-5 and S-6 involve significantly increased levels of effort, material handling, and potential MEC discovery although risks can be mitigated through suitable protective

equipment, good construction practices, standard dust suppression techniques, and qualified MEC personnel.

2.11.2.4 Implementability

RAOs would not be achieved by Response Actions S-1 and S-2 but these Response Actions would be the easiest to implement and would involve no short-term risks. Response Actions which are minimally intrusive (such as Response Actions S-3B, S-3, S-4B, and S-7) are more easily implemented and offer reduced short-term risks by reducing handling of contaminated soil and potential for MEC discovery. Response Actions S-4, S-5, and S-6 are increasingly difficult to implement as they involve significantly increased levels of effort, material handling, and potential MEC discovery.

2.11.2.5 Cost

Response Action S-1

Present Worth: \$0
Capital Costs: \$0

Response Action S-2

Present Worth: \$142,834
Capital Costs: \$34,260

Response Action S-3

Present Worth: \$1,043,475
Capital Costs: \$1,043,475

Response Action S-3B

Present Worth: \$804,295
Capital Costs: \$804,295

Response Action S-4

Present Worth: \$2,779,179
Capital Costs: \$2,779,179

Response Action S-4B

Present Worth: \$829,339
Capital Costs: \$829,339

Response Action S-5

Present Worth: \$9,477,505
Capital Costs: \$9,477,505

Response Action S-6

Present Worth: \$11,087,888
Capital Costs: \$11,087,888

Response Action S-7

Present Worth: \$2,150,930
Capital Costs: \$2,037,549

Response Action S-1 is the lowest cost as no activities would be performed under this option, followed by Response Action S-2, which would be included with any other Response Action evaluated since SCLs are based on a non-residential use scenario. Costs for the remaining Response Actions range from \$804,000 for Response Action S-3B, to \$11,088,000 for Response Action S-6. Response Actions S-5 and S-6 have the highest cost although these Response Actions address all COCs identified at the sites. It should be noted that the combination of other Response Actions may provide similar levels of performance with respect to the NCP screening criteria with significantly reduced costs compared to Response Actions S-5 and S-6.

2.11.3 Modifying Criteria (formally evaluated after the comment period)

2.11.3.1 Regulatory Acceptance

This document was prepared in partnership with USEPA and NJDEP representatives. NJDEP approval of the Selected Response Action is expected. The NJDEP has demonstrated that it concurs with the Selected Response Action through the approval of the final Proposed Plan (PP). The NJDEP commented that it will require the removal of areas with elevated lead concentrations along the bank of GPB, sample location 31GR-Z7, and PCBs at concentrations in excess of 160 mg/kg in order to approve of the Selected Response Action. Additionally, they commented that they will require wetlands mitigation for the areas impacted by the response action. All of these comments have been successfully incorporated into the Response Actions.

2.11.3.2 Community Acceptance

Community acceptance is addressed in the Responsiveness Summary (Section 3) of this ROD.

2.12 PRINCIPAL THREAT WASTE

The NCP establishes an expectation that USEPA will use treatment to address the principal threats posed by a site wherever practicable (NCP 300.430(a)(1)(iii)(A)). Identifying principal threat wastes combines concepts of both hazard and risk. In general, principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be contained in a reliable manner or would present a significant risk to human health or the environment should exposure occur. Conversely, non-principal threat wastes are those source materials that generally can be reliably contained and would present only a low risk in the event of exposure. In addition, principal threat wastes are identified based upon the results of the quantitative risk assessment, with those compounds that have a value of 1×10^{-3} or higher being considered as principal threat wastes. As concluded in the Risk Assessment, none of the contaminants in soil that exceeded LOCs at Site 31/101 (PICA 072) meets the criteria of principle threat waste. Therefore, the Selected Response Action does not need to address principal threat waste.

2.13 SELECTED RESPONSE ACTION

This ROD represents the Selected Response Action for soils at Site 31/101 (PICA 072) at Picatinny, Rockaway Township, Morris County, New Jersey, developed in accordance with CERCLA as amended and consistent with the NCP. Based on the results of the comparative analysis and comments received from the USEPA and NJDEP, the Selected Response Action includes the following:

- Response Action S-2 (Implementation of LUCs);
- Response Action S-3B (Excavation and Off-Site Disposal of Soil with PCB Concentrations Greater than 160 mg/kg);
- Response Action S-4B (Excavation and Off-Site Disposal of Lead-Contaminated Soil Adjacent to Green Pond Brook); and
- Response Action S-7 (Installation of an Asphalt Cap).

The Selected Response Action for soil is shown on Figure 8.

2.13.1 Summary of the Rationale for the Selected Response Action

Based on information currently available, the Army believes the Selected Response Action meets the threshold criteria and provides the best balance of tradeoffs among the other Response Actions with respect to the balancing and modifying criteria. The Army expects the Selected Response Action to satisfy the following statutory requirements of CERCLA 121: 1) be protective of human health and the environment; 2) comply with ARARs; 3) be cost-effective; and 4) utilize permanent solutions and alternative treatment technologies to the maximum extent practicable.

The Selected Response Action does not satisfy the preference for treatment as a principal element. However, as concluded in the Risk Assessment, none of the contaminants that exceeded LOCs at Sites 31/101 (PICA 072) meets the criteria of principal threat waste under the current and reasonably

anticipated future use, and the Selected Response Action provides an optimal balance of controlling human health and ecological risks at an acceptable level with minimal intrusive activities and an effective use of funding. Refer to Section 2.14.5 for more information.

2.13.2 Detailed Description of Selected Response Action

The Selected Response Action for Site 31/101 (PICA 072) includes excavation and off-site disposal of soil with PCB concentrations greater than 160 mg/kg, excavation and off-site disposal of lead (and other co-mingled metals) contaminated soil adjacent to Green Pond Brook, and installation of an asphalt cap. Additionally, LUCs would be employed to prevent exposure to contaminated soils.

In order to implement this Response Action, the following actions would be conducted:

- Preparation of the following documents:
 - Remedial Design and construction work plans
 - Site-specific health and safety plan
 - Long-term monitoring plan, and
 - Closure report (following completion of the project)
- Acquisition of the required environmental permit-equivalents;
- Erosion and sediment controls;
- Soil excavation and off-site disposal;
- Cap construction;
- Disposal of any construction-related debris/decontamination fluids;
- Site restoration; and
- Implementation of LUCs and ICs to comply with the requirements in N.J.A.C. 7:26E-8.1. This includes the monitoring, maintenance, and biennial certification of protectiveness of the Response Action.

The asphalt cap will require an engineering design to construct the cap to sufficiently contain the contaminants identified in surface and subsurface soil. Because this action will be conducted under CERCLA, permit equivalencies will be obtained in lieu of formal permits for all required activities. The construction of the asphalt cap will be outlined in the Remedial Design work plan, which will be submitted after the ROD. In addition, limits of soil excavation will be provided in the Remedial Design work plan. Activities summarized in the work plan will include the following:

- Site mobilization and site preparation activities (erosion controls, removal of site fence, and site clearing activities);
- Limits of soil excavation;
- Soil characterization and consolidation or disposal;
- Cap design, placement, and implementation;
- Decontamination and disposal of site debris;
- Stormwater management controls;
- Treatment and disposal of decontamination water, if applicable;
- Site restoration and vegetation; and
- Site closeout activities (site cleanup, surveying, and demobilization activities).

2.13.2.1 Land Use Controls

The Selected Response Action leaves contaminated substances in place that pose a potential future risk; therefore, enforcement of ICs and implementation of land use restrictions are included in the Selected Response Action to prevent uses that are associated with unacceptable risks to human or biological receptors from being implemented in the future. The Army is responsible for implementing, enforcing, maintaining, monitoring, and reporting on the LUCs. The LUCs and ICs that will be implemented at the site will be included as part of the Remedial Design. The LUC objectives include the following:

- Control the pathway for contact of COCs identified in soil above SCLs by human receptors;
- Control excavation at the site without proper safeguards; and
- Control changes in land use which would be inconsistent with the response action to protect human health.

A LUC Remedial Design will be prepared as the land use component of the Remedial Design. Within 90 days of ROD signature, the Army shall prepare and submit to USEPA for review and approval a LUC remedial design that shall contain implementation and maintenance actions, including periodic inspections. LUCs will be maintained until such time as contaminant levels allow for unrestricted use and unlimited exposure.

Requirements of NJDEP Deed Restriction policies will be included in the LUC Remedial Design. Many of the exhibits required (maps, engineering drawings, location maps) are already incorporated into the Army's plans. It should be noted that in the event Picatinny is closed and the land ownership transferred, the LUCs would need to be documented through an appropriate mechanism for privately owned property (i.e., deed notice).

Although the Army may later transfer these procedural responsibilities to another party by contract, property transfer agreement, or through other means, the Army shall retain ultimate responsibility for remedy integrity.

2.13.3 Summary of Expected Response Action Costs

The costs associated with the implementation of the Selected Response Action are summarized as follows:

Response Action	Present Worth
Response Action S-2 (Implementation of LUCs)	\$142,834
Response Action S-3B (Excavation and Off-Site Disposal of Soil with PCB Concentrations Greater than 160 mg/kg)	\$804,295
Response Action S-4B (Excavation and Off-Site Disposal of Lead-Contaminated Soil Adjacent to Green Pond Brook)	\$829,339
Response Action S-7 (Installation of an Asphalt Cap)	\$2,150,930
TOTAL:	\$3,927,398

A more detailed summary of the costs is provided in Tables 8 to 12. The costing information provided in these tables is based on the best available information regarding the anticipated scope of the Selected Response Action.

2.13.4 Expected Outcomes of Selected Response Action

It is anticipated that current land use will continue unchanged after implementation of the Response Action. It is expected that enforcement of ICs and implementation of land use restrictions will ensure that risks to human and ecological receptors remain within acceptable levels; however, as contaminants will remain in the soil above SCLs, uncontrolled use of the site is not provided by completing this action.

2.14 STATUTORY DETERMINATIONS

Under CERCLA § 121 and the NCP, the lead agency must select Response Actions that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for Response Actions that employ treatment and permanently and significantly reduce the volume, toxicity or mobility of hazardous wastes as a principal element and a bias against off-site disposal of untreated wastes. The following sections discuss how the Selected Response Action meets these statutory requirements.

2.14.1 Protection of Human Health and the Environment

The Selected Response Action provides protection to human and ecological receptors from unacceptable risks through restricting contact to soils with COC concentrations exceeding NRDCSCC-based SCLs. Contact with soils with contaminant concentrations exceeding SCLs would be restricted by either removing these soils from the site or placing them underneath the asphalt cap. Additionally, the implementation of LUCs will maintain the protectiveness of the Selected Response Action by prohibiting land use that would be inconsistent with RAOs.

The Selected Response Action will ensure that risks associated with soil remain below the 10^{-4} cancer risk level and a Hazard Index of less than 1.0. This level falls within the USEPA's target risk range of 10^{-4} to 10^{-6} . In fact a majority of the SCLs have been based on the NJNRDCSCC which, according to NJDEP, are based on the 10^{-6} risk level. In addition, there are no short-term threats associated with the selected remedies, and no adverse cross-media impacts are expected. In addition, there are no short-term threats associated with the selected remedies, and no adverse cross-media impacts are expected.

2.14.2 Compliance with Applicable or Relevant and Appropriate Requirements

ARARs were considered as part of the Feasibility Study to develop site cleanup levels, determine the appropriate extent of site cleanup, and govern implementation and operation of the Selected Response Action. Three types of ARARs—chemical-specific, location-specific, and action-specific— were considered as part of the Feasibility Study and are summarized in Table 13 (Surface and Subsurface Soil Chemical-Specific TBCs), Table 14 (Location-Specific ARARs and TBCs), and Table 15 (Action-Specific ARARs and TBCs).

In June 2008, NJDEP promulgated updated soil remediation standards. These new standards are being phased in between June and December 2008, in accordance with NJDEP guidance. Therefore, consistent with the phase-in guidance, previously approved CERCLA documents, and an August 6, 2008 meeting with NJDEP, the SCLs presented in this ROD are primarily based on the older NJNRDCSCC. The Selected Response Action would satisfy the chemical-specific cleanup levels through removal or containment of soils with concentrations above SCLs. The Selected Response Action satisfies the location-specific and action-specific ARARs for the site.

The Selected Response Action has been chosen because it mitigates unacceptable risk to human health and the environment, complies with the ARARs for the site, and is effective. Section 2.13 further discusses the rationale for the Selected Response Action.

2.14.3 Cost Effectiveness

In the lead agency's judgment, the Selected Response Action is cost-effective and represents a reasonable value for the money to be spent. In making this determination, the following definition was used: "A remedy shall be cost-effective if its costs are proportional to its overall effectiveness" (NCP §300.430(f)(1)(ii)(D)). This determination was accomplished by evaluating the "overall effectiveness" of those Response Actions that satisfied the threshold criteria (i.e., were both protective of human health and the environment and ARAR-compliant). Overall effectiveness was evaluated by assessing the five balancing criteria in combination (long-term effectiveness and permanence, reduction in toxicity, mobility and volume through treatment, short-term effectiveness, implementability, and costs). A comparison of the costs to the overall effectiveness was conducted to determine cost effectiveness. The relationship of

the overall effectiveness of this Response Action was determined to be proportional to its costs, and hence this Response Action represents a reasonable value for the money to be spent.

The estimated present worth cost of the Selected Response Action for soil is \$3,927,398, as presented in the FS (Shaw, 2005). Although Response Action S-1 is less expensive than the Selected Response Action, Response Action S-1 does not include any additional remedial activity that reduces potential site risks. The Army believes that the Selected Response Action is cost-effective and is protective of human health and the environment.

2.14.4 Utilization of Permanent Solutions and Alternative Treatment Technologies (or Resource Recovery Technologies) to the Maximum Extent Possible

Active remediation is proposed to achieve the RAOs developed for Site 31/101 (PICA 072). Consequently, the Selected Response Action employs permanent solutions to reduce the volume of contaminants present at the site. The Selected Response Action satisfies the criteria for long-term effectiveness by preventing unacceptable exposures to site soils. In addition, permanent reduction of risks will be accomplished through proper implementation of LUCs. Picatinny is an active military facility and there are currently no plans to change its status; however, should Picatinny ever be closed and the property transferred, the LUCs would need to be documented through an appropriate mechanism for privately owned property (i.e. deed restriction). Although the Selected Response Action does not remove all soils contamination above SCLs, it does reduce the toxicity, mobility and volume of contamination. The Selected Response Action is minimally intrusive and has reduced short-term risks by reducing handling of contaminated soils and potential for MEC discovery. Additionally, there are no special implementability issues associated with the Selected Response Action as the remedial activities are commonly applied construction practices.

2.14.5 Preference for Treatment as a Principal Element

The Selected Response Action does not address Sites 31/101 (PICA 072) through the use of active treatment technologies. As concluded in the Risk Assessment, none of the contaminants that exceeded LOCs at Sites 31/101 (PICA 072) meets the criteria of principal threat waste under the current and reasonably anticipated future use. In addition, groundwater itself is not a principal threat waste because it is considered a non-source material. Additionally, the Selected Response Action provides an optimal balance of controlling human health and ecological risks at an acceptable level with minimal intrusive activities and an effective use of funding. Therefore, the Selected Response Action is easier to implement and is much more cost effective than technologies that do utilize treatment.

2.14.6 Five-Year Review Requirements

Because this Response Action will result in hazardous substances, pollutants, or contaminants remaining on-site at concentrations above levels that allow for unlimited use and unrestricted exposure, statutory reviews will be conducted every five years after Response Action initiation. Five-year reviews will ensure that the Response Action is, or will be, protective of human health and the environment.

2.15 DOCUMENTATION OF SIGNIFICANT CHANGES FROM PREFERRED RESPONSE ACTION FROM PROPOSED PLAN

The Proposed Plan presented the same Selected Response Action as this ROD. No significant changes have been made. However, since the finalization of the Proposed Plan, improved conventional munitions, a type of MEC, were discovered at Site 31/101 (PICA 072). MEC at Site 31/101 (PICA 072) will be addressed under the MMRP, as PICA-007-R-03. Particularly, due to the discovery of improved conventional munitions during pre-construction delineation sampling, approximately half of an acre within Area of Attainment SS.₁ is excluded from this ROD. Improved conventional munitions, or submunitions, present a unique hazard to personnel as they are extremely sensitive. Due to this hazard, the Army is pursuing all required waivers and approvals to address these submunitions at some point in the future. Upon receipt of the necessary approvals, both MEC and coincidental chemical contamination within this half acre area will be addressed under the MMRP. The excluded area is depicted on Figure 8 (Selected Remedial Alternatives for Soil).

3.0 PART 3: RESPONSIVENESS SUMMARY

The final component of this ROD is the Responsiveness Summary. The purpose of the Responsiveness Summary is to provide a summary of the stakeholders' comments, concerns, and questions about the Selected Response Action for Site 31/101 (PICA 072) and the Army's responses to these concerns.

Site 31/101 (PICA 072) has been the topic of presentations at the Picatinny Arsenal Environmental Restoration Advisory Board (PAERAB). PAERAB members have provided comments regarding the Selected Response Action. A courtesy copy of the Proposed Plan was given to the PAERAB's co-chair and a complimentary copy was offered to any PAERAB member who requested it. A final Proposed Plan for Site 31/101 (PICA 072) was completed and released to the public on September 12, 2007, at the information repositories listed in Section 2.3.

Multiple newspaper notifications were made to inform the public of the start of the Proposed Plan comment period, solicit comments from the public, and announce the public meeting. The notification was run in the Daily Record on September 12, 2007 and in the Star Ledger on September 13, 2007. Copies of the certificates of publication are provided in Appendix A. A public comment period was held from September 20, 2007 to October 20, 2007. A public meeting was held on September 20, 2007 to inform the public about the Selected Response Action for Site 31/101 (PICA 072) and to seek public comments. At this meeting, representatives from the U.S. Army, NJDEP, USEPA, USACE, and the Army's contractor, ARCADIS U.S., Inc., were present to answer questions about the site and Response Actions under consideration.

In general, the community is accepting of the Selected Response Action. All comments and concerns summarized below have been considered by the Army, USEPA and NJDEP in selecting the final cleanup methods for Site 31/101 (PICA 072) at Picatinny.

3.1 PUBLIC ISSUES AND LEAD AGENCY RESPONSES

As of the date of this ROD, the Army endorses the Selected Response Action for Site 31/101 (PICA 072) of excavation and off-site disposal of soil with PCB concentrations greater than 160 mg/kg, excavation and off-site disposal of lead-contaminated soil adjacent to GPB, installation of an asphalt cap, and implementation of LUCs. The USEPA and the NJDEP support the Army's plan. Comments received during the Site 31/101 (PICA 072) public comment period on the Proposed Plan are summarized below.

3.1.1 Summary of Written Comments Received during the Public Comment Period

No comments were received during the public comment period.

3.1.2 Summary of Comments Received during the Public Meeting

Four comments specific to the Selected Response Action were received during the public meeting held on September 20, 2007. Transcripts from the public meeting have been submitted into the Administrative Record (located at the information repositories listed in Section 3.2) for the site.

The comments received on the Selected Response Action are summarized as follows:

Comment 1: Michael Glaab, PAERAB, Community Co-Chair: It is very reassuring and gratifying that you have included an option actually removing some of the highly contaminated soil, particularly the soil next to water. Are NJDEP and EPA satisfied with the 160 mg/kg level?

Response: Mr. William Roach of USEPA stated a lower level was originally proposed, and then after a change in the program to a risk-based approach, the number increased. USEPA would prefer the lower level but finds the 160 mg/kg level satisfactory. Mr. Greg Zalaskus of NJDEP stated that the Selected Response Action is acceptable as long as the Response Action prevents direct contact with the PCB impacted soil.

Comment 2: Michael Glaab: Are the institutional controls long-term?

Response: Yes, the institutional controls are established in CERCLA documents and will be maintained until concentrations of contaminants in the soil decrease to allow for unrestricted use and unlimited exposure.

Comment 3: Michael Glaab: What is the frequency of testing and will data be made available to the Restoration Advisory Board and the Technical Assistance for Public Participation (TAPP) contractor?

Response: As the action is implemented, leachability tests will be conducted to determine if there is any leaching of contaminants from the soil to the groundwater. The U.S. Army will continue public outreach and brief the Restoration Advisory Board. Further, reports will continue to be sent to NJDEP and USEPA and will be made available to the public.

Comment 4: Michael Glaab: The commenter stated that he did not recall the Restoration Advisory Board having voted to approve any response action that consisted of monitored natural attenuation. Monitored natural attenuation, he added, may have been selected but that does not mean that the Restoration Advisory Board approved it. [The commenter was referencing an early comment by Mr. Llewellyn regarding the Proposed Plan for sediment and surface water].

Response: Correct. The Restoration Advisory Board has occasionally conducted internal votes to assess PAERAB membership support of a remedy. However, the PAERAB itself is not a decision making authority and can only provide input for consideration by the Army and regulatory agencies. It is noted that, for Sites 31/101 (PICA 072), the PAERAB did not conduct an internal vote on this response action.

3.2 TECHNICAL AND LEGAL ISSUES

No technical or legal issues were raised on the Selected Response Action.

4.0 PART 4: REFERENCES

- ARCADIS U.S., Inc. 2007. *Final Proposed Plan, PICA 072 (Site 31/101), Former DRMO Yard and Former Gas Station*. Prepared for U.S. Army. September 2007. Final.
- Dames and Moore. 1989. *Site Investigation Report – Picatinny Arsenal, New Jersey*. Prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland.
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- Shaw Environmental, Inc. (Shaw). 2003. *Phase I 2A/3A Sites Remedial Investigation Report*. Prepared for U.S. Army Corps of Engineers – Baltimore District. Contract No. DACA31-95-D-0083. March 2003. Draft Final.
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- Shaw. 2005. *Site 31/101 (PICA 072) Feasibility Study*. Prepared for Army Total Environmental Program Support, Deliver Order No. 0017, November 2005. Final.
- Shaw. 2007. *Bear Swamp Brook Oil/Water Separator and Tributary Stream Sediment Removal Action Work Plan*. Prepared for U.S. Army Corps of Engineers – Baltimore District, March 2007. Final.
- United States Environmental Protection Agency (USEPA). 1989. *Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual*. Office of Emergency and Remedial Response. EPA-540/1-89/002. Washington, D.C. December 1989. Interim Final.

Tables

Table 1
Chronological Order of Investigations Conducted
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

Site No.	Investigation/Study	Year	Type of Investigation/Study
Site 31	The Environmental Photographic Interpretation Center (EPIC) Aerial Survey	1989	Aerial Survey, Imagery Analysis
	Dames and Moore Site Investigation	1989	Surface Soil Sampling, Surface Water sampling, Sediment Sampling
	Weston RCRA Closure Verification Investigation	1991	RCRA Closure Investigation of building 314, 314-B, and 314-E
	Applied Environmental Surface Soil Investigation	1993	Surface Soil Sampling at the DRMO Yard
	Weston environmental Removal Action Investigation	1994	Test Pit Excavation, Subsurface Soil Sampling, Monitoring Well Installation, Groundwater Sampling
	Dames and Moore Phase I RI	1998	Soil Gas Survey, Soil Gas Sampling
	ICF Kaiser Engineers (ICFKE) Sewer Line Subsurface Soil Sampling	1998	Subsurface Soil Sampling, Sewer Line Excavation, New Sewer Line Installation
	Green Pond Brook Focused Feasibility Study	1999	Sediment Sampling, Surface Water Sampling
	IT Corporation Additional RI Sampling	03/2000-11/2001	Surface Soil Sampling, Subsurface Soil Sampling
	Final Additional Site Investigations Remedial Investigation, Sites 3, 31, 192 & 199	2004	Evaluation of Human Health Risk
	Shaw Final Sites 31 and 101 Feasibility Study	November 2005	Preliminary Evaluation of Remedial Alternatives
Site 101	U.S. Geological Survey (USGS) Groundwater Investigation	1984-1985	Monitoring Well Installation, Groundwater Sampling
	USGS Groundwater Investigation	1986-1987	Groundwater Sampling
	USGS Sediment Investigation	1989-1990	Sediment Sampling
	Building 311 UST (Tank 17) Closure	1990	UST Excavation, Post-Excavation Soil Sampling
	Building 311 UST (Tank 18) Closure	1993	UST Excavation, Post-Excavation Soil Sampling
	Dames and Moore Phase I RI	1998	Surface Soil Sampling, Subsurface Soil Sampling, Surface Water Sampling, Sediment Sampling, Groundwater Sampling, Evaluation of Human Health and Ecological Risks
	Shaw Final Sites 31 and 101 Feasibility Study	November 2005	Preliminary Evaluation of Remedial Alternatives

Table 2
Contaminants Detected in Surface Soil Samples that Exceed LOCs
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

Contaminants	Range of Concentration [mg/kg (pg/g) dioxins]		LOC [mg/kg (pg/g) dioxins]	Source of LOC Value	Frequency of Detection	# of Samples Exceeding LOC
	Minimum	Maximum				
Semivolatiles						
Benz(a)anthracene	0.056	43	4	NJDEP-NRDCSCC	40/62	5
Benzo(a)pyrene	0.056	40	0.66	NJDEP-NRDCSCC	32/62	14
Benzo(b)fluoranthene	0.087	43	4	NJDEP-NRDCSCC	38/62	8
Benzo(k)fluoranthene	0.033	16	4	NJDEP-NRDCSCC	35/62	3
Chrysene	0.0635	51	40	NJDEP-NRDCSCC	48/62	1
Dibenz(a,h)anthracene	0.098	2.4	0.66	NJDEP-NRDCSCC	15/62	7
Indeno(1,2,3-c,d)pyrene	0.06	16	4	NJDEP-NRDCSCC	26/62	4
Pyrene	0.048	110	100	NJIGW	49/62	1
Metals						
Antimony	0.5	2230	340	NJDEP-NRDCSCC	30/52	1
Arsenic	1.3	85.2	20	NJDEP-NRDCSCC	67/67	18
Beryllium	0.451	2.23	2	NJDEP-NRDCSCC	20/54	1
Copper	15.1	68500	600	NJDEP-NRDCSCC	63/63	16
Lead	3.8	35900	600	NJDEP-NRDCSCC	72/72	20
Mercury	0.05	1250	270	NJDEP-NRDCSCC	52/54	1
Thallium	0.91	260	2	NJDEP-NRDCSCC	5/54	3
Zinc	29.6	53800	1500	NJDEP-NRDCSCC	40/40	6
PCBs						
Aroclor-1248	0.21	60	2 (total PCBs)	NJDEP-NRDCSCC	12/84	9
Aroclor-1254	0.032	27	2 (total PCBs)	NJDEP-NRDCSCC	19/84	7
Aroclor-1260	0.015	5100	2 (total PCBs)	NJDEP-NRDCSCC	43/84	14
Total PCBs*	0.257	5187	2	NJDEP-NRDCSCC	74/84	30
Dioxins/Furans						
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	130	4000	1900	IRBC	8/18	2

Notes:

* The range of concentrations for total PCBs was derived by adding the concentrations of the individual detected PCB congeners.

IRBC = USEPA Region III Industrial Surface Soil Risk Based Concentration

NJIGW = NJDEP Impact to Groundwater Cleanup Criteria

NRDCSCC = Non-Residential Direct Contact Soil Cleanup Criteria

Table 3
Contaminants Detected in Subsurface Soil Samples that Exceed LOCs
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

Contaminants	Range of Concentration [mg/kg (pg/g) dioxins]		LOC [mg/kg] (pg/g) dioxins]	Source of LOC Value	Frequency of Detection	# of Samples Exceeding LOC
	Minimum	Maximum				
Semivolatiles						
Benz(a)anthracene	0.047	8.6	4	NJDEP-NRDCSCC	18/32	3
Benzo(a)pyrene	0.065	11	0.66	NJDEP-NRDCSCC	18/32	8
Benzo(b)fluoranthene	0.089	12	4	NJDEP-NRDCSCC	18/32	4
Benzo(k)fluoranthene	0.037	6.7	4	NJDEP-NRDCSCC	17/32	2
Dibenz(a,h)anthracene	0.03	1.8	0.66	NJDEP-NRDCSCC	12/32	4
Indeno(1,2,3-c,d)pyrene	0.033	5.1	4	NJDEP-NRDCSCC	14/32	1
Metals						
Arsenic	1.6	80.2	20	NJDEP-NRDCSCC	23/25	5
Copper	10.1	7690	600	NJDEP-NRDCSCC	25/25	4
Lead	4.2	16400	600	NJDEP-NRDCSCC	24/24	4
Zinc	17.4	10200	1500	NJDEP-NRDCSCC	25/25	3
PCBs						
Aroclor-1260	0.024	110	2 (total PCBs)	NJDEP-NRDCSCC	21/38	5
Explosives						
2,4-Dinitrotoluene	9.2	9.2	4.2	NJDEP-NRDCSCC	1/22	1

Notes:

NRDCSCC = Non-Residential Direct Contact Soil Cleanup Criteria

Table 4
Human Health Risk Assessment Results
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

Site ID	Receptor	Exposure Medium	ELCR ¹	HI ²
Site 31	Current and Future			
	Industrial research worker	Surface Soil	8.2E-04	3.1
	Construction excavation worker	Subsurface Soil	2.3E-05	0.12
Site 101	Current and Future			
	Industrial research worker	Surface soil	1.1E-05	0.6
	Construction worker	Total Soil	3.1E-06	6.2 ³
	Onsite Youth Visitor	Sediment	4.0E-06	0.5

1. ELCR - Excess Lifetime Cancer Risk

2. HI - Hazard Index

3. A revised HI of 0.1 for the construction worker at Site 101 was calculated in Section 2.5.1 of the FS (Shaw, 2005). Refer to Section 2.8.1.3 of this ROD for more detail.

Table 5
Summary of Adult Lead Model Results
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

Site ID	Receptor	Media	Media Lead Concentration (Avg. mg/kg)	Lead Model PRGs (mg/kg) (GSDs = 2.1-1.8)	Exceedance?
Site 31	Industrial research worker	Surface Soil	1,080	778-1,354	Yes, with GSD=2.1
Site 101	Onsite youth Visitor	Surface soil	330	1,496-2,603	No

GSD - geometric standard deviations

PRG - preliminary remediation goal

Table 6
Final Site Cleanup Levels for Soil
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

Contaminant of Concern	Surface Soil (mg/kg)	Subsurface Soil (mg/kg)	Site Specific Leachate criterion ⁽¹⁾ (µg/L)
Antimony	340	--	138
Arsenic	20	20	3
Cadmium	--	8	92
Copper	600	600	29,900
Lead	600	600	115
Mercury	270	--	46
Thallium	72 ⁽²⁾	--	11.5
Zinc	1,500	1,500	46,000
Benz(a)anthracene	4.0	4.0	1.15
Benzo(a)pyrene	0.66	0.66	0.115
Benzo(b)fluoranthene	4.0	4.0	1.15
Benzo(k)fluoranthene	4.0	4.0	0.8
Chrysene	40	--	1.6
Dibenz(a,h)anthracene	0.66	0.66	0.3
Indeno(1,2,3-c,d)pyrene	4.0	4.0	0.022
Pyrene	100	--	135
PCB Aroclor -1248, -1254, -1260	2.0	2.0	0.5
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (2,3,7,8-TCDD TEQ)	0.0019	--	NA
2,4-dinitrotoluene	--	4.2	NA

- (1) Site Specific Leachate Criterion, were calculated using New Jersey guidance document for the use of **Synthetic Precipitation Leaching Procedure to develop Site-Specific IGW Remediation Standards, June 2, 2008**. Leachate Criterion calculation sheet is located at:

http://www.nj.gov/dep/srp/guidance/rs/splp_spreadsheet.xls

- (2) The USEPA Region III IRBC for thallium is used in place of the NRDCSCC (2 mg/kg). The NJDEP has informed the Army that criteria based on mean dietary intake will be eliminated from the NJ soil criteria and the Region III IRBC is an acceptable surrogate for thallium.

IGW - Impact to Groundwater Soil Cleanup Criteria

-- Not identified as a COC for the specified media

NA – Not Available

PCB – Polychlorinated Biphenyl

TC DD – 2, 3, 7, 8 – tetrachlorodibenzo-p-dioxin

TEQ – Toxicity Equivalent

Table 7
Summary of Areas of Attainment
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

AA	COCs	Area (SF)	Depth interval (ft)	Volume (CY)
Surface and Subsurface soil				
AA _{S-1}	Aroclor 1248, Aroclor 1254, Aroclor 1260, arsenic, benzo(a)pyrene	50,241	0-2 (65%) 0-10(35%)	8,933
AA _{S-2}	Aroclor 1254, Aroclor 1260, arsenic, cadmium, copper, lead, zinc	15,814	0-10	5,852
AA _{S-3}	Antimony, arsenic, copper, lead, mercury, zinc	314	0-1	12
AA _{S-4}	Benz(a) anthracene, benzo(a)pyrene, benzo(b)flouranthene, dibenz(a,h) anthracene, indeno(1,2,3-c,d) pyrene, HpCDD, copper	7,718	0-6	1,711
AA _{S-5}	Aroclor 1248	314	0-2	23
AA _{S-6}	Aroclor 1248, Aroclor 1254, Aroclor 1260, arsenic, cadmium,benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)flouranthene, dibenz(a,h) anthracene, indeno (1,2,3-c,d) pyrene, lead	37,298	0-2 (25%) 0-6 (50%) 0-10(25%)	8,289
AA _{S-7}	Copper, thallium	8,006	0-10	2,963
AA _{S-8}	Benz(a) anthracene, benzo(a)pyrene, benzo(b)flouranthene, dibenz(a,h) anthracene,2,4-DNT	314	0-10	116
AA _{S-9}	Benzo (a) pyrene	314	0-10	116

AA - Area of Attainment
CY - cubic yard
SF - square feet

Table 8
Cost Summary for Selected Response Actions
Site 31/101 (PICA 072)
Picatunny Arsenal, New Jersey

Response Action	Description	Capital Cost	Discounted O&M	Total Present Worth	Duration (Construction and O&M)
Soil					
	Continued Implementation of Land Use and Access Restrictions and Institutional Controls (ICs)	\$32,200.00	\$108,574.33	\$140,774.33	30 years
Response Action S-3B	Excavation of PCB "Hot Spots" (>100 mg/kg) with Off-Site Disposal	\$804,295.03	\$0.00	\$804,295.03	4 months, 30 years (ICs)
Response Action S-4B	Excavation of Lead Contaminated Soil Adjacent to Green Pond Brook with Off-Site Disposal	\$829,338.91	\$0.00	\$829,338.91	2 months, 30 years (ICs)
Response Action S-7	Installation of an Asphalt Cap	\$2,037,548.95	\$113,381.14	\$2,150,930.09	7 months, 30 years (ICs)
Total				\$3,925,338.36	

(1) Present worth O&M with discount rate of 7%.

Table 9
Costs for Continued Implementation of Land Use and Access Restrictions
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

	Description	Costs
Capital Costs		
	Land Use Restrictions and Institutional Controls	\$34,260
Total Capital Cost		\$34,260
O&M Costs		
	Annual Inspections	\$5,000
	5-Year Reviews	\$15,000
Present Worth O&M Costs (7% Int.) *		\$94,412
Contingency Costs (15%)		\$14,162
Total Costs for Institutional Controls		\$142,834.33

* O&M Costs are totaled as a present worth cost based on a 7% net investment rate for a 30-year period.

Table 10
Costs for Response Action S-3B - Excavation and Off-Site Disposal of Soil with PCB Concentrations Greater than 160 mg/kg
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

	Description	Costs
Capital Costs		
	Permits and Report Writing	\$78,000.00
	Confirmatory Sampling, Soil Profiling for Disposal, and Decon Water Profiling	\$16,776.00
	Site Preparation	\$137,794.74
	Excavation and Disposal of Contaminated Soil	\$184,219.82
	Site Restoration	\$40,467.54
	Mobilization and Demobilization	\$25,465.25
	Construction Oversight	\$182,123.62
	Travel and Per Diem	\$34,540.00
	Total Capital Cost	\$699,386.97
	Contingency Costs (15%)	\$104,908.05
	Total Remediation Cost for Alternative S-3B	\$804,295.02

Table 11
Costs for Response Action S-4B - Excavation and Off-Site Disposal of Lead Contaminated Soil Adjacent to Green Pond Brook
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

	Description	Costs
Capital Costs		\$721,164.28
	Permits and Report Writing	\$78,000.00
	Confirmatory Sampling, Soil Profiling for Disposal, and Decon Water Profiling	\$29,012.00
	Site Preparation	\$12,483.90
	Excavation and Disposal of Contaminated Soil	\$349,053.22
	Site Restoration	\$70,517.15
	Mobilization and Demobilization	\$47,076.20
	Construction Oversight	\$91,061.81
	Travel and Per Diem	\$43,960.00
Total Capital Cost		\$721,164.28
Contingency Costs (15%)		\$108,174.64
Total Remediation Cost for Alternative S-4B		\$829,338.92

Table 12
Costs for Response Action S-7 - Installation of an Asphalt Cap
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

	Description	Costs
Capital Costs		
	Permits and Report Writing	\$85,000.00
	Design of Soil Cover	\$25,000.00
	Site Preparation	\$39,396.54
	Construction of Asphalt Cover	\$1,027,742.00
	Mobilization and Demobilization	\$132,607.08
	Construction Oversight	\$377,256.07
	Travel and Per Diem	\$84,780.00
Contingency Costs (15%)		\$265,767.25
Total Capital Cost		\$2,037,548.94
O&M Costs		
	Quarterly Soil Cover Inspections	\$62,045.21
	Periodic Maintenance of the Soil Cover	\$14,968.92
	5-Year Reviews	\$21,578.17
Contingency Costs (15%)		\$14,788.85
Total O&M Cost		\$113,381.15
Total Remediation Cost for Alternative S-7		\$2,150,930.09

Table 13
Surface and Subsurface Soil Chemical-Specific TBCs
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

Law/Regulation	Requirement of Law Regulation	TBC Status
Soil cleanup standards (SCLs) based on New Jersey Non-Residential Direct Contact Soil Cleanup Criteria, Table 6	Non-residential cleanup criteria.	TBC Cleanup criteria for contaminated soils.

Table 14
Location-Specific ARARs and TBCs
Site 31/101 (PICA 072)
Picatunny Arsenal, New Jersey

Location	Law/Regulation	Requirement of Law Regulation	ARAR/TBC Status
Wetlands	Presence of wetlands as defined in Executive Order 11990- § 7 (c) and 40 CFR 6, Appendix A § 4 (J)	Whenever possible, Federal agency actions must avoid or minimize adverse impacts on wetland and act to preserve and enhance their natural and beneficial values. Agencies should particularly avoid new construction in wetland areas unless there are no practicable alternatives. Federal agencies shall incorporate wetlands protection consideration into planning, regulating, and decision-making processes.	<u>ARAR</u> Applicable to the substantive requirements if clearing and/or excavation activities encroach wetlands and/or transition areas identified in the Picatunny facility wide GIS at sites 31 and 101.
	Presence of wetlands as defined in the Clean Water Action Section 402 33 CFR 320.4 and NJAC 7:7A (the Freshwater Wetlands Protection Act, P.L. 1987)	To the extent possible, action must be taken to avoid degradation or destruction of wetlands. Discharges for which there are practicable alternatives with less adverse impacts or those that would cause or contribute to significant degradation are prohibited. If adverse impacts are unavoidable, action must be taken to enhance, restore, or create alternative wetlands.	<u>ARAR</u> Applicable to the substantive requirements if clearing and/or excavation activities encroach upon wetlands and/or transition areas identified in the Picatunny facility wide GIS at sites 31 and 101.

Table 14
Location-Specific ARARs and TBCs
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

Location	Law/Regulation	Requirement of Law Regulation	ARAR/TBC Status
Floodplains	Protection of flood plains as defined in Executive Order 11988 § 6 (c) and 40CFR 6, Appendix A § 4 (d)	<p>Federal agency actions shall take action to reduce the risk of flood loss; minimize the impact of floods on human safety , health and welfare; and restore and preserve the natural and beneficial values of flood plains</p> <p>Federal agencies shall evaluate the potential effects of actions in flood plains and ensure consideration of flood hazards and flood plain management</p> <p>If action is taken place in flood plains, federal agencies shall consider alternatives to avoid adverse effects, and potential</p>	ARAR 100 year flood plain is located on eastern boundary of site 31 based upon floodplains identified in the Picatinny facility wide GIS
	Within 100 year flood plain as defined in 40 CFR 6, Appendix A § 4 (d)	Facility must be designed, constructed, operated, and maintained to prevent washout of any hazardous waste by flooding.	ARAR 100 year flood plain is located on eastern boundary of site 31 based upon floodplains identified in the Picatinny facility wide GIS

Table 15
Action-Specific ARARs and TBCs
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

Action	Applicable Response Actions	Law/Regulation	Requirements of Law/Regulation	ARAR/TBC Status
Generation of Hazardous Wastes and Testing of Excavated Materials	S-3B, S-4B	RCRA methods for identification and evaluation of solid and hazardous wastes <ul style="list-style-type: none"> • 40 CFR 261, Subparts A, B, C and D • 40 CFR 136, App. A (SW-846 including method 608, 8082 by gas chromatography for PCB wastes). • NJAC 26G-5.1 (incorporated by reference) 	Specific requirements for identifying hazardous wastes. Establishes analytical requirements for testing and evaluating solid, hazardous, and water wastes	ARAR Applicable. TCLP analysis and testing results indicative of hazardous wastes.

Table 15
Action-Specific ARARs and TBCs
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

Action	Applicable Response Actions	Law/Regulation	Requirements of Law/Regulation	ARAR/TBC Status
Generation of PCB Remediation Waste	S-3B	TSCA Definition of PCB Remediation Waste 40 CFR 761.3	Specific requirements for identifying PCB waste.	<p>ARAR Applicable. PCB remediation waste is defined as any environmental media containing PCBs, such as soil, gravel, dredged materials, sediments, settled sediment fines and aqueous decantation of sediment. This definition also encompasses waste containing PCBs as a result of spill, release or unauthorized disposal at the following concentrations:</p> <ul style="list-style-type: none"> • ≥ 50 ppm current concentration of material disposal of prior to April 18, 1978 • ≥ 500 ppm PCB beginning on April 18, 1978 or ≥ 50 ppm PCB beginning on July 2, 1979 • - Any concentrations of PCBs which are not authorized
Sampling and Analysis	S-3B, S-4B	Remediation Technical Requirements NJAC 7:26E-3	Requirements of quality assurance for sampling and analysis at remediation sites.	ARAR Applicable to sampling and analytical activities at the site.

Table 15
Action-Specific ARARs and TBCs
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

Action	Applicable Response Actions	Law/Regulation	Requirements of Law/Regulation	ARAR/TBC Status
Sampling and Analysis (continued)	S-3B, S-4B	Regulations Governing the Certification of Laboratories and Environmental Measurements NJAC 7:18:1-3, 5 and 9	Establishes the procedures for obtaining and maintaining certifications and the criteria and procedures that certified laboratories shall follow in handling, preserving, and analyzing regulatory samples.	ARAR Applicable when selecting a laboratory for sampling activities during remediation and groundwater monitoring.
	S-3B, S-4B	Notice of Intent to implement a Performance Based Measurement System (PBMS) 62 FR 52098, Oct. 6, 1997 (FRL-5903-2)	Give the public an opinion on selecting any appropriate analytical test method to use in complying with USEPA regulations.	TBC Applies to analytical methods in regards to waste generation.
Excavation and Capping	S-3B, S-4B, S-7	40 CFR 264.310(a) New Jersey Soil Erosion and Sediment Control Act, NJAC 7:13-3 and NJAC 2:90	Requirements for the placement of fill for a soil cover and soil erosion and sediment controls.	ARAR Applicable to substantive requirements of the placement of a soil cap on site, excavation, and clearing activities.

Table 15
Action-Specific ARARs and TBCs
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

Action	Applicable Response Actions	Law/Regulation	Requirements of Law/Regulation	ARAR/TBC Status
Capping	S-3B, S-4B, S-7	TSCA Capping Requirements 40 CFR 761.61(a)(7)	Defines and addresses capping requirements for PCB on-site cleanup and disposal.	<p>ARAR Relevant and Appropriate to construction, design, and placement of soil and/or other material cap to prevent exposure to PCB contamination. Cap requirements are:</p> <ul style="list-style-type: none"> • Shall have a minimum thickness of 10 inches of compacted soil; or 6 inches of concrete, asphalt, or similar material • Cap material shall have a PCB concentration less than 1 ppm • Design/construct according to 40 CFR 264.310(a), 40 CFR 761.75(b)(i)(ii)-b(i)(v) • Site must maintain cap in perpetuity <p>Not binding under CERCLA</p>
Military Munitions Identification, Treatment, and Disposal	S-3B, S-4B, S-7	40 CFR 266,200 – 266,206, Subpart M [reference 40 CFR 260-270]	Regulations which identify when military munitions become a solid waste and if hazardous.	<p><u>ARAR</u> Potentially applicable if MEC are discovered during excavation and/or clearing activities at the site. DOD and RPM will be contacted.</p>

Table 15
Action-Specific ARARs and TBCs
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

Action	Applicable Response Actions	Law/Regulation	Requirements of Law/Regulation	ARAR/TBC Status
	S-3B, S-4B, S-7	40 CFR 300.120	Department of Defense (DOD) will have removal response authority and Remedial Project Manager (RPM) will be the prime contact for incidents involving military weapons and munitions under control of DOD.	ARAR Potentially applicable if MEC are discovered during excavation and/or clearing activities at the site. DOD and RMP will be contacted.
Military Munitions Identification, Treatment, and Disposal (continued)	S-3B, S-4B, S-7	ER-1110-1-8153	<p>Defines response actions and roles and responsibilities for MEC removal.</p> <p>Adapts criterion of 10% explosive content as a measure of contaminated soil reactivity to differentiate between hazardous and explosive waste.</p>	<p>ARAR Potentially applicable if MEC are discovered during excavation and/or any other access of personnel at site.</p> <p>ARAR Applies to explosive content in soil. Not applicable to MEC directly.</p>
	S-3B, S-4B, S-7	EP-1110-1-18	Provides the procedures to implement an MEC removal action.	ARAR Potentially applicable if MEC are discovered during excavation and/or any other access of personnel at site
	S-3B, S-4B, S-7	TM-9-1375-213-12	Defines the minimum safe distance between emitters of electromagnetic radiation in the radio frequency range and MEC clearance/ demolition activities.	ARAR Potentially applicable if MEC are discovered during excavation and/or any other access of personnel at site.

Table 15
Action-Specific ARARs and TBCs
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

Action	Applicable Response Actions	Law/Regulation	Requirements of Law/Regulation	ARAR/TBC Status
	S-3B, S-4B, S-7	TM-5-855-1	Defines protective measures to be taken to reduce blast shock and fragmentation damage.	ARAR Potentially applicable if MEC are discovered during excavation and/or any other access of personnel at site.
	S-3B, S-4B, S-7	DA PAM 385-61 DA PAM 385-64	Defines procedures for emergency decontamination of site workers and minimum safe distance for MEC removal.	ARAR Potentially applicable if MEC are discovered during excavation and/or any other access of personnel at site.
	S-3B, S-4B, S-7	TM60-A-1-1-31	Provides MEC disposal requirements	ARAR Potentially applicable if MEC are discovered during excavation and/or any other access of personnel at site/
Military Munitions Identification, Treatment, and Disposal (continued)	S-3B, S-4B, S-7	DOD 6055.9-STD	Requires specialized personnel in detection, removal, and disposal of MEC; stipulates required safety precautions and procedures for detonation/disposal; establishes depth of remediation based on land use.	ARAR Potentially applicable if MEC are discovered during excavation and/or any other access of personnel at site.
General Remediation	S-3B, S-4B, S-7	Technical Requirements for Ste Remediation NJAC 7:26E 1, 4-7	Specifies the minimum technical requirements to investigate and remediate contamination on any site.	ARAR Relevant and appropriate for on-site remediation activities.

**Table 15
Action-Specific ARARs and TBCs
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey**

Action	Applicable Response Actions	Law/Regulation	Requirements of Law/Regulation	ARAR/TBC Status
	S-3B, S-4B, S-7	New Jersey Soil Erosion and Sediment Control Act 40 CFR 122.26 (c) NJAC 7:13-3 and 4:24. 40 CFR 122.26 (c)	Requires the implementation of soil and erosion and sediment control measures for activities disturbing over 5,000 square feet of surface area of land.	ARAR Applicable to the substantive requirements for site activities involving excavation, grading, or other soil disturbance activities exceeding 5,000 square feet.
	S-3B, S-4B, S-7	USEPA OSWER Publication 9345.3-03FS, January 1992	Investigation-derived wastes generated from remedial activities (e.g., drilling muds, purged water, etc.) are required to be properly stored, managed and disposed. Guidance given in the publication includes waste material containment, collection, labeling, etc.	TBC for wastes generated during excavation activities and groundwater monitoring.
Discharge of Aqueous Waste to Surface Water	S-3B, S-4B, S-7	CWA Effluent Guidelines 40 CFR 401 40 CFR 122 and 125 40 CFR 136.1 – 136.4	Provides requirements for point source discharges of pollutants.	ARAR Applicable for discharge of storm water that may result from on-site in-situ and/or excavation and clearing activities and the discharge of treated wash water to the drainage ditch or wetlands.

**Table 15
Action-Specific ARARs and TBCs
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey**

Action	Applicable Response Actions	Law/Regulation	Requirements of Law/Regulation	ARAR/TBC Status
	S-3B, S-4B, S-7	New Jersey Water Pollution Control Act – New Jersey Pollutant Discharge Elimination System (NJPDES) (NJAC 7:14A)	Discharge of pollutants to surface water and groundwater from remediation sites is regulated via NJPDES requirements. NJPDES requirements include obtaining a discharge to surface water or groundwater permit equivalent and meeting substantive requirements of the permit. Requirements include effluent limitations, water quality based limitations, monitoring, and monitoring techniques.	<u>ARAR</u> Applicable to the substantive requirements of the state program for storm water and treated wash water discharges to the drainage ditch or wetlands.
Stream/Wetland Encroachment	S-3B, S-4B, S-7	33 CFR 320.4 Flood Hazard Area Control (NJAC 7:13-1.1 et seq.) Freshwater Wetland Protection Act Rule (NJAC 7:7A-9, NJS 13:9A-1) All the regulations require equivalency permit and correlate with location specific requirements.	Equivalency permit required for the following activities: <ul style="list-style-type: none"> • Development or disturbances in floodplain and wetland area • Stream encroachment • Soil erosion and sediment control 	<u>ARAR</u> Applicable to the substantive requirement of the state program for remediation activities.

Table 15
Action-Specific ARARs and TBCs
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

Action	Applicable Response Actions	Law/Regulation	Requirements of Law/Regulation	ARAR/TBC Status
On-Site Treatment, Storage and Disposal	S-3B, S-4B, S-7	RCRA Treatment, Storage, and Disposal of Hazardous Waste 40 CFR 264, Subparts A, B, C, D, E, G and I. 265, Subparts A, B, C, D, E, G and I NJAC 26G-8 and 9 (incorporation by reference)	Standards and requirements for facilities that treat, store, and dispose of hazardous waste. Requirements include: <ul style="list-style-type: none"> • General Facility Standards • Emergency Preparedness and Prevention • Contingency Plan and Emergency Procedures • Manifest System • Use and Management of Containers • Closure and Post Closure 	<u>ARAR</u> Applicable to the substantive requirements if hazardous waste is treated or stored on site.
	S-3B, S-4B, S-7	RCRA Treatment, Storage and Disposal of Hazardous Waste 40 CFR 264, Subparts J, L and X 40 CFR 265 Subparts, J, L, and Q RCRA – New Jersey Hazardous Waste Regulations Incorporates the above regulations (NJAC 7:26G-8 and 9)	Provides requirements for handling waste at the following facility types: <ul style="list-style-type: none"> • Tank systems • Waste piles • Chemical, physical and biological treatment • Miscellaneous units 	<u>ARAR</u> Potentially applicable to the storage and treatment of wash water and soils from remediation activities. This would be applicable if wash water and/or excavated soils were identified as hazardous waste and treated on site.

Table 15
Action-Specific ARARs and TBCs
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

Action	Applicable Response Actions	Law/Regulation	Requirements of Law/Regulation	ARAR/TBC Status
Air Emissions	S-3B, S-4B, S-7	Clean Air Act (CAA) National Ambient Air Quality Standards (NAAQS) Particulates 40 CFR 50 40 CFR 52, Subpart FF	Establishes maximum concentrations for particulates and fugitive dust emissions; and records New Jersey's State Implementation Plan.	ARAR May be applicable for on-site activities which would generate particulate matter and fugitive dust emissions from construction vehicles and equipment. Standards have been deferred to the state. See State Air Quality Regulations.
Air Emissions (continued)	S-3B, S-4B, S-7	Air Quality Regulations New Jersey NJAC 7:27-13	Provides requirements applicable to ambient air pollution sources.	ARAR Potentially applicable to the on-site generation and emission of ambient air pollutants. Air monitoring will be performed and is the following air quality standards are exceeded, then requirements are applicable. Primary air quality standard is 75 µg/m ³ (not to exceed 260 µg/m ³ more than once) and secondary standard of 60 µg/m ³ (not to exceed 150 µg/m ³ more than once), both for geometric mean value of all 24-hour average concentration standard over 12 consecutive months.
Decontamination	S-3B, S-4B, S-7	TSCA decontamination standards and procedures for removing PCBs 40 CFR 761.79 40 CFR 761.1(3) 40 CFR 761.300-761.359	Requirements for regulating PCBs from water, organic liquids, nonporous surfaces, concrete, and nonporous surfaces covered with a porous surface.	ARAR Potentially applicable to decontamination of equipment during remedial and clearing activities at the site.

Table 15
Action-Specific ARARs and TBCs
Site 31/101 (PICA 072)
Picatinny Arsenal, New Jersey

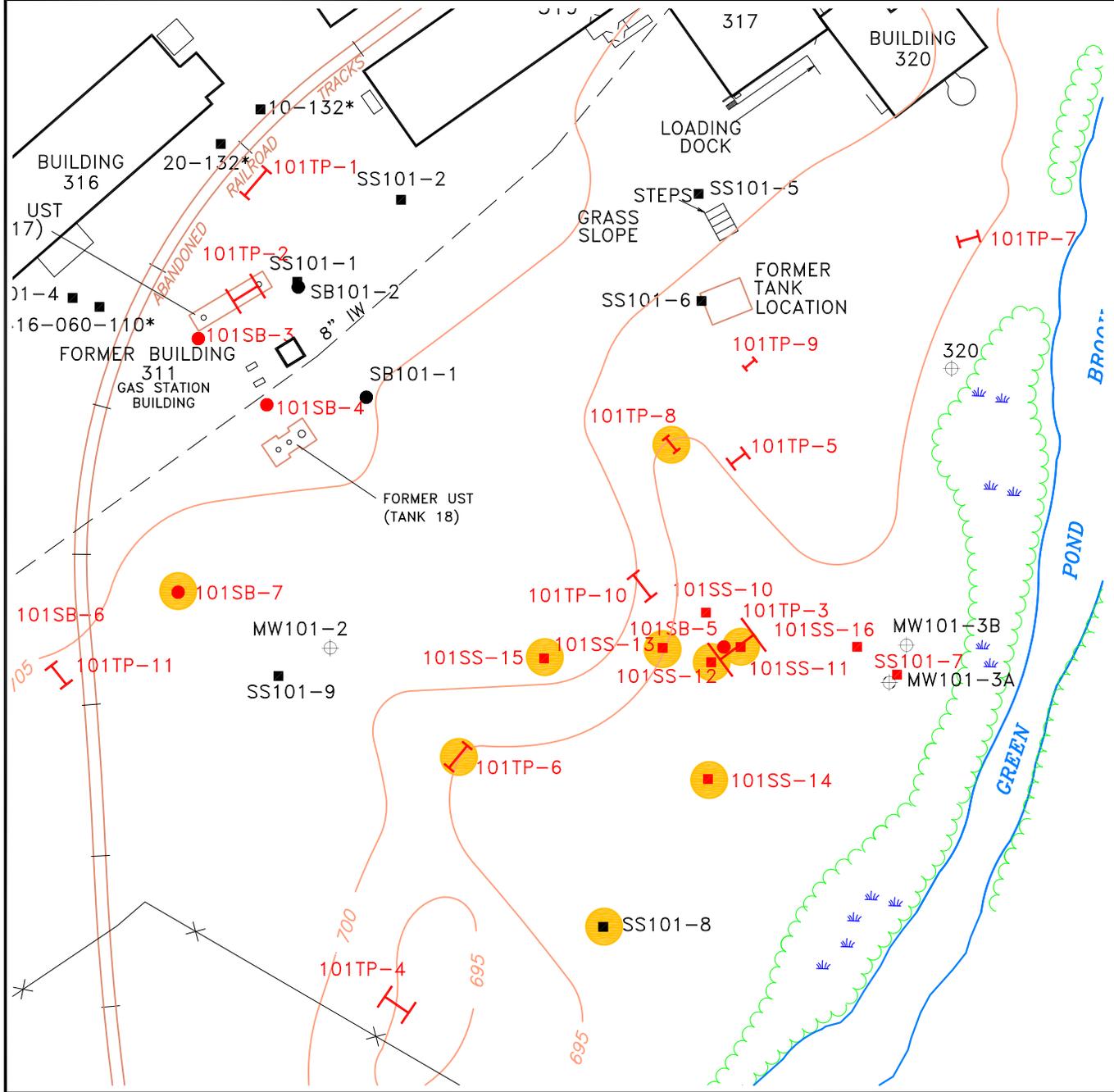
Action	Applicable Response Actions	Law/Regulation	Requirements of Law/Regulation	ARAR/TBC Status
Disposal Off Site	S-3B, S-4B	RCRA Land Disposal Restrictions 40 CFR 268, Subparts A, B, C, D, and E 40 CFR 300.440 (off-site rule) NJAC 7:26-11 <i>et seq.</i>	Identifies hazardous wastes that are restricted from land disposal and defines those limited circumstances under which an otherwise restricted waste may continue to be land disposed.	ARAR Applicable if hazardous waste is disposed of on site or transported off-site to a landfill.
	S-3B, S-4B	TSCA Identification of alternate disposal methods, traditional (performance based) and risk-based methods for disposal. 40 CFR 761.50 (alternate disposal method) 40 CFR 761.75 (chemical waste landfill) 40 CFR 761.61 (self-implementing, traditional and risk based options) 40 CFR 761.77 (approval)	Applicable to disposal of material: 1. containing <50 ppm PCBs; 2. managed under a 404 CWA or equivalent permit USACE under 33 CFR 320; 3. getting prior approval from USEPA based on risk assessment and site specifics.	ARAR Applicable. Spills and other uncontrolled discharges of PCBs at concentrations of ≥50 ppm constitute disposal of PCBs. Applicable to disposal >50 ppm PCBs may be sent to a TSCA approved landfill compliant with 40 CFR 761.75. Applicable to disposal of <50 ppm PCBs may be sent to a RCRA approved landfill.
Packaging, Labeling and Storage	S-3B, S-4B	RCRA Hazardous Waste Generation 40 CFR 262, Subparts A, B, C, D, and E. NJAC 7:26G-6	Specifies requirements for hazardous waste packaging, labeling, manifesting, and storage.	ARAR Potentially applicable for the off-site transportation of hazardous waste.
	S-3B, S-4B	TSCA 40 CFR 761.40 and 40 CFR 761.45	Specifies requirements for labeling and shipping of PCBs.	ARAR Potentially applicable for labeling and transportation of PCBs off-site.

Table 15
Action-Specific ARARs and TBCs
Site 31/101 (PICA 072)
Picatunny Arsenal, New Jersey

Action	Applicable Response Actions	Law/Regulation	Requirements of Law/Regulation	ARAR/TBC Status
Labeling and Transportation	S-3B, S-4B	NJDEP – Division of Waste Management: NJAC 7:26 Subchapter 3; NJAC 7:26 – 3.2(c), - 3.2(b), - 3.2(a), - 3.2(a)2, - 3.2(a)6; NJAC 7:26-16.4 and NJAC 7:26-3.4 and 7:26-3.5	Solid waste for off-site transportation must obtain proper written approval from the state prior to transporting the waste. Once approved, the transporting vehicle has to be properly registered to handle the waste with appropriate placard.	ARAR Applicable for off-site transportation of soil and debris generated on site.
Transportation	S-3B, S-4B	RCRA – Solid/Hazardous Waste Regulations: 40 CFR, Subparts A, B, C, and D and 40 CFR 263, Subparts A, B, C Directive #9330.2-07,49 NJAC 7:26G-7	Hazardous waste containing vehicles must be properly registered to handle and transport the waste to a regulated facility. In addition, waste must be properly packed and accompanied with proper emergency response spill procedures and manifests.	ARAR Potentially applicable for the off-site transportation of hazardous waste.
	S-3B, S-4B	DOT Hazardous Materials Transportation Regulations 40 CFR 171-180	Establishes classification, packaging, and labeling requirements for shipments of hazardous materials.	ARAR Potentially applicable for off-site transportation of hazardous materials and PCBs generated on site.

Figures

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JG	9/18/07	AC	9/18/07	TC	9/18/07		



LEGEND

	RAILROAD		FORMER BUILDING
	TREE LINE		COVERED WALKWAY
	FENCE		SWAMP
	TRANSFORMER		WATER
	BLAST WALL		10' SURFACE CONTOUR
	STORM SEWER		PAVED ROADWAY
	SANITARY SEWER		UNPAVED ROADWAY
	EARTH MOUND		
	BUILDING		

EXISTING SAMPLING LOCATIONS

	MONITORING WELL
	SURFACE WATER/SEDIMENT
	SURFACE SOIL
	SOIL BORING
	TEST PIT
	HYDROPUNCH
	SAMPLE WITH PAH CONCENTRATION > LOCs

PHASE I 2A/3A SAMPLING LOCATIONS

	MONITORING WELL
	SURFACE WATER/SEDIMENT
	SURFACE SOIL
	SOIL BORING
	TEST PIT
	HYDROPUNCH



FIGURE NO. 2
SITE 101 - SURFACE AND SUBSURFACE SOIL SAMPLE LOCATIONS

SITES 31 AND 101 PROPOSED PLAN
 PICATINNY ARSENAL, DOVER, NEW JERSEY

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LEGEND

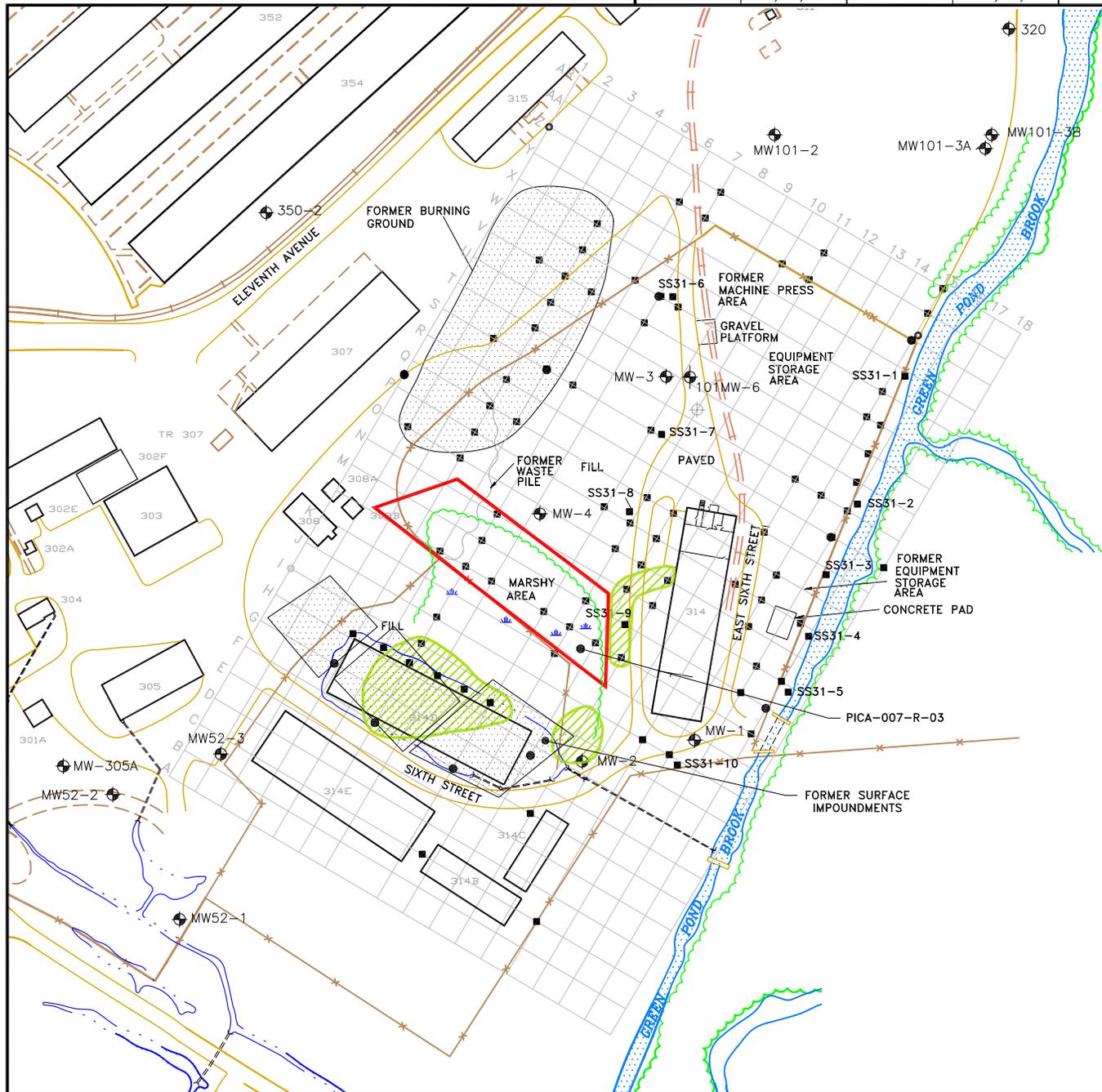
	RAILROAD		FORMER BUILDING
	TREE LINE		COVERED WALKWAY
	FENCE		SWAMP
	TRANSFORMER		WATER
	BLAST WALL		10' SURFACE CONTOUR
	STORM SEWER		PAVED ROADWAY
	SANITARY SEWER		UNPAVED ROADWAY
	EARTH MOUND		MONITORING WELLS
	BUILDING		SOIL BORING LOCATION
			SURFACE SOIL SAMPLING LOCATION



FIGURE NO. 3
SITE 31 - SURFACE AND SUBSURFACE SOIL SAMPLE LOCATIONS

SITE 31 AND 101 (PICA 072) RECORD OF DECISION
 PICATINNY ARSENAL, DOVER, NEW JERSEY

DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
JG	09/18/07	AC	09/18/07	TC	09/18/07	



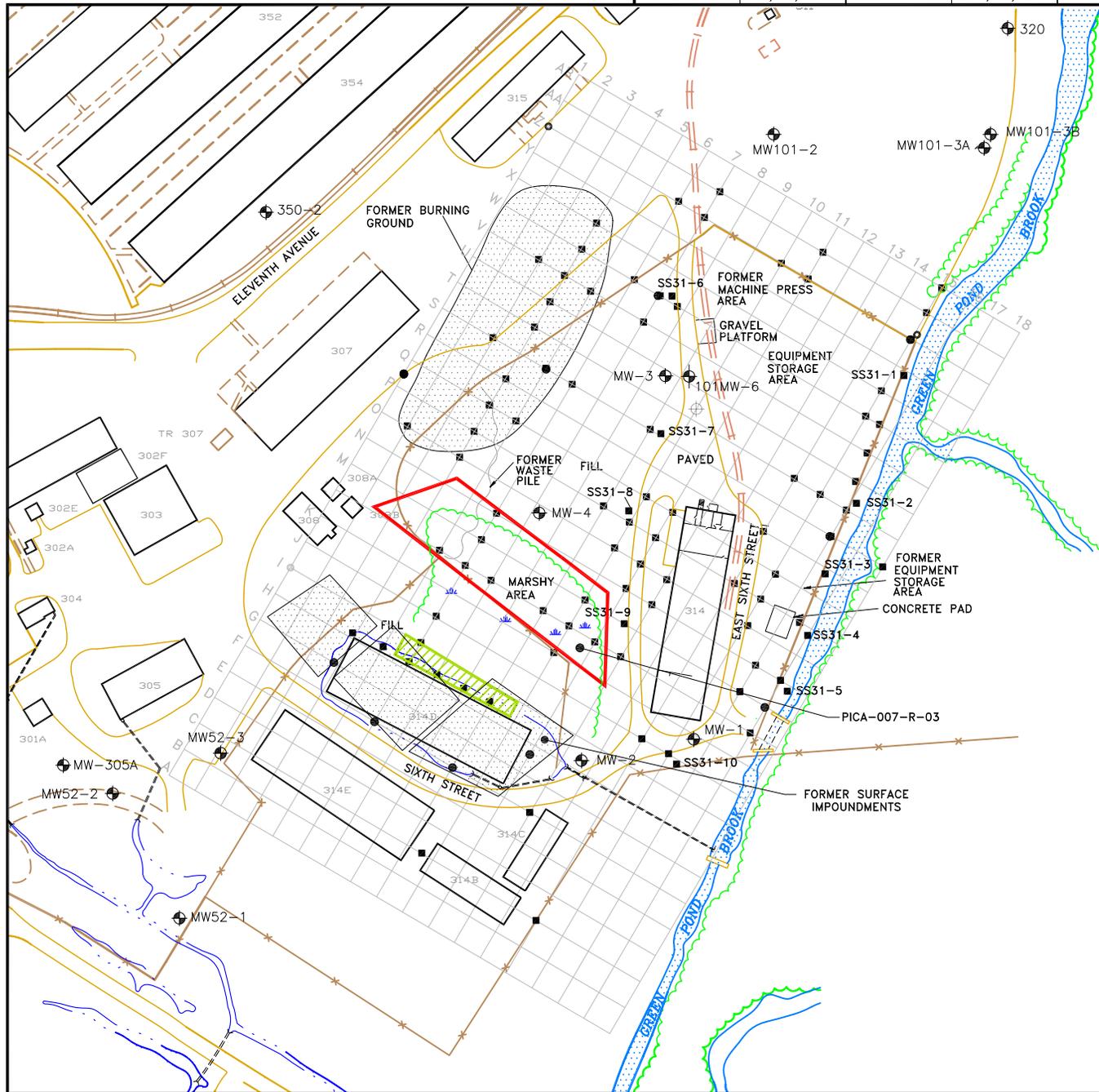
LEGEND

	RAILROAD		FORMER BUILDING
	TREE LINE		COVERED WALKWAY
	FENCE		SWAMP
	TRANSFORMER		WATER
	BLAST WALL		10' SURFACE CONTOUR
	STORM SEWER		PAVED ROADWAY
	SANITARY SEWER		UNPAVED ROADWAY
	EARTH MOUND		MONITORING WELLS
	BUILDING		SOIL BORING LOCATION
			SURFACE SOIL SAMPLING LOCATION
	APPROXIMATE AREA OF EXCAVATION (>50mg/kg TOTAL PCBs)		



FIGURE NO. 4
 APPROXIMATE AREA OF EXCAVATION FOR
 RESPONSE ACTION S-3
 SITE 31 AND 101 (PICA 072) RECORD OF DECISION
 PICATINNY ARSENAL, DOVER, NEW JERSEY

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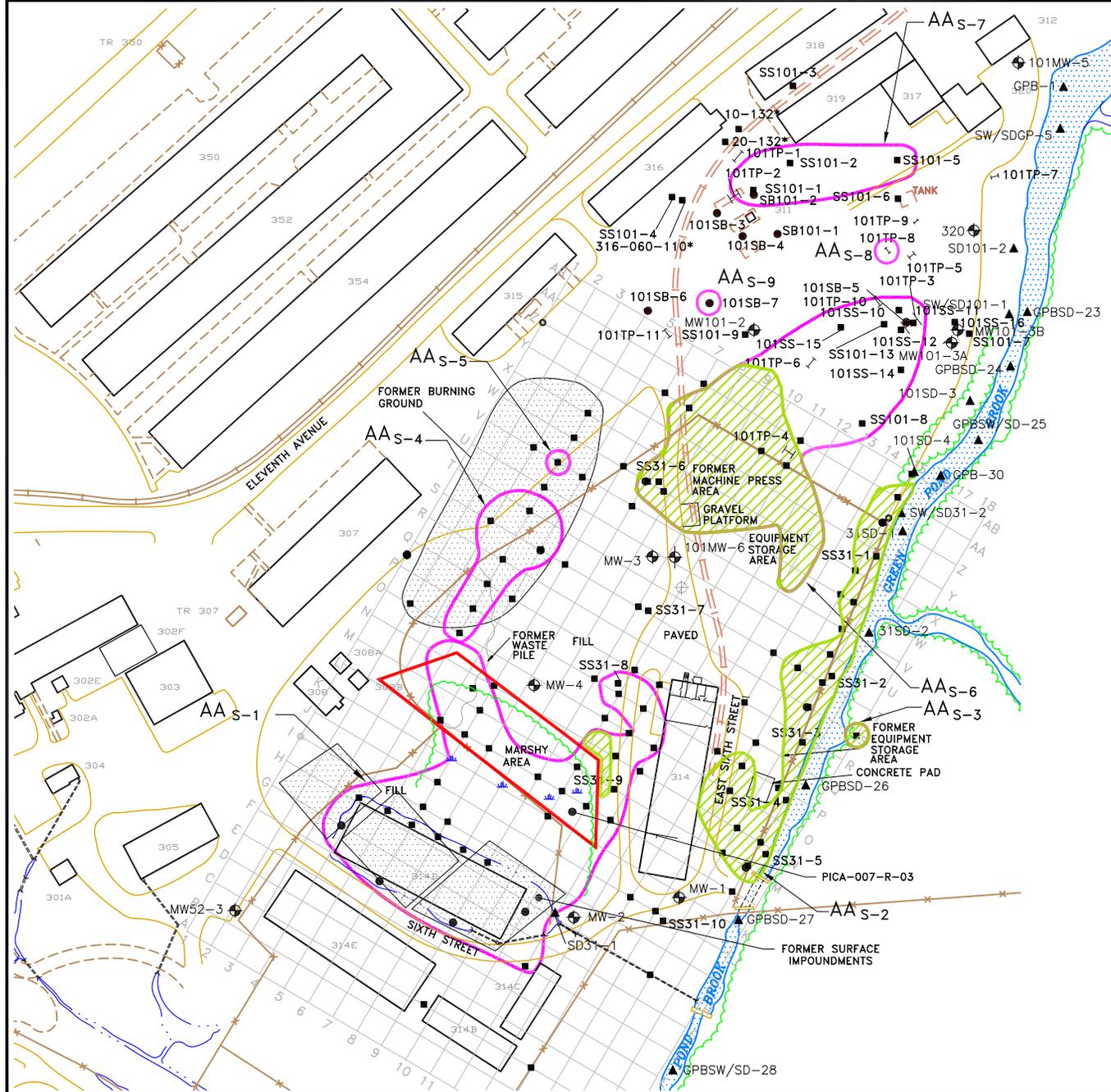
LEGEND

	RAILROAD		FORMER BUILDING
	TREE LINE		COVERED WALKWAY
	FENCE		SWAMP
	TRANSFORMER		WATER
	BLAST WALL		10' SURFACE CONTOUR
	STORM SEWER		PAVED ROADWAY
	SANITARY SEWER		UNPAVED ROADWAY
	EARTH MOUND		MONITORING WELLS
	BUILDING		SOIL BORING LOCATION
	APPROXIMATE AREA OF EXCAVATION (>160mg/kg TOTAL PCBs)		SURFACE SOIL SAMPLING LOCATION



FIGURE NO. 5
 APPROXIMATE AREA OF EXCAVATION FOR
 RESPONSE ACTION S-3B
 SITE 31 AND 101 (PICA 072) RECORD OF DECISION
 PICATINNY ARSENAL, DOVER, NEW JERSEY

DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
JG	01/02/06	AC	01/02/06	TC	01/02/06	



LEGEND

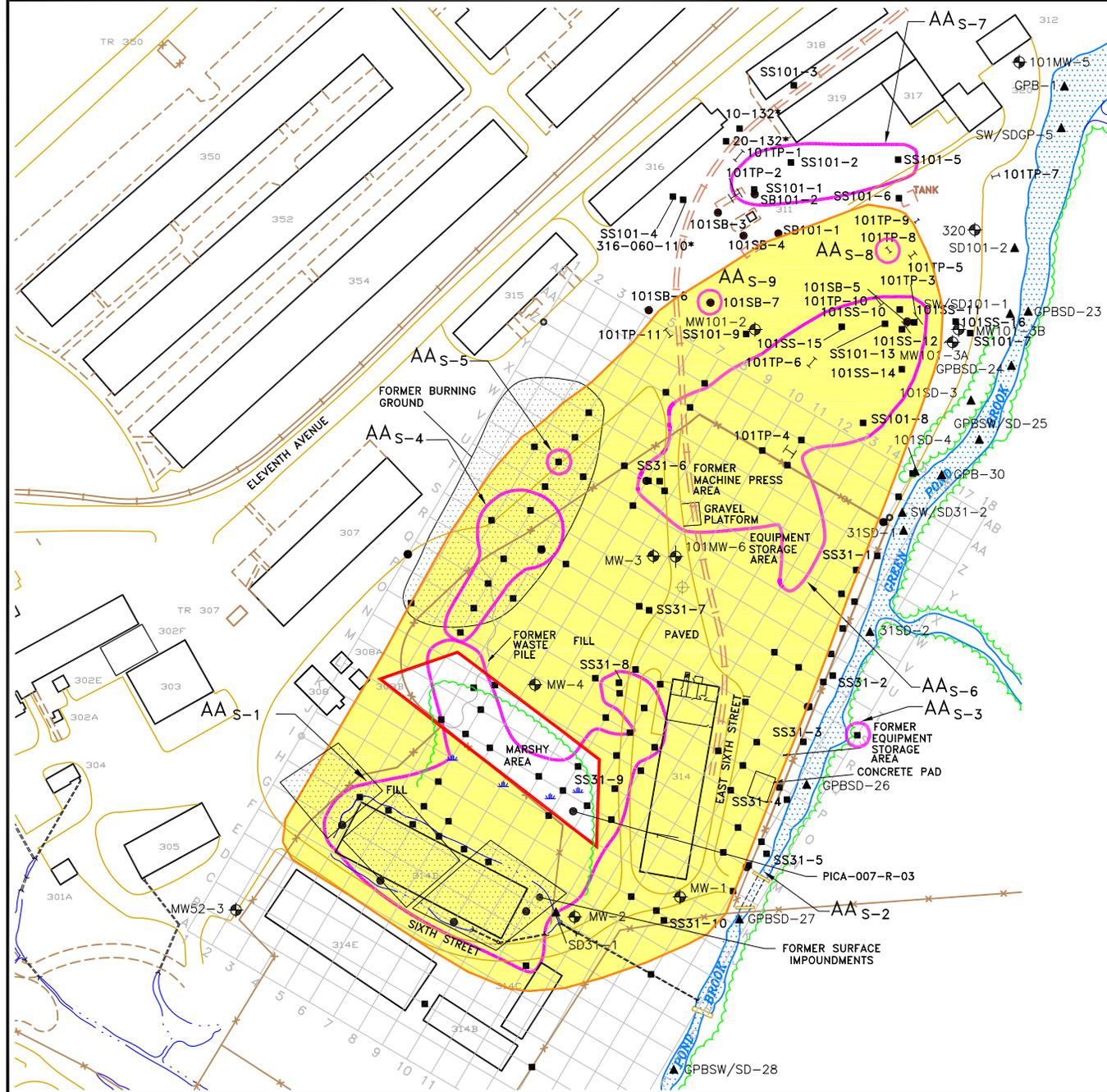
	RAILROAD		FORMER BUILDING
	TREE LINE		COVERED WALKWAY
	FENCE		SWAMP
	TRANSFORMER		WATER
	BLAST WALL		10' SURFACE CONTOUR
	STORM SEWER		PAVED ROADWAY
	SANITARY SEWER		UNPAVED ROADWAY
	EARTH MOUND		SURFACE WATER/SEDIMENT MONITORING WELLS
	BUILDING		SOIL BORING LOCATION
	APPROXIMATE AREA OF >60 mg/kg Lead		LOCATION AREA OF ATTAINMENT

NOTE:
 1. BASED ON A MILITARY MUNITIONS RESPONSE PROGRAM INVESTIGATION, AA_{S-3} WILL BE INCORPORATED INTO A NEW IRP SITE AND ADDRESSED IN A SEPARATE INVESTIGATION.



FIGURE NO. 6
 APPROXIMATE AREAS OF EXCAVATION FOR
 RESPONSE ACTION S-4 (LEAD REMOVAL)
 SITES 31 AND 101 (PICA 072) RECORD OF DECISION
 PICATINNY ARSENAL, DOVER, NEW JERSEY

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LEGEND

	RAILROAD		FORMER BUILDING
	TREE LINE		COVERED WALKWAY
	FENCE		SWAMP
	TRANSFORMER		WATER
	BLAST WALL		10' SURFACE CONTOUR
	STORM SEWER		PAVED ROADWAY
	SANITARY SEWER		UNPAVED ROADWAY
	EARTH MOUND		SURFACE WATER/SEDIMENT MONITORING WELLS
	BUILDING		SOIL BORING LOCATION
	ASPHALT CAP		SURFACE SOIL SAMPLING LOCATION
			AREA OF ATTAINMENT

- NOTES:**
1. DEPICTED CAP LIMITS REPRESENT THE MAXIMUM AREA THAT MAY BE CAPPED WITH ASPHALT. THIS AREA WAS USED FOR THE BASIS OF THE COST ESTIMATE AND THE FINAL CAP LIMITS WILL ULTIMATELY BE DETERMINED DURING THE REMEDIAL DESIGN PHASE AND SUBSEQUENT WASTE PROFILE SAMPLING LIKELY RESULTING IN A SMALLER PAVED AREA THAN 6-ACRES.
 2. BASED ON A MILITARY MUNITIONS RESPONSE PROGRAM INVESTIGATION, AA_{S-3} WILL BE INCORPORATED INTO A NEW IRP SITE AND ADDRESSED IN A SEPARATE INVESTIGATION.

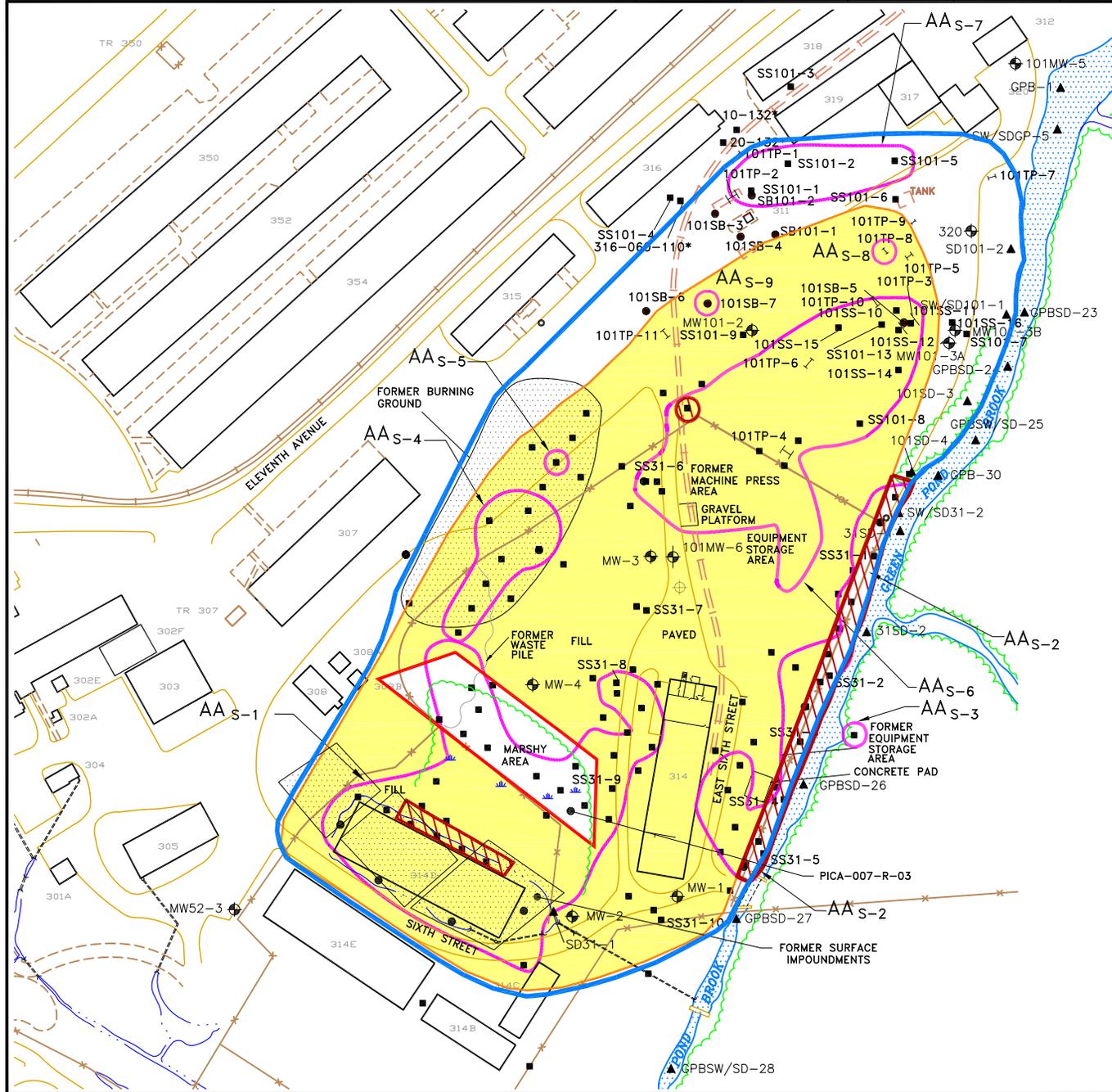


FIGURE NO. 7

APPROXIMATE AREA OF ASPHALT CAP UNDER RESPONSE ACTION S-7

SITE 31 AND 101 (PICA 072) RECORD OF DECISION
 PICATINNY ARSENAL, DOVER, NEW JERSEY

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LEGEND

	RAILROAD		FORMER BUILDING
	TREE LINE		COVERED WALKWAY
	TRANSFORMER		SWAMP
	BLAST WALL		WATER
	STORM SEWER		10' SURFACE CONTOUR
	SANITARY SEWER		PAVED ROADWAY
	EARTH MOUND		UNPAVED ROADWAY
	BUILDING		SURFACE WATER/SEDIMENT MONITORING WELLS
	ASPHALT CAP		SOIL BORING LOCATION
	EXCAVATE, TRANSPORT, AND DISPOSE OFF-SITE		SURFACE SOIL SAMPLING LOCATION
			AREA OF ATTAINMENT
			AREA OF LUCs

NOTES:

1. DEPICTED CAP LIMITS REPRESENT THE MAXIMUM AREA THAT MAY BE CAPPED WITH ASPHALT. THIS AREA WAS USED FOR THE BASIS OF THE COST ESTIMATE AND THE FINAL CAP LIMITS WILL ULTIMATELY BE DETERMINED DURING THE REMEDIAL DESIGN PHASE AND SUBSEQUENT WASTE PROFILE SAMPLING LIKELY RESULTING IN A SMALLER PAVED AREA THAN 6-ACRES.



FIGURE NO. 8

SELECTED REMEDIAL ALTERNATIVE FOR SOIL COMBINATION OF RESPONSE ACTION S-3B, S-4B, AND S-7

SITE 31 AND 101 (PICA 072) RECORD OF DECISION
 PICATINNY ARSENAL, DOVER, NEW JERSEY

Appendix A

Certificate of Publication for Public
Notices

PUBLIC NOTICE
U.S. ARMY INVITES PUBLIC COMMENT ON PROPOSED PLANS FOR SITES 31 AND 101 (PICA 072), FORMER DRMO YARD AND FORMER GAS STATION AND AREA C GROUNDWATER (PICA 206)

The U.S. Army at Picatinny Arsenal (Picatinny) invites the public to comment on two Proposed Plans for addressing contaminated media at Picatinny Arsenal. The first Proposed Plan addresses soil at Sites 31 and 101 (PICA 072), the former Defense Reutilization Marketing Office (DRMO) and former Gas Station. The second Proposed Plan addresses groundwater at Area C (PICA 206), located in the southern portion of Picatinny Arsenal. Both Proposed Plans are summarized below.

Sites 31 and 101 (PICA 072) Proposed Action

Sites 31 and 101 (PICA 072) consists of approximately 6 acres on the western side of Green Pond Brook in the center of Picatinny Arsenal. The sites have been used for a variety of activities since 1909. These uses included a gasoline station, production of explosives during WWI and WWII, office buildings, storage, and the Defense Reutilization and Marketing Office. Today, there are six buildings on the sites which are used for office space, light industrial storage, and DRMO activities. Most of the site is paved or covered in gravel. The Army conducted comprehensive environmental investigations at the site. Various chemicals and metals have been detected at elevated levels in the surface and sub-surface soil. Human health and ecological risk assessments showed potential impacts to human health. Sediments and surface water at Sites 31 and 101 (PICA 072) are being addressed as part of Green Pond Brook Record of Decision, groundwater is being addressed under a separate broader groundwater investigation, and the potential presence of ordnance is being addressed under a separate Army program.

Sites 31 and 101 (PICA 072) Alternatives Evaluated

The Army, the US Environmental Protection Agency, and the New Jersey Department of Environmental Protection evaluated the following alternatives:

Alternative S-1: No Action.

Alternative S-2: Land Use Controls.

Alternative S-3: Excavation and off-site disposal of soil with PCB concentrations greater than 50 milligrams per kilogram (mg/kg).

Alternative S-3B: Excavation and off-site disposal of soil with PCB concentrations greater than 100 milligrams per kilogram (mg/kg).

Alternative S-4: Excavation and off-site disposal of soil with lead concentrations above Site Cleanup Levels (SCLs).

Alternative S-4B: Excavation and off-site disposal of lead-contaminated soil adjacent to Green Pond Brook.

Alternative S-5: Excavation of soil with concentrations of COCs that exceed SCLs with off-site disposal and land-use controls.

Alternative S-6: Excavation of soil with concentrations of COCs that exceed SCLs, stabilization of hazardous waste with off-site disposal.

Alternative S-7: Installation of an asphalt cap and land-use controls.

Sites 31 and 101 (PICA 072) Preferred Alternative

A combination of Alternatives S-3B, S-4B and S-7, is the preferred alternative. This combination of Alternatives provides an optimum balance between the selection criteria and is protective of human health and the environment. The preferred alternative may be modified or a new alternative may be developed based on public input. The final alternative selected will be documented in a Record of Decision that summarizes the decision-making process. The Army will summarize and respond to comments received during the comment period as part of the Record of Decision.

Area C Groundwater (PICA 206) Proposed Action

The area designated as PICA 206 is approximately 126 acres in size in the southern portion of the arsenal. PICA 206 represents the groundwater within Area C including the southern boundary of the facility. Land use within Area C is predominantly light industrial and intermittent recreational activities. Low concentration levels of specific parameters have been detected in the groundwater; however there is no recognized plume within Area C. Environmental concerns associated with other media within Area C have and will be addressed under separate site-specific Records of Decision.

Area C Groundwater (PICA 206) Alternatives Evaluated

The Army, the US Environmental Protection Agency, and the New Jersey Department of Environmental Protection conducted a screening of General Response Actions (GRAs) to develop alternatives to be evaluated for Area C groundwater. Screened GRAs included No Action, Land Use Controls, Monitoring, Physical Barriers, Hydraulic Barriers, Groundwater Removal, and Groundwater Treatment. The following alternatives were developed with a detailed evaluation:

Alternative GW-1: No Action

Alternative GW-2: Land Use Controls and Long-Term Groundwater Monitoring

Area C Groundwater (PICA 206) Preferred Alternative

Alternative GW-2 is the preferred alternative. This Alternative provides an optimum balance between the selection criteria and is protective of human health and the environment. The preferred alternative may be modified or a new alternative may be developed based on public input. The final alternative selected will be documented in a Record of Decision that summarizes the decision-making process. The Army will summarize and respond to comments received during the comment period as part of the Record of Decision.

PUBLIC MEETING

The Army invites the public to attend a meeting on Thursday, September 20, 2007, 6 p.m., Hilton Garden Inn (near the Rockaway Townsquare Mall), 375 Mt. Hope Avenue, Rockaway, NJ 07866. The meeting location is wheelchair accessible. A meeting of Picatinny's Environmental Restoration Advisory Board will follow the Proposed Plan meeting, and the public is also invited to attend the Board meeting.

WRITTEN COMMENTS

Copies of the investigation reports are available for public review at the Environmental Affairs Directorate at Picatinny by contacting Mr. Ted Gabel at (973) 724-6748 in advance. Starting September 20, 2007, copies of the Proposed Plans are available for review at the Rockaway Township Library (61 Mount Hope Road) and Morris County Library (30 East Hanover Avenue, Whippany). The public may submit written comments during the 30-day comment period (September 20 to October 20, 2007). Comments must be postmarked by October 20 and sent to Mr. Ted Gabel, Environmental Affairs Office, U.S. Army Installation Management Agency, Northeast Regional Garrison Office, Building 319, Picatinny, NJ, 07806.

Being duly sworn, according to law, on oath sayeth that

she is Clerk of the

Star-Ledger, in said County of Essex, and that the notice, of

which the attached is a copy, was published in said paper

on the 13th day of September, 2007

and continued therein for _____

successively, at least once in each _____

for 1 day

Loretta Dasher

Sworn to and subscribed

before me this: 31st
day of October, 2007

Kathleen Simon
NOTARY PUBLIC OF NEW JERSEY

KATHLEEN SCONZO
NOTARY PUBLIC OF NEW JERSEY
MY COMMISSION EXPIRES NOV. 13, 2007

Daily Record

AN OFFICIAL
AFFIDAVIT (PROOF) OF PUBLICATION
(Cut, stamped and sealed at and by the Daily Record)

STATE OF NEW JERSEY, } ss.
Morris County

PAT YOST,

Of full age, being fully sworn according to law,
doth depose and say that she is employed in the
Advertising Marketing Services Dept. of Morris
County's Daily Record a newspaper printed and
published in Parsippany and circulated in the
County of Morris, in this State, and generally
circulating in Warren, Sussex, Essex, Union,
Passaic and Somerset Counties, in this State, and
the notice, of which the annexed is a printed copy,
has been published in said newspaper 1 time.
Publication being made the 12th day of September,
A.D. 2007.

Pat Yost
Sworn to and subscribed before me

this 12th day of September, A.D. 2007

Sharon Glover
NOTARY PUBLIC
SHARON GLOVER
Notary Public of New Jersey
My Commission Expires Dec. 01, 2009

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P.F.5232.65,1-T,9/12

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