EXPLANATION OF SIGNIFICANT DIFFERENCES FOR 3 SITE GROUP (SITES 118 [PICA-097], 131 [PICA-131] and 149 [PICA-149])

PICATINNY ARSENAL
NEW JERSEY

FINAL **JULY 2019**

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ACRONYMS AND ABBREVIATIONS

%	percent
2,4-DNT	2,4-dinitrotoluene
AR	Administrative Record
Army	United States Department of the Army
ARAR	Applicable Relevant and Appropriate Requirements
bgs	below ground surface
CERCLA	Comprehensive Environmental Response and Compensation Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
DERP	Defense Environmental Restoration Program
ECC	Environmental Chemical Corporation
ERA	Ecological Risk Assessment
ESD	Explanation of Significant Differences
FFA	Federal Facilities Agreement
ft	foot/feet
ft^2	square feet
FS	Feasibility Study
HHRA	Human Health Risk Assessment
HI	Hazard Index
IC	Institutional Control
ID	Identification
LOC	Level of Concern
LUC	Land Use Control
mg/kg	milligrams per kilogram
NCP	National Contingency Plan
NJAC	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
NRDCSRS	Non-Residential Direct Contact Soil Remediation Standard
PAERAB	Picatinny Arsenal Environmental Restoration Advisory Board
PAH	polycyclic aromatic hydrocarbon
PICA	Picatinny Arsenal
Picatinny	Picatinny Arsenal
RA	Response Action
RACR	Remedial Action Completion Report
RAO	Remedial Action Objectives
RAWP	Remedial Action Work Plan
RI	Remedial Investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
Shaw	Shaw Environmental, Inc.
SRS	Soil Remediation Standard
US	United States

ACRONYMS AND ABBREVIATIONS

USEPA	United States Environmental Protection Agency
UU/UE	Unrestricted Use/Unrestricted Exposure

1.0 INTRODUCTION

Picatinny Arsenal (Picatinny or PICA), formally designated as United States (US) Department of the Army (Army), Installation Management Command, Garrison Office, is in north central New Jersey in Morris County near the city of Dover (Figure 1). Picatinny Arsenal was included on the National Priorities List in March 1990, and assigned US Environmental Protection Agency (USEPA) ID number NJ3210020704. The Army signed a Federal Facility Agreement (FFA) with the USEPA in 1991. At Picatinny, remediation is being conducted in accordance with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and the Defense Environmental Restoration Program (DERP).

On 26 July 2017, the Army, as the lead agency, signed a Record of Decision (ROD) that described a remedy selected to address contamination in soil at the 3 Site Group, Picatinny Arsenal, Rockaway Township, New Jersey:

- *Final Record of Decision for 3 Site Group (Sites 118 [PICA-097], 131 [PICA-131] and 149 [PICA-149], Picatinny Arsenal, New Jersey* (US Army, 2017).

The ROD was signed by the Acting Director of the Emergency and Remedial Response Division (ERRD), now the Superfund and Emergency Management Division (SEMD), of the USEPA on 15 September 2017. USEPA Region 2 is the support agency that exercises oversight responsibilities. In addition, plans and activities are coordinated with the New Jersey Department of Environmental Protection (NJDEP). The ROD was prepared in accordance with the CERCLA of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, Executive Order 12580, and to the extent practicable, the NCP as required by the DERP.
On 18 September 2017, the NJDEP published a Notice of Administrative Change in the New Jersey Register that updated Soil Remediation Standards (SRS) for 19 contaminants in accordance with New Jersey Administrative Code (NJAC) 7:26D-6.2. Several of these contaminants were considered Contaminants of Concern (COC) in the ROD for the 3 Site Group.

This Explanation of Significant Differences (ESD) is being submitted to provide notification of a change to the ROD for the 3 Site Group. It was prepared in accordance with CERCLA §117(c) and with the NCP, Title 40 of the Code of Federal Regulations (CFR) §300, 435(c)(2)(i). The ESD documents significant differences to the remedy identified in the ROD concerning the cleanup goals for selected COCs present in soil at the 3 Site Group. This ESD does not impact remaining components of the selected remedy. With approval from regulators (see Section 6 and Section 8), the updated SRS values were used in the Final Remedial Action Work Plan (RAWP) (Environmental Chemical Corporation [ECC], 2018a), the soil removal, and the Remedial Action Completion Report (RACR) (ECC, 2018b).

The purpose of this ESD is to summarize revisions to NJDEP SRS values and their effect on the selected Response Action (RA) at the 3 Site Group as stipulated in the ROD. This ESD also summarizes information that led to these changes to the remedy and confirms that the remedy will continue to comply with the statutory requirements of CERCLA. Additionally, Section 5 summarizes the soil removal component of the RA which took place in March and April 2018.

The ESD will become part of the Administrative Record (AR) file for the 3 Site Group, pursuant to §300.825 (a)(2) of the NCP. This ESD and all documents supporting the decisions regarding the selected remedy are contained in the AR, which is available at the following location:

Environmental Affairs Division of Public Works
Garrison Picatinny Arsenal
Picatinny Arsenal, New Jersey 07806-5000
Building 319

The Picatinny Arsenal AR and Information Repository are also available for public review at the following repositories:

Rockaway Township Library
61 Mount Hope Road
Rockaway Township, NJ 07866
(973) 627-2344
Hours: Monday through Wednesday, and Friday: 9:00 a.m. – 8:00 p.m.
Thursday and Saturday: 9:00 a.m. – 5:00 p.m.
Sunday: 1:00 p.m. – 4:00 p.m.

Morris County Library
30 East Hanover Avenue
Whippany, NJ 07981
(973) 285-6930
Hours: Monday through Thursday: 9:00 a.m. – 9:00 p.m.
Friday and Saturday: 9:00 a.m.- 5:00 p.m.
Sunday: 1:00 p.m. – 5:00 p.m.

The modified remedy detailed herein meets the Remedial Action Objectives (RAO) established in the ROD and the RAWP for the 3 Site Group. The proposed changes do not fundamentally alter the selected remedy, and the ROD remains protective and continues to meet Applicable or Relevant and Appropriate Requirements (ARAR) (NCP 300.430(f)(1)(ii)(B)(1) and (2)).

2.0 SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

2.1 HISTORY OF 3 SITE GROUP

2.1.1 Site 118/PICA-097

Site 118/PICA-097 occupies approximately 0.1 acres in Area D in the west-central portion of Picatinny (Figure 1). Site 118 includes Building 41 at the eastern end of Dunn Avenue in the middle of the golf course (Figure 2). Constructed in 1956, Building 41 is approximately 3,150 square feet (ft^2) in area. It is a one-story hollow-tile wall building constructed on a concrete foundation. Site 118 was created to address the releases of pesticides and herbicides from Building 41.

According to a historical Picatinny document, prior to 1964 Building 41 was maintained by Picatinny Arsenal Supply Division and may have been used for storage purposes. In 1964, this building was reassigned to the Plant Engineering, Buildings, Roads, and Ground Branch, to store fertilizer, lime, and miscellaneous inert materials. Until recently, the building was used predominantly for storing pesticides and herbicides, which were applied on the golf course and the lawn surrounding Site 118.

According to Picatinny personnel, the roof of Building 41 has leaked over the years during rainfall events. Until 1988, it was reportedly a common occurrence for open bags of pesticides and herbicides stored inside Building 41 to spill their contents onto the floor. During a 2004 site reconnaissance, several holes were observed in the roof. However, all pesticides and herbicides had been removed from the building by that time. Thereafter, the building was used only for storing golf course maintenance equipment and food processing equipment.

As outlined in the ROD, the Army conducted several environmental investigations at this site, beginning in 1986. A Remedial Investigation (RI) was conducted from 2000 to 2001 (Shaw Environmental, Inc. [Shaw], 2005a), during which time various environmental media were sampled and characterized. The RI indicated that most impacts to the soil were at shallow depths, usually less than 2 feet (ft) below ground surface (bgs). The most recent investigation was conducted in 2016 pursuant to an approved Work Plan (ECC, 2015). The objective of the work was to refine previous horizontal and vertical delineation efforts of COCs by collecting additional soil samples within the Area of Attainment. Findings were summarized in the 3 Site Group RAWP (ECC, 2018a).

2.1.2 Site 131/PICA-131

Site 131/PICA-131 occupies approximately 1.2 acres in Area H within a small valley bounded to the west by Green Pond Mountain (Figure 1). Building 266, a former ordnance manufacturing facility on Site 131, was originally constructed in 1903 (Figure 3). It served as an explosives production facility from the time of its construction until the early-1950s. Explosives production ceased sometime before 1953, when the building was converted to its current use as a wind tunnel research facility. The wind tunnel research facility has been used to simulate and study the flight characteristics of small projectiles. Materials known to be used in wind tunnel operations included

compressor oils, lubricating oils, and uranium-containing valves and gauges. Site 131 was created to address the suspected releases of oil-contaminated wastewater from Building 266.

In the past, oil-contaminated wastewater generated by wind tunnel activities at Building 266 was conveyed to an oil-water separator and water was discharged to Bear Swamp Brook. The oil-water separator is known to have malfunctioned on at least one occasion; as a result, untreated wastewater was discharged directly to Bear Swamp Brook. According to Picatinny personnel, wastewater from the building presently discharges to the sanitary sewer, while all remaining wastes are disposed of off-site.

The Army has conducted several environmental investigations at this site, beginning in 1988. An RI was conducted from 1995 to 2000 (Shaw, 2005b), during which time various environmental media were characterized. The RI indicated that most impacts to soil were at shallow depths, usually less than 2 ft bgs. The most recent investigation, a soil impacts/delineation refinement study, conducted pursuant to an approved Work Plan (ECC, 2015), was conducted in 2016. Findings are summarized in the RAWP (ECC, 2018a).

2.1.3 Site 149/PICA-149

Site 149/PICA-149 is situated in Area I (Figure 1). Area I, which is located at the approximate center of Picatinny, consists of Picatinny Lake and production and storage areas positioned on the shore around the lake. The subject site occupies 0.8 acres along the southeast shore of Picatinny Lake and includes the site of former Building 541 (Figure 4). The building was constructed in 1943 to house a water-drying process used to harden explosive powder grains. These operations ceased in the mid-1950s. Subsequently, the building was used in the 1960s to house two Plymouth gas locomotives. Building 541 was demolished in 1983. Site 149 was created to address the releases of propellants and solvents from Building 541.

During its use as a water-drying process facility, Building 541 received shipments of explosive powder delivered from Building 533 via rail. After the explosive powder was unloaded inside the building, an elevator was used to hoist the powder to 12 wooden cypress tanks, where the water drying process hardened the grains and removed excess solvents. The water and powder mixture was discharged from the tanks directly into transport rail carts. These carts moved on a small interior track system that ran the length of the building.

Picatinny personnel reported the rupture of a vat in Building 541 at an unknown point in time during active operations. The rupture caused wastewater containing propellant to leak onto the building floor and to the area outside the building. The solution was reported to be single-base propellant grains dissolved in solvents. The energetic compounds were nitrocellulose and/or nitroglycerine. The solvents were ether, alcohol, or acetone.

The initial Phase II RI sampling activities (Round 1) of various media at Site 149 were conducted between April and October 1996. Subsequent soil sampling was performed in 2001 and 2002. Findings from the RI revealed explosives and polycyclic aromatic hydrocarbon (PAH) impacts to subsurface as well as surface soil (Shaw, 2005c). The most recent investigation, a soil impacts/delineation refinement study, conducted pursuant to an approved Work Plan (ECC, 2015), was conducted in 2016. Findings are summarized in the RAWP (ECC, 2018a).

2.2 CONTAMINATION IN SOIL AT 3 SITE GROUP

2.2.1 Contaminants of Concern and Site Cleanup Goals

As part of the Final FS (ARCADIS, 2014a), contaminants detected in soil at the sites were screened to identify COCs. COCs are defined as contaminants that 1) contribute to the majority of site-specific human health or ecological risk based on the human health risk assessment (HHRA) or ecological risk assessment (ERA); or 2) exceed the Levels of Concern (LOC) values determined for that media.

COCs in soil identified for each of the three sites are identified as follows:

- Site 118/PICA-097 – thallium, manganese, arsenic, lead, dieldrin, and heptachlor epoxide;
- Site 131/PICA-131 – arsenic and PAHs (benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene); and
- Site 149/PICA-149 – 2,4-dinitrotoluene (2,4-DNT) and PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene).

The NJDEP Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) are identified as ARARs unless the NRDCSRS is based on inhalation risk calculations (such as the NRDCSRS for manganese). As the single manganese result above the LOC (at Site 118) was below the site cleanup goal established for that metal, manganese was not considered further. As noted above (and described in detail in Section 4 below), SRS values for several COCs identified at these sites were affected by the NJDEP Notice of Administrative Change issued 18 September 2017.

2.2.2 Site 118/PICA-097

Based on previous soil investigations, Table 1 presents a summary of the COCs identified at this site, including the maximum concentrations observed in soil and the cleanup goals stipulated in the ROD. The COCs for which cleanup goals were defined and stipulated in the ROD are arsenic, dieldrin, heptachlor epoxide, lead, and thallium.

Table 1 - Concentrations of COCs in Soil at Site 118 and Site Cleanup Goals in the ROD

Contaminant of Concern	Maximum Concentration Detected (mg/kg)	Cleanup Goal[1] (mg/kg)
Site 118/PICA-097		
Arsenic	124	19[2]
Dieldrin	0.5	0.2
Heptachlor epoxide	0.77	0.3
Lead	2,400	800
Thallium	587	79[3]

mg/kg – milligrams per kilogram
[1] Cleanup goals are the NJDEP NRDCSRS values
[2] Natural background value for soil at Picatinny Arsenal
[3] Applicable SRS value prior to 18 September 2017

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- Site 118/PICA-097 – thallium, manganese, arsenic, lead, dieldrin, and heptachlor epoxide;
- Site 131/PICA-131 – arsenic and PAHs (benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene); and
- Site 149/PICA-149 – 2,4-dinitrotoluene (2,4-DNT) and PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene).

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Thallium	587	79[(3)]

mg/kg – milligrams per kilogram
[(1)] Cleanup goals are the NJDEP NRDCSRS values
[(2)] Natural background value for soil at Picatinny Arsenal
[(3)] Applicable SRS value prior to 18 September 2017

2.2.3 Site 131/PICA-131

Based on previous soil investigations, Table 2 presents a summary of COCs identified at this site, including the maximum concentrations observed in soil and cleanup goals stipulated in the ROD. The COCs for which cleanup goals were defined are arsenic, benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene.

Table 2 - Concentrations of COCs in Soil at Site 131 and Site Cleanup Goals in the ROD

Contaminant of Concern	Maximum Concentration Detected (mg/kg)	Cleanup Goal[(1)] (mg/kg)
Site 131/PICA-131		
Arsenic	1,440	19[(2)]
Benzo(a)anthracene	4	2[(3)]
Benzo(a)pyrene	4	0.2[(3)]
Benzo(b)fluoranthene	4	2[(3)]

mg/kg – milligrams per kilogram
[(1)] Cleanup goals are the NJDEP NRDCSRS values
[(2)] Natural background value for soil at Picatinny Arsenal
[(3)] Applicable SRS value prior to 18 September 2017

2.2.4 Site 149/PICA-149

Based on previous soil investigations, Table 3 presents a summary of COCs identified at this site, including the maximum concentrations observed in soil and cleanup goals stipulated in the ROD. The COCs for which cleanup goals were defined 2,4-DNT, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene and indeno(1,2,3-c,d)pyrene.

Table 3 - Concentrations of COCs in Soil at Site 149 and Site Cleanup Goals in the ROD

Contaminant of Concern	Maximum Concentration Detected (mg/kg)	Cleanup Goal[(1)] (mg/kg)
Site 149/PICA-149		
2,4-Dinitrotoluene	630	3
Benzo(a)anthracene	11	2[(2)]
Benzo(a)pyrene	13	0.2[(2)]
Benzo(b)fluoranthene	20	2[(2)]
Dibenz(a,h)anthracene	0.69	0.2[(2)]
Indeno(1,2,3-c,d)pyrene	4.4	2[(2)]

mg/kg – milligrams per kilogram
[(1)] Cleanup goals are the NJDEP NRDCSRS values
[(2)] Applicable SRS value prior to 18 September 2017

2.3 DESCRIPTION OF SELECTED REMEDY

The RAOs for soil are described in the 2017 ROD as follows:

- Address soil with contaminants driving the risk or hazard index (HI) for the site greater than 1E-4 to 1E-6 or 1, respectively.
- Eliminate exposure to soil contaminants to the extent required to reduce the exposure point concentrations below the contaminants respective NJDEP NRDCSRS regardless of whether the contaminant has been designated a risk driver. Although significant risks to

ecological receptors were not indicated during the previous ecological risk assessments (ERA), this RAO would consequently provide additional protection to ecological receptors.

The RAOs have been developed in such a way that attainment of these goals results in the protection of human health, ecological receptors and the environment. These RAOs are for soils only as groundwater has been previously addressed at Site 118 by the 2004 Area D ROD and at Site 131 by the 2012 Mid-Valley ROD. Based on RI sampling, groundwater was eliminated as a media of concern at Site 149.

Following the comparative analysis of remedial alternatives (explained in detail in the ROD), the Army selected RA SL-4 to achieve the RAOs for each of the three sites (118, 131 and 149):

- Removal;
- Off-Site Disposal; and
- Land Use Controls (LUC).

This RA was developed in accordance with CERCLA as amended and is consistent with the NCP. In March and April 2018, the first part of the RA was carried out, whereby contaminated soil was excavated and transported off-site. This action was carried out pursuant to the final RAWP which was approved by NJDEP on 12 February 2018 and by USEPA on 16 March 2018. A description of the soil removal is summarized in Section 5.

As detailed in the ROD, a soil impacts/delineation refinement study was conducted in March 2016 pursuant to a Work Plan (ECC, 2015) to delineate target areas for the removal action portion of the RA. Based on the 2016 and historical RI data, the target footprints and depths (proposed as Areas of Attainment) for excavation were defined for each site. Multiple Areas of Attainment were designated at each site, as discussed in the RAWP.

The selected RA included LUCs as a component. The LUCs may consist of non-engineered instruments, such as administrative or legal controls, or engineered or physical barriers, such as fences and security guards. LUCs help to minimize the potential for exposure to contamination and/or protect the integrity of a response action and are typically designed to work by limiting land and/or resource use or by providing information that helps modify or guide human behavior at a site. LUCs may be broken down into Institutional Controls (IC), the administrative or legal portion of LUCs, or engineering controls, the engineered or physical barriers. ICs at Picatinny are the administrative measures exercised to affect human activity in order to control future land use.

For the 3 Site Group soils, the LUC objectives are to ensure that land use remains industrial, prohibiting residential buildings, schools, childcare facilities and playgrounds, and protecting users from unacceptable risks posed by contact with soil. If soils with concentrations of COCs exceeding cleanup goals remain in place after reasonable cleanup efforts have been taken, additional LUCs (as described in the ROD for RA SL-2) would be applied. Furthermore, the objective to ensure that soil covers are maintained and not disturbed in the future would be included. Site conditions (such as utilities, building foundations, large boulders or outcrops, or groundwater) that cause unreasonable difficulties in accessing subsurface contamination might be considered, after a reasonable effort to access such contamination. LUCs will be maintained until

the concentration of COCs in soil are at levels that would allow for Unlimited Use/Unrestricted Exposure (UU/UE). Existing Army controls are in place, as described in the ROD (Section 2.2.1) and the RAWP, which aid the Army's ability to implement, maintain and monitor these LUCs.

Five-year reviews will be conducted in compliance with CERCLA and the NCP to ensure that the selected RA is, and will continue to be, protective of human health and the environment.

3.0 BASIS FOR THE EXPLANATION OF SIGNIFICANT DIFFERENCES

This ESD documents changes to cleanup goals for selected COCs applicable to the selected RA, SL-4, as presented in the ROD (US Army, 2017) for addressing impacted surface and subsurface soil at the 3 Site Group. The ESD is limited in scope to the changes in PAH and thallium SRS values. The respective NJDEP NRDCSRS values are the cleanup goals for COCs addressed by the ROD. The SRS values are identified as ARARs.

The Final ROD for the 3 Site Group was signed by USEPA 15 September 2017. On 18 September 2017, the NJDEP published a Notice of Administrative Change in the New Jersey Register that updated the SRS values for 19 contaminants in accordance with NJAC 7:26D-6.2. These updates (effective 18 September 2017) reflected revisions to the toxicity information for these contaminants, as found in the USEPA Integrated Risk Information System database, on which the soil remediation standards are based. The soil remediation standards for 11 contaminants increased (i.e., became less stringent). These 11 contaminants included seven PAHs, five of which were benzo(a) anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno (1,2,3-cd)pyrene). These 5 PAHs are included as COCs for two sites included in the 3 Site Group (Tables 2 and 3). In addition, the NJDEP SRS for thallium was updated from 79 mg/kg to "not regulated".

It is reiterated that in the context of the ROD, only values for PAHs and thallium were updated by the NJDEP. In an email dated 7 November 2017, USEPA agreed that the remedial process could move forward with the updated SRS values with the change in values documented in the RAWP, and a memorandum to the site file that the standards have changed. The USEPA agreement to move forward was contingent upon an ESD being completed prior to the next five-year review in 2021. The RAWP with the updated SRS values was approved by NJDEP on 12 February 2018 and by USEPA on 16 March 2018. The respective SRS values (and therefore the cleanup goals) for the remaining 3 Site Group COCs (i.e., arsenic, lead, 2,4-DNT, dieldrin, and heptachlor epoxide) remained unchanged following NJDEP changes to the SRS values. The changes in the SRS values have not affected the protectiveness of the selected RA. The selected RA complies with the NCP and the statutory requirements of CERCLA.

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4.0 DESCRIPTION OF SIGNIFICANT DIFFERENCES

4.1 DESCRIPTION OF CLEANUP GOALS FOR COCs IN THE ROD

The selected RA for the 3 Site Group included excavation and off-site disposal of soil wherein concentrations of COCs exceed cleanup goals. The original cleanup goals specified for the five PAHs and thallium, defined in the ROD, are the (superseded) NJDEP NRDCSRS values shown below in Table 4. The cleanup goals defined in the ROD are the SRS values. The updated SRS values for these COCs are also provided in Table 4 for comparison.

Table 4 – Comparison of Original and Updated SRS Values for PAHs at the 3 Site Group

Contaminant	Original Non-Residential Direct Contact Soil Remediation Standard (mg/kg) Stipulated in the 3 Site Group ROD(1)	Updated Non-Residential Direct Contact Soil Remediation Standard (mg/kg) Used for Remedial Action(2)
Benzo(a) anthracene	2	**17**
Benzo(a)pyrene	0.2	**2**
Benzo(b)fluoranthene	2	**17**
Dibenz(a,h)anthracene	0.2	**2**
Indeno (1,2,3-cd)pyrene)	2	**17**
Thallium	79	**NR**

mg/kg – milligrams per kilogram
NR – Not regulated by NJDEP as of 18 September 2017
(1) NJDEP NRDCSRS value prior to 18 September 2017
(2) Applicable SRS as of 18 September 2017 and revised cleanup goal for ROD for 3 Site Group

4.2 DESCRIPTION OF UPDATED CLEANUP GOALS FOR COCs PER SITE

The original (superseded) and updated values for the NJDEP SRS values for PAHs and thallium are summarized in Table 4 as they apply to the 3 Site Group. Upon approval by regulators (see Section 6 and Section 8) the updated SRS values replaced the original SRS values in the ROD as cleanup goals. The RAWP and the RACR incorporate the updated values.

For Site 118, there are no changes in cleanup goals from those originally stipulated in the ROD, with the exception of thallium, as shown in Table 5.

Table 5 - Concentrations of COCs in Soil at Site 118 and Post-ROD Cleanup Goals

Contaminant of Concern	Maximum Concentration Detected (mg/kg)	Cleanup Goal (mg/kg)
Site 118/PICA-097		
Arsenic	124	19(1)
Dieldrin	0.5	0.2
Heptachlor epoxide	0.77	0.3
Lead	2,400	800
Thallium	587	NR

mg/kg – milligrams per kilogram
NR – Not regulated by NJDEP as of 18 September 2017
(1) Natural background value for soil at Picatinny Arsenal

Tables 6 and 7 summarize the revised cleanup goals, effective as of the date of RAWP approval, for all COCs in the context of the ROD for the 3 Site Group. With incorporation of updated cleanup goals into the selected remedy, the selected remedy remains protective and continues to meet ARARs. Any changes resulting from the updated SRS values/cleanup goals were documented in the RAWP and in the RACR.

Table 6 - Concentrations of COCs in Soil at Site 131 and Post-ROD Cleanup Goals

Contaminant of Concern	Maximum Concentration Detected (mg/kg)	Cleanup Goal[(1)] (mg/kg)
Site 131/PICA-131		
Arsenic	1,440	19[(2)]
Benzo(a)anthracene	4	17
Benzo(a)pyrene	4	2
Benzo(b)fluoranthene	4	17

mg/kg – milligrams per kilogram
[(1)] Applicable SRS value as of 18 September 2017 and revised cleanup goal for ROD for 3 Site Group
[(2)] Natural background value for soil at Picatinny Arsenal

Table 7 - Concentrations of COCs in Soil at Site 149 and Post-ROD Cleanup Goals

Contaminant of Concern	Maximum Concentration Detected (mg/kg)	Cleanup Goal[(1)] (mg/kg)
Site 149/PICA-149		
2,4-Dinitrotoluene	630	3[(2)]
Benzo(a)anthracene	11	17
Benzo(a)pyrene	13	2
Benzo(b)fluoranthene	20	17
Dibenz(a,h)anthracene	0.69	2
Indeno(1,2,3-c,d)pyrene	4.4	17

mg/kg – milligrams per kilogram
[(1)] Applicable SRS value as of 18 September 2017 and revised cleanup goal for ROD for 3 Site Group
[(2)] SRS is unchanged from original value

4.3 CHANGES IN OUTCOME

During execution of the selected RA, adherence to the updated cleanup goals (where applicable) resulted in a smaller estimated volume, than originally anticipated, of soil being excavated and transported off-site, resulting in a change in scope and cost in implementing the selected remedy. This change was within the + 50 percent (%) to -30% accuracy defined for FS cost estimates.

The change in PAH cleanup goals also affected remedy performance in that "cleanup levels" for PAHs and thallium are now (as of 18 September 2017) less stringent than those originally stipulated in the ROD. Section 6 details the agreement of regulators to move forward in the remedial process with the updated SRS cleanup goals. The change will not affect the long-term reliability and protectiveness of the remedy.

A decrease in areas targeted for excavation also translated into a smaller environmental impact imposed during remediation. The site most impacted by the new cleanup goals was Site 149/PICA-149 (Figure 4). Site 149 is located adjacent to Picatinny Lake, and in an area that the Integrated

Natural Resources Management Plan (Picatinny Arsenal, 2015) has identified as a Zone of Concern for Roosting and Foraging of the Indiana Bat (Shaw, 2003), a Federally-listed endangered mammal. A reduction in excavated areas for Site 149 resulted in less disturbance than originally anticipated to this Zone of Concern.

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5.0 SUMMARY OF SOIL REMOVAL

In March and April 2018, under ROD RA SL-4, and pursuant to the final RAWP, soils containing COCs at concentrations exceeding the updated SRS values (Section 4), or those with COCs driving unacceptable risk to human health for the current and reasonably anticipated future use (military/industrial), were removed from the three sites using conventional earthmoving equipment. While significant risks to ecological receptors were not indicated during ERAs, this RA provided additional protection/reduction of risks to ecological receptors. These activities were described in detail in the RACR (ECC, 2018b).

The excavated soil was transported off-site to USEPA-approved landfills. Based on waste characterization results, this material was disposed at two permitted Resource Conservation and Recovery Act Subtitle D (municipal waste) landfills. This disposal option was pre-determined, based on historical sample data and waste characterization sampling results provided to the facilities.

Following excavation of soil from multiple Areas of Attainment, post-excavation confirmatory sampling was performed. These samples were collected from each sidewall as well as the bottom of the excavations and analyzed for the COCs. The final maximum excavation depth was determined by comparing updated SRS values (i.e., cleanup goals) to the results of the confirmation (post-excavation) sampling, as described in the RACR. Final excavation depths are shown on Figure 2 (Site 118), Figure 3 (Site 131), and Figure 4 (Site 149). For Site 118, excavation depths ranged from 1 to 3 ft bgs. For Site 131, excavation depths ranged from 1 to 4 ft bgs. For Site 149, excavations depths ranged from 1 to 7 ft bgs.

Initial excavations were performed to the proposed horizontal and vertical extents shown in Figures 2, 3 and 4 and adjusted as required based on the revised cleanup goals. Following initial excavation activities, samples were collected from the excavation walls and bottom and submitted for laboratory analysis. While laboratory confirmatory results were pending, excavations remained open. If concentrations of COCs in one or more of the sidewall samples exceeded revised (18 September 2017) soil cleanup goals, additional soil was excavated. Confirmatory samples were collected until either results were below cleanup goals or excavating could not continue due to an impediment (i.e. building, utilities, etc.), as was stipulated in the approved RAWP.

Excavations were backfilled with clean soil, compacted and vegetated as necessary to stabilize the site. A topsoil layer of 6 inches in thickness was applied to the excavated, backfilled and regraded area, and the area was seeded to re-establish vegetative cover.

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6.0 REGULATORY COMMENTS

The USEPA and NJDEP have worked with the Army in developing the changes described herein. A memorandum to the site file was provided to USEPA and NJDEP on 26 October 2017. In an email dated 7 November 2017, USEPA agreed that the remedial process could move forward with the updated SRS values with the change in values documented in the RAWP and a memorandum to the site file that the standards have changed. The USEPA agreement to move forward was contingent upon the ESD being completed prior to the next five-year review in 2021. The RAWP, with the updated SRS values, was submitted to regulators on 3 January 2018 for review, discussed in a technical meeting with regulators on 18 January 2018, and was approved by NJDEP on 12 February 2018 and by USEPA on 16 March 2018. A summary of the history and recent activities at 3 Site Group was presented to the Picatinny Arsenal Environmental Restoration Advisory Board (PAERAB) on 24 May 2018 with no questions or concerns voiced regarding the material presented. The PAERAB unanimously approved the 24 May 2018 meeting minutes in the subsequent 29 October 2018 PAERAB meeting. The updated SRS values were also documented in the RACR and submitted to regulators for review on 11 September 2018. The memorandum to the site file and accompanying transmittal email are provided in Appendix A.

Regulatory comments received on the draft ESD have been incorporated herein and are provided in Appendix B. Both USEPA and NJDEP concur with this ESD, and this information will be made part of the AR.

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7.0 AFFIRMATION OF STATUTORY DETERMINATIONS

Changes to cleanup goals for PAHs promulgated by the State of New Jersey do not fundamentally change the scope, performance, or cost of the remedy or adversely affect the ability of the remedy to comply with the statutory requirements of CERCLA §121 as required by the NCP, 40 CFR §300.430(f)(5)(ii). Specifically, the remedy:

- Remains protective of human health and the environment;
- Complies with federal and state requirements that were identified as ARARs in the ROD;
- Is cost effective; and
- Utilizes permanent solutions or alternative treatment technologies to the maximum extent practicable.

Further, five-year reviews will be conducted to ensure that the remedy continues to provide adequate protection of human health and the environment. The first five-year review for 3 Site Group is scheduled to be completed in 2021.

In summary, the revised cleanup goals satisfy the statutory requirements of CERCLA §121.

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7.1 AUTHORIZING SIGNATURES

Isaac C. Manigault
Colonel, Commander
US Army Environmental Command

13 Sep 2019
Date

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Pat Evangelista, Acting Director
Superfund and Emergency Management Division
United States Environmental Protection Agency, Region 2

Date 9/30/19

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8.0 PUBLIC PARTICIPATION

A formal public comment period is not required when issuing an ESD. However, the Army presented the 3 Site Group modified remedy to stakeholders on several occasions:

- A memorandum to the site file regarding updated SRS values was provided to USEPA and NJDEP on 26 October 2017.
- USEPA approval to use updated SRS values received on 7 November 2017, contingent upon an ESD being completed before the next five-year review (2021).
- The use of updated SRS values was discussed in a technical meeting with regulators on 12 December 2017.
- The Draft RAWP, with the updated SRS values, was submitted to regulators on 3 January 2018 for review.
- The RAWP was discussed in a technical meeting with regulators on 18 January 2018, approved by NJDEP on 12 February 2018 and approved by USEPA on 16 March 2018.
- The Final RAWP was issued to regulators on 20 March 2018.
- A summary of the history, updated SRS values and recent activities at 3 Site Group was presented to the PAERAB on 24 May 2018 with no questions or concerns voiced regarding the material presented.
- The memorandum to the site file, the RAWP, meeting minutes, and related correspondences, along with other documents generated between 1 June 2017 and 31 May 2018, were made available to the public on 3 July 2018 via an AR and Information Repository update.
- The updated SRS values were documented in the RACR, submitted to regulators for review on 11 September 2018.
- The PAERAB unanimously approved the 24 May 2018 meeting minutes in the subsequent 29 October 2018 PAERAB meeting.

Public notification will be made in the local papers (i.e., *Picatinny Voice*, *Daily Record* and *Star Ledger*). The ESD is available for review as part of the AR located at repositories as listed in Section 1.0. The public participation requirements set forth in the NCP §300.435(c)(2)(i) will have been met.

For more information regarding this ESD, contact Mr. Ted Gabel, Project Manager for Environmental Restoration, US Army Garrison, Picatinny Arsenal IMPI-PWE, Building 319, Picatinny Arsenal, New Jersey, 07806-5000, (973)724-6748, ted.b.gabel.civ@mail.mil.

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9.0 REFERENCES

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FIGURES

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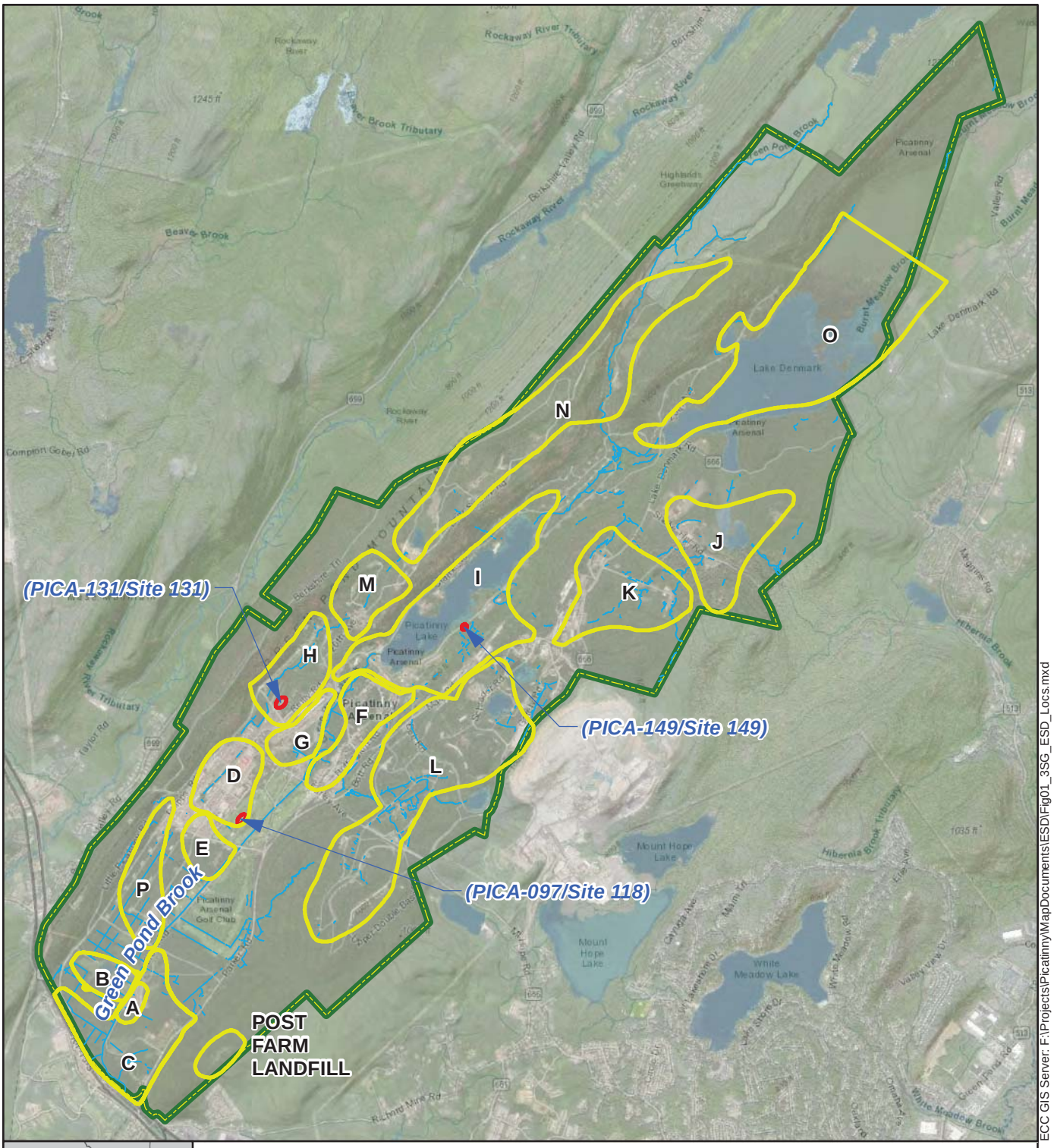

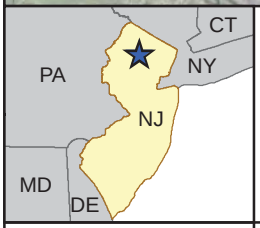

Legend

- Installation Boundary
- River/Stream
- Sites
- Areas

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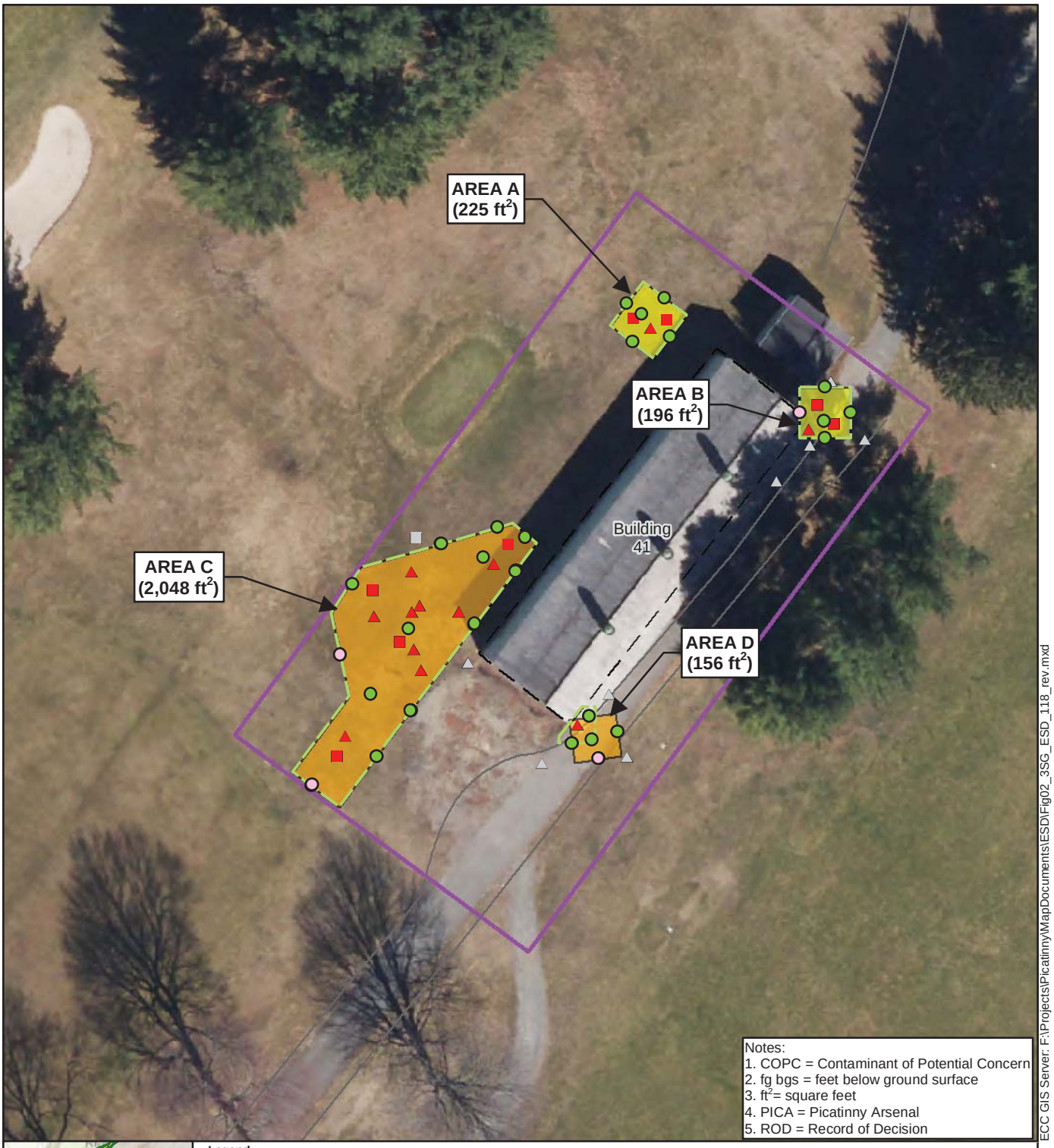
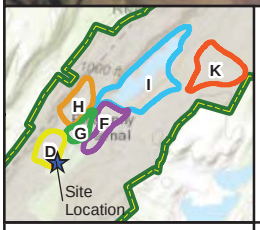
PICATINNY ARSENAL
3 SITE GROUP
EXPLANATION OF SIGNIFICANT DIFFERENCES
MORRIS COUNTY, NEW JERSEY

Figure 1
Location of Picatinny Arsenal and 3 Site Group





Legend

Sample Locations in March 2016

- Soil Sample where COPC concentration Exceeds Cleanup Goal
- Soil Sample where COPC concentrations Less Than Cleanup Goal

Previous Sample Locations

- Soil Sample where COPC concentration Exceeds Cleanup Goal
- Soil Sample where COPC concentrations Less Than Cleanup Goal
- Confirmation Sample Location
- Confirmation Sample (Exceed)

Areas of Attainment

- 0-1 ft bgs
- 0-3 ft bgs
- Area of Remediation Defined in ROD
- Former or Existing Building
- Site 118/PICA-097 Boundary for Area of Applicability of Land Use Controls
- Road
- Installation Boundary

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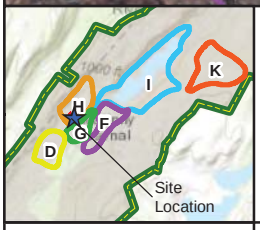
PICATINNY ARSENAL
3 SITE GROUP
EXPLANATION OF SIGNIFICANT DIFFERENCES
MORRIS COUNTY, NEW JERSEY

Figure 2
Site 118 (PICA-097)
Areas of Attainment and
Sample Locations



Legend

Sample Locations in March 2016
- Soil Sample where COPC concentration Exceeds Cleanup Goal
- Soil Sample where COPC concentrations Less Than Cleanup Goal

Previous Sample Locations
- Soil Sample where COPC concentration Exceeds Cleanup Goal
- Soil Sample where COPC concentrations Less Than Cleanup Goal

- Gas Line
- Sanitary Sewer Line
- Water Line
- Road

Areas of Attainment
- 0-1 ft bgs
- 0-3 ft bgs
- 0-4 ft bgs

- Confirmation Sample Location
- Confirmation Sample (Exceed)
- Area of Remediation Defined in ROD
- Former or Existing Building
- Site 131/PICA-131 Boundary for Area of Applicability of Land Use Controls
- Installation Boundary

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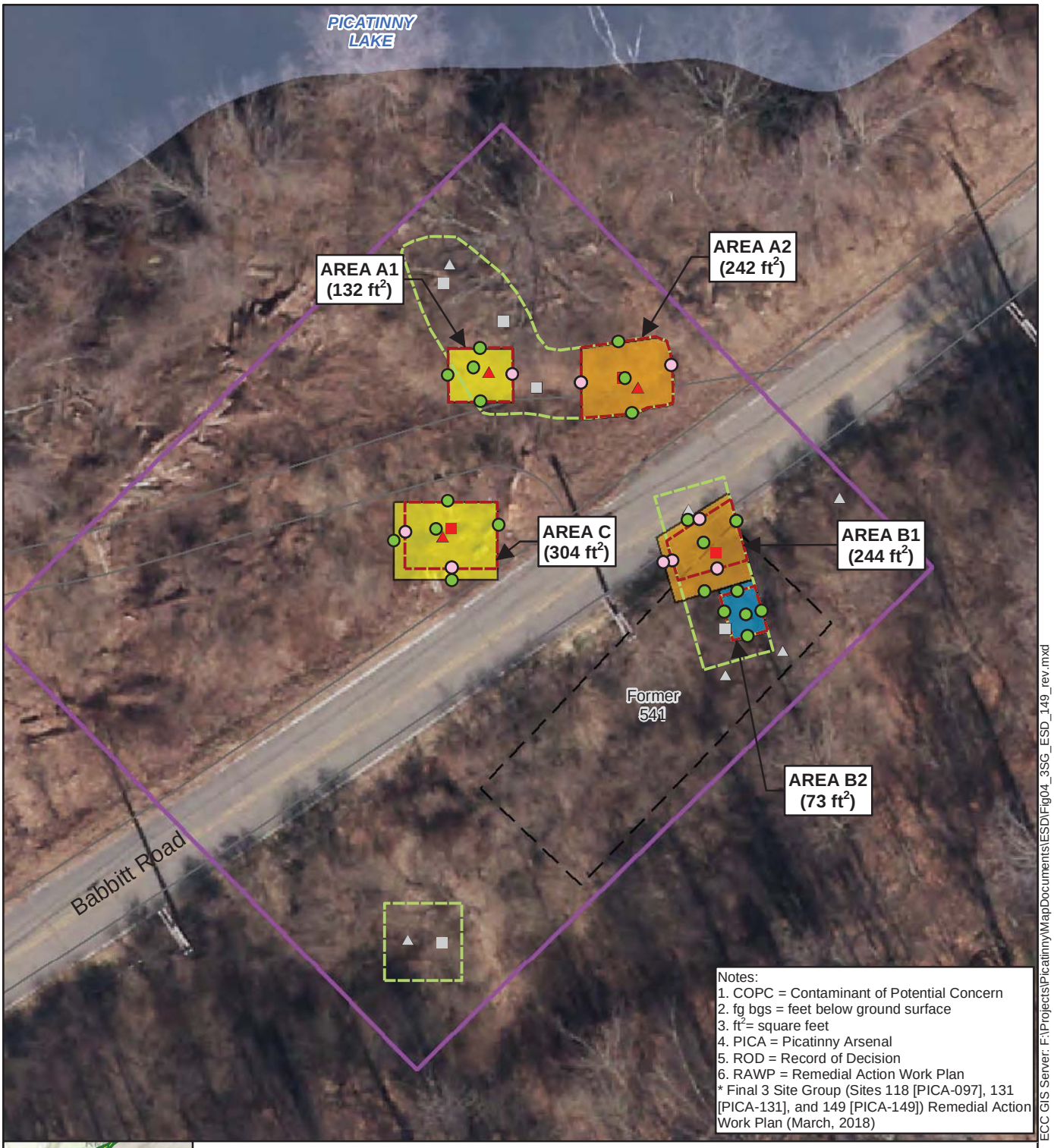
PICATINNY ARSENAL
3 SITE GROUP
EXPLANATION OF SIGNIFICANT DIFFERENCES
MORRIS COUNTY, NEW JERSEY

Figure 3
Site 131(PICA-131)
Areas of Attainment and
Sample Locations



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PICATINNY ARSENAL
3 SITE GROUP
EXPLANATION OF SIGNIFICANT DIFFERENCES
MORRIS COUNTY, NEW JERSEY

Figure 4
Site 149 (PICA-149)
Areas of Attainment and Sample Locations

APPENDIX A

Memorandum to Site File Regarding the Use of Revised New Jersey Department of Environmental Protection Soil Remediation Standards

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-----Original Message-----
From: Gabel, Ted B CIV USARMY USAG (US) [mailto:ted.b.gabel.civ@mail.mil]
Sent: Thursday, October 26, 2017 8:41 AM
To: Hartzell, Sharon <hartzell.sharon@epa.gov>
Cc: Kealy, Jim <Jim.Kealy@dep.nj.gov>
Subject: Change in NJ standard in regard to the (UNCLASSIFIED)

Sharon:
Good morning. Hope your trip back into the city was uneventful and that you found the RAB as entertaining as our site tour was yesterday.

As we discussed yesterday, attached is the Draft Paper that ECC put together that is still being reviewed by the Army and first page is marked draft. It appears now that Army team thinks that this change in the NJ standard is considered minor as defined by EPA guidance since the relevant standards went up. This means that the change will not prompt an Explanation of Differences. Hence, a record-to-file as this draft paper suggests or - as you noted yesterday - a discussion in the Remedial Design Workplan and/or Remedial Action Report are both appropriate for documenting the change

The specific information you requested yesterday for Doug is on PDF page 8 (cost estimate information) and PDF page 9 (map showing changes in the "Area of Remediation). Only the first page is mark draft, the other seven pages are background information about the change and technical information on the site(s).

Ted

Ted Gabel
Project Manager for Environmental Restoration US Army Garrison, Picatinny Arsenal IMPI-PWE
B319
Picatinny Arsenal, NJ 07806-5000
Commercial: (973) 724-6748
Fax: (973)-724-5398
CELL: (973)-787-4654
DSN: (312) 880-6748

-----Original Message-----
From: Debra MacDonald [mailto:DMacDonald@ecc.net]
Sent: Thursday, October 26, 2017 12:18 AM
To: Gabel, Ted B CIV USARMY USAG (US) <ted.b.gabel.civ@mail.mil>
Subject: [Non-DoD Source] 3 site group for Sharon

_____

Debra MacDonald, PE, PMP
Project Manager
ECC
43 Broad Street, Suite A301
Hudson, MA 01749
(508) 229-2270 x22155 (office)
(774) 258-0782 (cell)
Caution-http://www.ecc.net < Caution-http://www.ecc.net/ >
CLASSIFICATION: UNCLASSIFIED

18 October 2017
3 Site Group Memo to Site File, Documenting Non-significant (or Minor) Post-ROD Changes (ROD signed by USEPA 15 September 2017)
Post-ROD Change: New cleanup goals to reflect updated NJDEP SRSs (released 18 September 2017)

The Final ROD for the 3 Site Group was signed by USEPA Friday, 15 September 2017. The following Monday, 18 September 2017, the New Jersey Department of Environmental Protection (NJDEP) published a Notice of Administrative Change in the New Jersey Register that updated the soil remediation standards (SRSs) for 19 contaminants in accordance with N.J.A.C. 7:26D-6.2 (please see attached summary of changes). These updates reflect revisions to the toxicity information for these contaminants, as found in the United States Environmental Protection Agency (USEPA) Integrated Risk Information System (IRIS) database, on which the soil remediation standards are based. The soil remediation standards for 11 contaminants increased (became less stringent). These 11 contaminants included 7 polycyclic aromatic hydrocarbons (PAHs), 5 of which are included as chemicals of concern (COCs) for two of the sites in the 3 Site Group (please see attached Table 1). The remedy for the 3 Site Group is excavation and off-site disposal of soil with concentrations of COCs above the Cleanup Goals (CUGs); the CUGs specified in the ROD are the NJDEP Non-Residential SRSs. Therefore, as a minor post-ROD change, ECC is proposing to prepare a Memo to the Site File identifying the new NJDEP SRSs, and therefore new CUGs, with stakeholder concurrence. Any changes resulting from the new soil standards and cleanup goals would also be documented in the RAWP and RACP.

The *Guide To Preparing Superfund Proposed Plans, Records Of Decision, And Other Remedy Selection Decision Documents* (USEPA, July 1999) identifies three different type of post-ROD changes: minor changes, explanations of significant differences, and ROD amendments. Minor changes are described as changes that do not have a significant impact on the scope, performance or cost of the remedy. The new CUGs would require less volume of soil to be excavated and transported off-site, which would result in a change in scope and cost for the remedy. However, the estimated cost change for Site 149 would be approximately 26%, within the + 50% to -30% accuracy for Feasibility Study cost estimates (please see attached revised estimate for Site 149); the overall cost difference for the ROD would be approximately 8% including all 3 Sites. Smaller excavation areas would also mean a smaller environmental impact during remediation. The site most impacted by the new CUGs is Site 149/PICA-149 (please see attached figure). Site 149 is located adjacent to Picatinny Lake, and in an area that the Integrated Natural Resources Management Plan (INRMP) (Picatinny Arsenal, April 2015) has identified as a Zone of Concern for Roosting and Foraging of the Indiana Bat, a Federally-listed endangered mammal. A reduction in the areas of excavation for Site 149 would subsequently result in less disturbance to this Zone of Concern.

SITE REMEDIATION & WASTE MANAGEMENT PROGRAM
IMPLEMENTATION OF UPDATED
SOIL REMEDIATION STANDARDS, N.J.A.C. 7:26D
(version September 18, 2017)

BACKGROUND

On September 18, 2017, the New Jersey Department of Environmental Protection (the Department) published a Notice of Administrative Change in the New Jersey Register that updated the soil remediation standards for 19 contaminants in accordance with N.J.A.C. 7:26D-6.2. These updates reflect revisions to the toxicity information for these contaminants, as found in the United States Environmental Protection Agency (USEPA) Integrated Risk Information System (IRIS) database (see www.epa.gov/iris), on which the soil remediation standards are based.

A courtesy copy of the Notice of Administrative Change is available on the Department's website at www.nj.gov/dep/rules/notices.html. A courtesy copy of the updated Remediation Standards is available on the Department's website at www.nj.gov/dep/rules/rules/njac7_26d.pdf.

As a result of this update, the existing soil remediation standards are affected as follows:

- The soil remediation standards for 11 contaminants are increasing (becoming less stringent);
- The soil remediation standards for six (6) contaminants are decreasing (becoming more stringent);
- The soil remediation standards for one (1) contaminant are unchanged; and
- One (1) contaminant will no longer be regulated.

Of the six (6) contaminants for which the soil remediation standards are decreasing, the soil remediation standards for three (3) contaminants are decreasing by an order of magnitude or more. These three contaminants are:

- **1,1-Biphenyl**: both residential and non-residential soil remediation standards are decreasing by an order of magnitude or more
- **Cyanide**: both residential and non-residential soil remediation standards are decreasing by an order of magnitude or more
- **Nitrobenzene**: only the non-residential soil remediation standard is decreasing by an order of magnitude or more (the residential soil remediation standard is decreasing by less than an order of magnitude)

Contaminant	Previous Residential Direct Contact Soil Remediation Standard (mg/kg)	Updated Residential Direct Contact Soil Remediation Standard (mg/kg)	Previous Non-Residential Direct Contact Soil Remediation Standard (mg/kg)	Updated Non-Residential Direct Contact Soil Remediation Standard (mg/kg)
Direct Contact Soil Remediation Standards Increasing				
Benzo(a)Anthracene	0.6	5	2	17
Benzo(a) Pyrene	0.2 *	0.5	0.2	2
Benzo(b)Fluoranthene	0.6	5	2	17
Benzo(k)Fluoranthene	6	45	23	170
Chrysene	62	450	230	1,700
Dibenz(ah)Anthracene	0.2 *	0.5	0.2	2
Indeno(123-cd)Pyrene	0.6	5	2	17
Carbon Tetrachloride	0.6	2	2	4
Methylene Chloride	34	46	97	230
Tetrachloroethene	2	43	5	1,500
1,1,1-Trichloroethane	290	160,000*****	**	**
Direct Contact Soil Remediation Standard Not Changing ***				
1,1,2,2-Tetrachloroethane	1	1	3	3
Direct Contact Soil Remediation Standards Decreasing - No Order of Magnitude Change				
Hexachloroethane	35	12	140	48
Nitrobenzene	31	5	****	****
Pentachlorophenol	3	0.9	10	3
Trichloroethene	7	3	20	10
Direct Contact Soil Remediation Standards Decreasing - Order of Magnitude Change				
1,1-Biphenyl	3,100	61	34,000	240
Cyanide	1,600	47	23,000	680
Nitrobenzene	****	****	340	14
Contaminant No Longer Regulated				
Thallium	5	Not Regulated	79	Not Regulated
1,1,1-Trichloroethane	**	**	4,200	Not Regulated

Footnotes:

***** Previous direct contact soil remediation standard based on practical quantitation level (PQL).

** Updated residential direct contact soil remediation standard for this contaminant increases. Updated non-residential direct contact soil remediation standard for this contaminant is not regulated because the health-based criterion exceeds the soil saturation level.

*** 2010 IRIS reassessment presented a new cancer slope factor (ingestion/dermal exposure pathway) and withdrew the cancer unit risk factor (inhalation exposure pathway). Updated inhalation exposure pathway remediation standard based on route-to-route conversion of new ingestion/dermal cancer slope factor. Applying the route-to-route conversion, the remediation standard is not changing.

**** Updated residential direct contact soil remediation standard for this contaminant decreases less than an order of magnitude. Updated non-residential direct contact soil remediation standard decreases by an order of magnitude or more.

***** This is the correct value. The September 18, 2017 Notice of Administrative Change contained an error (criterion listed as 22,000 mg/kg), which was corrected in a Notice of Administrative Correction to be published in the October 16, 2017 New Jersey Register. The operative date of this corrected value is September 18, 2017.

PHASE-IN

The updated soil remediation standards are operative as of September 18, 2017.

I. For sites that do not have a final remediation document

A. Updated soil Remediation Standard decreasing by less than an order of magnitude

The person responsible for conducting the remediation may continue to remediate a site using soil remediation standards in effect prior to September 18, 2017, provided the updated remediation standard is not an order of magnitude or more lower than the pre-September 18, 2017 remediation standard, and if the following conditions exist:

1. The site being remediated has either:

   a. An existing Remedial Action Workplan or Remedial Action Report approved by the Department prior to September 18, 2017, or

   b. An existing Remedial Action Workplan or Remedial Action Report certified by a licensed site remediation professional (LSRP) and that has been submitted to the Department prior to September 18, 2017.

- OR -

2. The site being remediated will have by March 18, 2018 either:

    a. A Remedial Action Workplan or Remedial Action Report approved by the Department, or

    b. A Remedial Action Workplan or Remedial Action Report certified by an LSRP and submitted to the Department.

Additionally, the remedial action must be conducted within the applicable regulatory timeframe as specified in the Technical Requirements for Site Remediation at N.J.A.C. 7:26E-5.8.

B. Updated soil Remediation Standard decreasing by an order of magnitude or more

For sites impacted by any of the three contaminants for which the soil remediation standard is decreasing by an order of magnitude or more, the updated remediation standard(s) must be used, regardless of whether there is an approved/certified remedial action workplan or remedial action report.

II. For sites that have a final remediation document

A. Updated soil Remediation Standard decreasing by less than an order of magnitude

No further evaluation is necessary.

B. Updated soil Remediation Standard decreasing by an order of magnitude or more

1. Deed Notice established

    a. In order to determine the protectiveness of the implemented remedy, the person responsible for maintaining the engineering and/or institutional control must perform the order of magnitude evaluation for each of the three contaminants as part of the biennial protectiveness certification pursuant to the Administrative Requirements for the Remediation of Contaminated Sites, N.J.A.C. 7:26C-7.7.

    b. If the remedy does not control exposure to the updated remediation standard, additional remediation will be required.

    c. If the remedy continues to be protective due to the use of the existing engineering and institutional controls, no additional remediation will be required.

d. Regardless of the determination whether additional remediation will be required, both the deed notice and the soil remedial action permit will need to be modified to reflect the updated soil remediation standard.

e. If a soil remedial action permit has not yet been issued, the person responsible for maintaining the engineering and/or institutional control shall apply for a remedial action permit pursuant to N.J.A.C. 7:26C-7.5.

2. Deed Notice not established

a. For sites that have a final remediation document but for which a Deed Notice did not need to be established, the order of magnitude evaluation will be conducted whenever the site "re-enters" the Site Remediation and Waste Management Program pursuant to the Administrative Requirements for the Remediation of Contaminated Sites, N.J.A.C. 7:26C-1.4.

b. If the remedy does not control exposure to the updated remediation standard, additional remediation will be required. If contamination remains above the applicable soil remediation standard(s), a Deed Notice will be required, as will a soil remedial action permit.

Table 1 Site Specific Concentrations of Contaminants of Concern in Soil for 3 Site Group
3 Site Group, PICA New Jersey

Contaminant of Concern	Maximum Concentration Detected (mg/kg)
Site 118/PICA-097	
Arsenic	12
Dieldrin	0.
Heptachlor epoxide	0.7
Lead	2,400
Thallium	58
Site 131/PICA-131	
Arsenic	1,440
Benzo(a)anthracene	4
Benzo(a)pyrene	4
Benzo(b)fluoranthene	4
Site 149/PICA-149	
2,4-Dinitrotoluene	63
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	2
Dibenz(a,h)anthracene	0.6
Indeno(1,2,3-c,d)pyrene	4.

Table D-9
Projected Costs for Alternative SL-4 - Removal, Off-site Disposal, and Land Use Controls at Site 149/PICA-149
Picatinny Arsenal, New Jersey

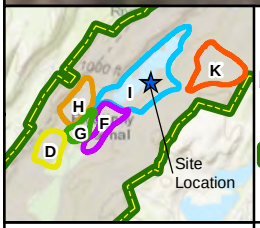
Item		Quantity	Units	Unit Cost	Capital Cost	Annual O&M Cost	Present Worth Cost
I. ADMINISTRATIVE ACTIONS							
1. Land Use Controls		1.0	LS	$2,050	$2,050		
Subtotal:					$2,050	$0	$0
II. GENERAL ACTIONS/SITE PREPARATION							
1. Mobilization/Demobilization		1.0	LS	$1,000	$1,000		
2. Clear and Chip		0.019	Acre	$50,000	$933		
3. Grub		15.0	ton	$167	$2,505		
4. Erosion and Sediment Controls		1.0	LS	$500	$500		
5. Surveying		1.0	Day	$1,400	$1,400		
6. MEC (UXO)		1.0	Day	$2,800	$2,800		
7. Decontamination Controls		1.0	LS	$500	$500		
Subtotal:					$9,638	$0	$0
III. SOIL EXCAVATION AND REMOVAL							
1. Excavation of soil		1.0	Day	$650	$650		
2. Transportation and Disposal of Excavated Soil		135	ton	$167	$22,545		
3. Import Common Borrow		127	ton	$20	$2,540		
4. Import Topsoil		15.1	CY	$28	$423		
5. Backfill and Place Soil Cover		2.0	Day	$650	$1,300		
6. Waste Characterization		1.0	each	$770	$770		
7. Labor/personnel		40.0	Hour	$207	$8,280		
8. Field Expense		5.0	Day	$585	$2,925		
9. Site Restoration		1.0	LS	$2,000	$2,000		
Subtotal:					$41,433	$0	$0
IV. O&M, ANNUAL INSPECTION AND FIVE-YEAR REVIEW							
1. Annual Inspection and Reporting		30.0	Each	$1,500		$45,000	$18,600
2. Five-Year Review		6.0	Each	$15,000		$90,000	$37,200
3. O&M		30.0	Each	$250		$7,500	$3,100
Subtotal:					$0	$142,500	$58,900
SUBTOTAL (I, II, III, and IV)					$53,121	$142,500	$58,900
V. IMPLEMENTATION Costs							
1. Administration and Legal	5% of Capital Costs				$2,700		
2. Remedial Design		1.0	LS	$20,000	$20,000		
3. Procurement	18% of Capital Costs				$9,600		
4. Construction Management	12% of Capital Costs				$6,400		
5. Completion Report		1.0	LS	$20,000	$20,000		
6. Cost Contingency	25% of Capital Costs				$13,300		
7. O&M Contingency	15% of O&M Costs					$21,400	$8,900
Subtotal:					$72,000	$21,400	$8,900
A. TOTAL CAPITAL COSTS					$125,000		
B. TOTAL ANNUAL COSTS						$164,000	
C. TOTAL PRESENT WORTH OF ANNUAL COSTS							$68,000
TOTAL PRESENT WORTH OF CAPITAL AND ANNUAL COSTS (A + C)							$193,000

ROD estimate was $260,000; 26% difference for Site 149
An 8% cost difference for overall cost (all 3 Sites)

CY - Cubic Yard
LF - Linear Foot
LS - Lump Sum
SY - Square Yard

MEC = Munitions and Explosives of Concern
UXO - Unexploded Ordnance
O&M - Operations and Maintenance

Sample depths, as estimated for costing purposes, were by individual excavation area, and based on historical and pre-design soil data.
Estimated depths are shown for each area in Figure 10.
Present worth is calculated using 7.0% interest in 2014 dollars.



Legend

- Former or Existing Building
- Site 149/PICA-149 Boundary for Area of Applicability of Land Use Controls
- Water Bodies
- Road
- Installation Boundary

Areas of Attainment

- 0-1 ft bgs
- 0-3 ft bgs
- 0-7 ft bgs
- 0-3 ft bgs (original excavation area)

Sample Locations in March 2016

- Soil Sample Where COPC Concentration Exceeds September 2017 Cleanup Goal
- Soil Sample Where COPC Concentrations Less Than September 2017 Cleanup Goal

Previous Sample Locations

- Soil Sample Where COPC Concentration Exceeds September 2017 Cleanup Goal
- Soil Sample Where COPC Concentrations Less Than September 2017 Cleanup Goal

N W E S

Feet
0 10 20 40

PICATINNY ARSENAL
3 SITE GROUP RECORD OF DECISION SITES
PICATINNY, NEW JERSEY
MORRIS COUNTY

Figure 10
Site 149/PICA-149
Area of Remediation

ECC GIS Server: F:\Projects\PicatinnyMapDocuments\ROD\3SiteGroup\Fig10_Site149_RemediationREVISED.mxd

APPENDIX B

Regulatory Response to Comments and Concurrence

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USEPA comments on the
Draft Explanation of Significant Differences for 3 Site Group (Sites 118 [PICA-097], 131 [PICA-131] and 149 [PICA-149])
Picatinny Arsenal, New Jersey, dated March 2019

Response Code: A = Agree with comment D = Disagree with comment C = Comment requires clarification

Comment Number	Commenter	Page(s)	Section	Line(s)	Comment	Response Code	Response
TECHNICAL COMMENTS							
1	SH		General		In several places the document refers to soil removal as a "removal action", even though it is a remedial action. Document should be checked to ensure clarity that while soil is being removed, it is a remedial action.	A	The document text will be revised to refer to the action as a "soil removal" or "remedial action", as appropriate.
2	SH			Line 41	replace "removal action" with "soil removal"	A	On Line 41, the phrase "removal action" will be replaced with "soil removal".
3	SH			Line 229, 231	just remove the word "removal"	A	On Line 229-231, the word "removal" will be deleted.
4	SH			Line 380	Change title to "Summary of Soil Removal"	A	The title of Section 5.0 will be revised from "Summary of Removal Action" to "Summary of Soil Removal".
5	SH			Line 323	Thallium at site 118/PICA-097: NJDEP withdrew its soil remediation standards for thallium in September 2017 at the same time the PAH values were changed. The tables in section 2.2.2 and 4.2 identify a SRS of 79 mg/kg which no longer exists, and text on line 323 states that no changes in cleanup goals occurred. Clarify the thallium change.	A	Text will be updated to reflect the change in the thallium NJDEP SRS.
6	SH		Appendices		Appendices: Most of the information (meeting minutes and presentations, etc.) are extraneous. The Memo to the File and following pages (PDF pages 40-49) can remain included, but the rest can be excluded from the ESD.	A	Appendix A will be revised to only include the Memo to Site File and the accompanying transmittal email.
7	SH			Line 6	This should be called an "EPA ID number" and not a CERCLIS number.	A	CERCLIS will be replaced with EPA ID.
8	SH			Line 22	Strike last sentence regarding doing an FS and PRAP.	A	The following sentence will be deleted, "The ROD was preceded by a Final Feasibility Study (FS) (ARCADIS, 2014a) and a Final Proposed Plan (ARCADIS, 2014b)."
9	SH			Line 27-30	this sentence should be moved to the final paragraph on page 1-1	A	The following sentence will be moved to the final paragraph on page 1-1, "With approval from regulators (see Section 6 and Section 8), the updated SRS values were used in the Final Remedial Action Work Plan (RAWP) (Environmental Chemical Corporation [ECC], 2018a), the removal action, and the Remedial Action Completion Report (RACR) (ECC, 2018b)."
10	SH			Line 116	Did we sample for uranium? If listed it will come up.	A	Samples were not analyzed for uranium. As noted in Response #3 to written comments received on the 3 Site Group ROD: "As noted in the Site 131 background section, "uranium-containing valves and gauges," which are primarily self-contained, have been and may still be used in wind tunnel operations. There have been no documented releases of uranium at this site and any radiological equipment is properly stored or disposed when no longer used. Uranium has not been identified as a contaminant of concern for any of the sites in this ROD and excavations will, therefore, be conducted to achieve noted ARARs (NRDCSRS). There are no radiological wastes of which to dispose from any of the sites in this ROD. Soil excavated from these sites will be disposed at an appropriate facility.
11	SH			Line 150	Why include that no studies at Bldg 541 were conducted when the previous PP indicates releases from Bldg 541?	A	The first sentence of the 4th paragraph in Section 2.1.3 will be deleted.
12	SH			Line 182	Revise to "The COCs for which cleanup goals were defined and stipulated in the ROD are arsenic..." etc	A	The phrase "and stipulated in the ROD" will be added to the sentence in the first paragraph of Section 2.2.2, as suggested.
13	SH			Line 218	May need sentence to indicate status of GW; whether it was not found to pose a risk or whether it is being addressed separately and the ROD and ESD address soil only.	A	The following text will be added to the 2nd paragraph of Section 2.3, "These RAOs are for soils only as groundwater has been previously addressed at Site 118 by the 2004 Area D ROD and at Site 131 by the 2012 Mid-Valley ROD. Based on RI sampling, groundwater was eliminated as a media of concern at Site 149."
14	SH			Line 231/232	Take out last two sentence to reflect removal of most appendices	A	The following sentence will be deleted, "Regulatory approval via emails, letters and other documentation are presented in Appendix A."
15	SH			Line 248	Revise to "If soils with concentrations of COCs exceeding cleanup goals remain in place after reasonable cleanup efforts have been taken, additional LUCs (as described in the ROD for RA SL-2) would be applied."	A	The following sentence will be deleted and replaced with the suggested text, "Additionally, if after a reasonable effort, noncompliant soils remain in place (i.e., concentrations of COCs exceed cleanup goals), additional LUCs (as described in the ROD for RA SL-2), would be incorporated into the selected RA."
16	SH			Line 456	Remove reference to supporting documentation in Appendix A	A	The last sentence in the 1st paragraph of Section 6.0 will be revised to read as follows, "The memorandum to the site file and accompanying transmittal email are provided in Appendix A."
17	SH			Line 525	"issues" should be "issued"	A	The word "issues" will be replaced with "issued" in the 6th bullet of Section 8.0.
EDITORIAL COMMENTS							

COMMENTS PROVIDED BY

Initials	Name	Department/ Organization	Email Address	Phone
SH	Sharon Hartzell	USEPA	hartzell.sharon@epa.gov	(212) 637-4132

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From: Hartzell, Sharon [mailto:hartzell.sharon@epa.gov]
Sent: Monday, July 15, 2019 11:00 AM
To: Gabel, Ted B CIV USARMY ID-SUSTAINMENT (US) <ted.b.gabel.civ@mail.mil>
Cc: Pocze, Doug <Pocze.Doug@epa.gov>
Subject: [Non-DoD Source] ESD

Ted – I thought I had sent this already.

The RTCs on the ESD are acceptable with the following changes:

Line 38 - change to "soil removal"

Response: Requested change has been made.

Lines 242 and 245 - change to "soil removal".

Response: Requested change has been made.

Also, while the change in thallium to non-regulated is noted in Table 5, the text right above it at lines 337-338 still states there is no change in cleanup goals for Site 118. I will defer to Doug on the uranium issue.

Response: A note has been added to the text to clarify that thallium is no longer regulated by NJDEP.

Sharon Hartzell
Remedial Project Manager
U.S. EPA Region 2 – New York, NY
(212) 637-4132

"…so that those who live after may have clean earth to till." – J.R.R. Tolkien

Debra MacDonald

From: Gabel, Ted B CIV USARMY ID-SUSTAINMENT (US) <ted.b.gabel.civ@mail.mil>
Sent: Thursday, July 25, 2019 8:38 AM
To: Debra MacDonald
Cc: Michelle Daly; Maly, Mary E CIV USARMY IMCOM AEC (US); Marsh, Russell E CIV USARMY CENAB (US); Catherine C. Guido
Subject: OK from EPA] RE: Clarification on you ESD concurrence and question on the uranium

Ted Gabel
Project Manager for Environmental Restoration Environmental Division Directorate of Public Works Building 319 US Army Garrison, Picatinny Arsenal, NJ USAG Picatinny Arsenal, New Jersey
Office: 973-724-6748
Cell: 973-787-4654
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https://nam03.safelinks.protection.outlook.com/?url=www.imcom.army.mil&data=02%7C01%7CDMacDonald%40ecc.net%7C877b701f056745570d9d08d710fce965%7Cf337a21bd9ac428594076fdd7563d421%7C1%7C0%7C636996550751703153&sdata=Ia0uKNFemg6VIx41CPUqX2RpWM9IYOqhrF45BUpkDyc%3D&reserved=0

-----Original Message-----
From: Hartzell, Sharon [mailto:hartzell.sharon@epa.gov]
Sent: Wednesday, July 24, 2019 5:49 PM
To: Gabel, Ted B CIV USARMY ID-SUSTAINMENT (US) <ted.b.gabel.civ@mail.mil>
Subject: [Non-DoD Source] RE: Clarification on you ESD concurrence and question on the uranium

---

Sorry, Ted.

We accept the response regarding the uranium issue.

Thanks,

Sharon

-----Original Message-----
From: Gabel, Ted B CIV USARMY ID-SUSTAINMENT (US) <ted.b.gabel.civ@mail.mil>
Sent: Tuesday, July 23, 2019 9:11 AM
To: Hartzell, Sharon <hartzell.sharon@epa.gov>
Subject: FW: Clarification on you ESD concurrence and question on the uranium

Sharon:

I would like an answer on the ESD Uranium question.. that was answered during the ROD development the same way. Please email me back or I may have to call you.

Ted Gabel
Project Manager for Environmental Restoration Environmental Division Directorate of Public Works Building 319 US Army Garrison, Picatinny Arsenal, NJ USAG Picatinny Arsenal, New Jersey
Office: 973-724-6748
Cell: 973-787-4654
We are the Army's Home - Serving the Rugged Professional. Learn more at Caution-www.imcom.army.mil

-----Original Message-----
From: Gabel, Ted B CIV USARMY ID-SUSTAINMENT (US)
Sent: Thursday, July 18, 2019 9:06 AM
To: 'Hartzell, Sharon' <hartzell.sharon@epa.gov>
Cc: Pocze, Doug <Pocze.Doug@epa.gov>; 'Vondy, Scott' <Scott.Vondy@dep.nj.gov>
Subject: Clarification on you ESD concurrence and question on the uranium

Sharon:

1 The 3-Site Group RACR: During our conference call on Monday, I thought you said that EPA's concurrence on the ESD also applied to the RAR, although MEM did not hear that. If so, I think that also deserves an email concurring for at least on the RtCs and revised document. If not, then I am still asking for that review. I sent the responses on May 7, 2019.

2. Below you said that uranium issue was going to be deferred to Doug. The response we gave was exact response to a similar question on the ROD that was accepted.

Appreciate a response.

Ted Gabel
Project Manager for Environmental Restoration Environmental Division Directorate of Public Works Building 319 US Army Garrison, Picatinny Arsenal, NJ USAG Picatinny Arsenal, New Jersey
Office: 973-724-6748
Cell: 973-787-4654
We are the Army's Home - Serving the Rugged Professional. Learn more at Caution-www.imcom.army.mil

-----Original Message-----
From: Hartzell, Sharon [Caution-mailto:hartzell.sharon@epa.gov]
Sent: Monday, July 15, 2019 11:00 AM
To: Gabel, Ted B CIV USARMY ID-SUSTAINMENT (US) <ted.b.gabel.civ@mail.mil>
Cc: Pocze, Doug <Pocze.Doug@epa.gov>
Subject: [Non-DoD Source] ESD

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Also, while the change in thallium to non-regulated is noted in Table 5, the text right above it at lines 337-338 still states there is no change in cleanup goals for Site 118. I will defer to Doug on the uranium issue.

Sharon Hartzell

Remedial Project Manager

U.S. EPA Region 2 - New York, NY

(212) 637-4132

"...so that those who live after may have clean earth to till." - J.R.R. Tolkien