Iowa Army Ammunition Plant

Proposed Plan for 26 Iowa Army Ammunition Plant Sites Proposed for No Further Action

Operable Unit 11

Introduction

This ***Proposed Plan***[1] identifies ***No Further Action (NFA)*** as the preferred remedial alternative for 26 environmental sites within 21 areas at the Iowa Army Ammunition Plant (IAAAP) (Figure 1). The sites recommended for NFA are assigned to ***Operable Unit*** 11 (OU-11) for the Proposed Plan phase of the ***Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*** process. The following sites are proposed for NFA under OU-11:

Soil and Groundwater Sites:

- Boxcar Unloading Area (Army Environmental Database [AEDB] site numbers IAAP-014 [soil] and IAAP-014G [groundwater]; Web Compliance Assessment and Sustainment System–Enterprise [WEBCASS-E][2] identification numbers 19105.1019 [soil] and 19105.1072 [groundwater]).
- Unidentified Substance Waste (Oil) Site (IAAP-022 and IAAP-022G; 19105.1028 and 19105.1078).
- Explosive Waste Incinerator (IAAP-025 and IAAP-025G; 19105.1030 and 19105.1079).
- Construction Debris Disposal Area (IAAP-028 and IAAP-028G; 19105.1033 and 19105.1080).
- Abandoned Coal Storage Yard (IAAP-042 and IAAP-42G; 19105.1046 and 19105.1085).

Groundwater-Only Sites:

- Lines 4A/4B Ammo Assembly (IAAP-005G; 19105.1066).
- Line 6 Ammo Production (Detonator) (IAAP-007G; 19105.1068).
- Line 7 Ammo Load, Assemble, and Pack (LAP) (Fuze/Blank) (IAAP-008G; ID 19105.1069).
- Line 8 Ammo LAP (Fuze/Rocket) (IAAP-009G; 19105.1070).
- Incendiary Disposal Area East Yard D (IAAP-013G; 19105.1071).
- Old Fly Ash Waste Pile (IAAP-015G; ID 19105.1074).
- Possible Demolition Site (South Yard G) (IAAP-018G; 19105.1077).
- Building 600-86 Septic System (IAAP-038G; 19105.1088).
- Roundhouse Transformer Storage Area (IAAP-040G; 19105.1089).
- Fly Ash Disposal Area (IAAP-043G; 19105.1081).
- Central Test Area (IAAP-47G; 19105.1073).
- Yard L (Unassigned ID).

Soil-Only Site:

- Line 3A Pond (IAAP-041; 19105.1045).

Surface Water-Only Site:

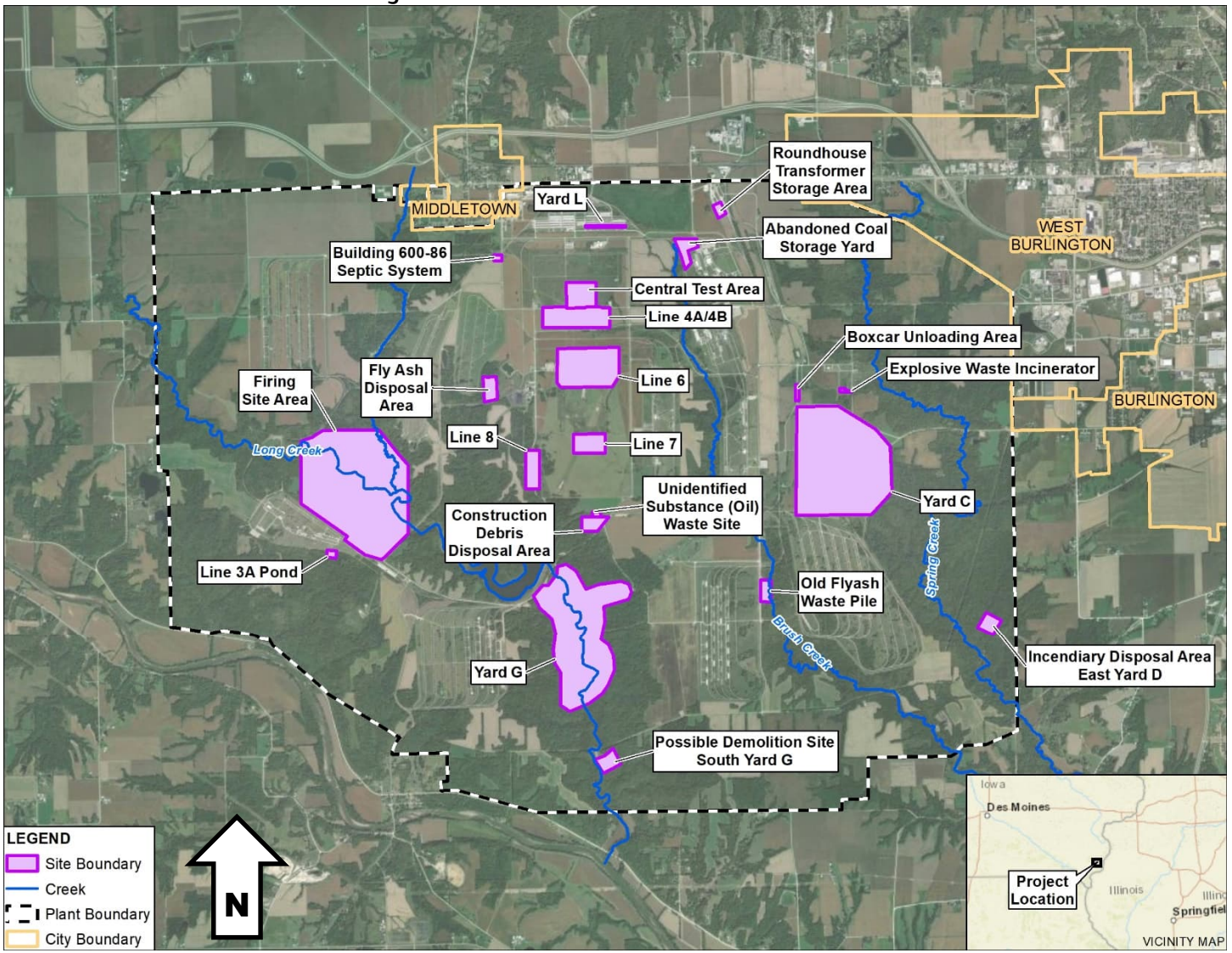
- Firing Sites Area (IAAP-030; 19105.1035).

Groundwater and Surface Water Sites:

- Yard C (Unassigned ID).
- Yard G (Unassigned ID).

[1] Words that are in ***bold and italicized*** font are defined in the glossary of terms at the end of this Proposed Plan.
[2] The Headquarters Army Environmental System (HQAES) was replaced with WEBCASS-E in January 2024. WEBCASS-E retains the site identification information from HQAES referenced in previous documents.

Figure 1 – Locations of OU-11 Sites at the IAAAP



This work is being conducted in accordance with CERCLA and the IAAAP Federal Facility Agreement (FFA).

This document concerning the IAAAP facility is issued by the US Army (Army) and the US Environmental Protection Agency (EPA). The IAAAP is a Government-Owned US Army Sustainment Command facility operated by the civilian contractor American Ordnance, LLC. As further discussed in the IAAAP Site Background section, the site was added to the National Priority List in August 1990 and an FFA was executed in September 1990. The State of Iowa is not a signatory to the IAAAP FFA. The Army is the lead agency for environmental response actions and EPA is the primary regulatory agency.

The Army and EPA are issuing this Proposed Plan to facilitate public involvement in the remedy selection process, as part of the public participation responsibilities under CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Proposed Plan fulfills the CERCLA (§117[a]) and NCP (§300.430[f][2]) requirements for issuance to the public. Furthermore, Restoration Advisory Board (RAB) meetings are held on a quarterly basis for community outreach and public interaction regarding the IAAAP.

Community Involvement & Administrative Record:

A) Public Comment Period

April 1–30, 2026

B) Public Meeting

10:00 a.m., April 21, 2026

The Army is seeking comments on the preferred remedial alternative identified in this Proposed Plan. During the 30-day public comment period the Army and EPA will accept written comments on the Proposed Plan. The Army will hold a public meeting to explain the Proposed Plan and the ***preferred remedial alternative.*** Verbal and written comments will also be accepted at the meeting. The meeting will be held at West Burlington City Hall, 122 Broadway Street, West Burlington, Iowa.

For more information, refer to the ***Administrative Record***, which is located online at https://iaaaprestoration.com/adminrecord/, Operable Unit 11. A printed copy is housed in the IAAAP Restoration Repository at 17571 DMC Highway 79, Middletown, Iowa 52638-5000.

The Burlington Public Library has computers available to the public for those interested in viewing the electronic version of the Administrative Record. The public is encouraged to review documents pertinent to this Proposed Plan on the Administrative Record.

This Proposed Plan summarizes information detailed in the ***Remedial Investigation (RI)*** Report for OU-11 (CH2M, 2021), the OU-11 Supplemental RI Report for Line 6 (Jacobs, 2024), and the RI Report for OU-7 (Jacobs, 2026). These documents are part of the Administrative Record, which is a compilation of the information that was considered in developing this Proposed Plan and provides a comprehensive description of the site investigations and the basis for why no CERCLA action is necessary for the OU-11 sites addressed in this Proposed Plan.

This Proposed Plan presents the Preferred Remedy of NFA for OU-11 and the rationale for NFA at the OU-11 sites. The RIs for these environmental sites, which included a Human Health Risk Assessment (HHRA) and a Screening-Level Ecological Risk Assessment (SLERA), concluded pursuant to CERCLA that there is either no evidence of a site release or if there was, site-related chemicals do not pose potentially unacceptable risk to human health or the environment currently or in the future. As such, this results in unlimited use/unrestricted exposure (UU/UE) for each of the sites in this Proposed Plan.

The preferred remedial alternative of NFA presented in this Proposed Plan may be modified based on new information or public comments. Therefore, the public is encouraged to review and comment on the information presented here.

IAAAP Site Background

The sites comprising OU-11 are part of the IAAAP, an active US Army Sustainment Command facility. The IAAAP encompasses 19,011 acres near Middletown in Des Moines County, Iowa.

Production of munitions began at the IAAAP in 1941. Currently, the IAAAP primarily loads, assembles, and packs ammunition items. EPA added the IAAAP to the ***National Priorities List*** of Superfund Sites on August 30, 1990. The IAAAP is now part of the US Department of Defense's Installation Restoration Program (IRP), which follows the CERCLA process. The Army is the potentially responsible party for the IRP sites addressed in this Proposed Plan. The IRP was established under the Defense Environmental Restoration Program (DERP) to identify, investigate and clean up hazardous substances, pollutants, and contaminants that pose environmental health and safety risks at active military installations and formerly used defense sites. To facilitate the management of environmental work at the IAAAP, it has been divided into 12 active OUs and one inactive OU (OU-2). This Proposed Plan addresses OU-11, which includes IRP sites that warrant NFA following the RI. Remedial action for contamination at IRP sites that do not allow for UU/UE will be addressed under other IAAAP OUs.

The current mission of the IAAAP is to load, assemble, and pack ammunition items. Public access to the installation is restricted by perimeter fencing and the IAAAP installation security staff. Approximately 8,000 acres of the IAAAP are leased for agricultural use, 7,500 acres are forested, and the remaining areas are used for administrative and industrial operations (USACE, 2016). Recreational facilities are located on the IAAAP property and in the area immediately surrounding the IAAAP. The IAAAP receives potable drinking water from the Burlington Regional Water Works in the town of Burlington, Iowa. Groundwater use on the installation has been discontinued with the exception of Yards D and F. The anticipated future land use at the IAAAP is commercial, industrial, agricultural, and recreational (USACE, 2020).

Throughout this Proposed Plan, various screening criteria are referenced (for example, ***project action limit*** [PAL], ***maximum contaminant level*** [MCL], and ***background threshold value*** [BTV]). Refer to the glossary of terms for additional details about each screening criterion discussed herein.

Screening values used for site characterization (such as PALs) differ from those used to select ***chemicals of potential concern*** (COPCs) in risk assessments. Site characterization PALs are used to assess the distribution and nature and extent of chemicals, whereas more conservative screening values were used for risk assessments. The OU-7 (CH2M, 2021) and OU-11 (Jacobs, 2026) RIs present the hierarchy of screening criteria that have evolved over numerous RIs for IAAAP sites.

A complete discussion concerning the development of site-specific PALs is beyond the scope of this document. In general, sites may have different screening criteria based on a number of factors, including type of medium, anticipated future land use, and possible ecological or human exposure. The PALs for IAAAP sites are selected from the applicable regional screening levels (RSLs), MCLs, and ***ecological screening values*** (ESVs), among others.

The Previous Investigation and Site Characteristic sections of this Proposed Plan concern the nature and extent of contamination with respect to site characterization PALs. However, in many of these sections other screening levels (e.g. RSLs, MCLs, and OU-1 ***remedial goals*** [RGs]) are referenced when a detected concentration exceeds its respective PAL. In these cases, the PAL used in decision making is a more conservative value than the other screening level, which is still considered protective of human health and the environment. These comparisons only demonstrate another line of evidence suggesting negligible risks despite the PAL exceedance.

The following pages discuss the 26 sites (21 areas within the IAAAP) proposed for NFA under OU-11. Site characteristics, background, previous investigations, risk assessments, and scope and role of action responses are described for each of the 26 sites.

Boxcar Unloading Area (IAAP-014 and IAAP-014G)

The Boxcar Unloading Area (BCU) is located in the northeast portion of the IAAAP site (Figure 2). This Proposed Plan includes both soil and ***groundwater*** at the BCU, which fall under IRP sites IAAP-014 and IAAP-014G, respectively. Note, although the 1992 Site Inspection (SI) (JAYCOR and CDM, 1992) concluded that the potential for a release at this area was negligible, the IRP site for groundwater (IAAP-014G) was created in 2012 to facilitate the management of environmental work at the IAAAP.

The BCU, which encompasses approximately 7 acres, is surrounded by agricultural fields, vegetation, and trees, and is adjacent to railroad tracks and Plant Road O. The BCU is located within a recreational hunting area. Surface water and sediment are not present at the BCU.

Figure 2 – Layout of Boxcar Unloading Area (IAAP-014 and IAAP-014G)

Background

The BCU was used as an unloading and temporary storage area for ***dunnage lumber*** beginning in the 1940s. Occasionally, the boxcars would transport boxes of explosives; therefore, 2,4,6-trinitrotoluene (TNT) and Royal Demolition Explosive (RDX) may have come in contact with dunnage and/or soil in the area. Explosives were shipped in wooden boxes within a cardboard box sealed with wax. The sealed box was then placed

in a heavy paper bag liner, also waxed to seal out moisture. Therefore, the potential for explosives to spill from triple-packed and sealed boxes was considered negligible (JAYCOR, 1996). The railroad within the site is still in use; however, explosives at the facility are now transported via trucks (Tetra Tech, 2011), and the BCU is no longer used for temporary storage of dunnage lumber.

Previous Investigations

The BCU has been characterized as part of several investigations since 1987. No soil excavation or removals have been completed at the BCU. Documents detailing previous site investigations are available in the Administrative Record. A summary of previous investigations is outlined in the 2021 OU-11 RI (CH2M, 2021), which can be found in the OU-11 folder of the Administrative Record (https://iaaaprestoration.com/adminrecord/).

Conclusions from previous investigations pertinent to soil and groundwater at the BCU are summarized as follows:

- **1987 Resource Conservation and Recovery Act (RCRA) Facility Assessment:** Elevated concentrations of metals and polycyclic aromatic hydrocarbons (PAHs) were detected in surface soil samples. A RCRA Facility Investigation was recommended for the BCU (Ecology and Environment, 1987).
- **1992 SI:** Soil analytical results indicated no significant soil contamination compared to background concentrations. It was recommended that the BCU did not warrant inclusion in the RI (JAYCOR and CDM, 1992). Although the BCU was not evaluated during the 1996 RI (JAYCOR), the RI reiterated that the potential for a release would have been negligible because the boxes triple-packed and sealed with wax.
- **2006 Comprehensive Watersheds Evaluation:** During the 2006 review of the BCU, it was concluded that three explosives surface soil samples should be collected to determine the extent of any potential contamination, and that these results should be used to determine if groundwater sampling was warranted (Tetra Tech, 2006).

  Based on the recommendation, surface soil samples were collected for explosives analysis. No explosives were detected in any of the samples (Tetra Tech, 2012). There was no indication that contamination was present at the site; therefore, groundwater sampling was not considered warranted.
- **2018–2020 RI:** The RI for the BCU provided a comprehensive review and risk assessment of existing analytical data. No additional samples were collected as part of the 2018–2020 RI activities because previous investigations adequately characterized the area.

At the BCU, one explosive (nitrobenzene), 11 metals, and one semivolatile organic compound (SVOC) (pyrene) were detected in soil/dry sediment samples. No volatile organic compounds (VOCs), herbicides, pesticides, or polychlorinated biphenyls (PCBs) were detected in any of the soil samples. To evaluate nature and extent, detected concentrations were compared against site characterization PALs. Nitrobenzene and pyrene were detected at concentrations less than the site characterization PALs. Of the 11 metals detected, only barium and cadmium exceeded site characterization PALs. However, neither barium nor cadmium were significantly elevated compared to BTVs, nor were they detected in any one area or in the same soil sample location at the site. Therefore, the metals detections were attributed to natural background occurrence rather than evidence of soil contamination.

Groundwater was not collected during the RI because it was not deemed to be of concern based on the lack of soil impacts and there was no evidence of a release. The RI recommended that NFA was warranted for the BCU (CH2M, 2018c).

Site Characteristics

The BCU features flat topography with surface water runoff flowing into nearby ditches and an intermittent ***tributary*** of Spring Creek. It is underlain by fill material consisting of miscellaneous debris and silty clay. Wind-blown, non-stratified, silts and clays (loess) are located beneath the fill material. Underlying the loess is a ***glacial till*** consisting of clay and silt with discontinuous sand and gravel seams.

Shallow groundwater at the adjacent site south of the BCU has been found at depths of 1.2 to 11.5 feet below ground surface (bgs). ***Groundwater flow*** in this area of the IAAAP varies seasonally, generally moving south-southwest to east-southeast.

No contamination or principal threat waste was identified at the BCU; therefore, geographical and topographical factors are not needed to support an NFA decision for soil and groundwater.

Summary of Risks

Potentially unacceptable risks or hazards from exposure to contaminants in site groundwater and soil were evaluated in the HHRA and SLERA. These evaluations are summarized in the following subsections.

Human Health Risk Assessment

An HHRA was conducted for the BCU to evaluate potential risks from exposure to chemicals in surface soil. Groundwater data were not collected/evaluated in the HHRA for the BCU because it was deemed to be not of concern based on the BCU conceptual site model (CSM) that indicated no impacts to soil. Potential future human receptors include hunters/recreators, site workers, construction/utility workers, and hypothetical residents.

The risk characterization followed a four-step process detailed in the OU-11 RI Report (CH2M, 2021). Two metals, arsenic and chromium, were identified as COPCs in surface soil. The final ***chemical of concern (COC)*** determination, which was based on the residential receptor, found no COCs for the BCU. Because risks and hazards for residents at the BCU are acceptable, risks for other scenarios such as hunter/recreational, site workers, and construction/utility workers are also considered acceptable. The CSM and conclusions defined in the OU-6 Uniform Federal Policy for Quality Assurance Project Plan (UFP-QAPP) (CH2M, 2017) determined that because of the absence of soil contamination at the BCU, leaching to groundwater was not considered a potential pathway and no groundwater data gaps were present, Therefore, the BCU qualifies for an NFA decision.

Ecological Risk Assessment

The SLERA for the BCU site evaluated potential ecological hazards from historical activities. The site, characterized by disturbed habitats with cool season grasses, showed limited wildlife value. The assessment identified seven chemicals of potential ecological concern (COPECs), including metals such as barium, cadmium, and lead. Despite these findings, the small size and poor quality of the habitat, along with limited exposure pathways, suggest that these chemicals are unlikely to harm wildlife populations.

The SLERA process involved screening-level problem formulation, exposure estimates, and risk calculations. The results indicated that while some metals exceeded ESVs, their spatial distribution and bioavailability were limited, reducing the potential ecological risk. Based on the weight of evidence, the BCU qualifies for NFA from an ecological perspective.

Scope and Role of Response Action

No further CERCLA action is necessary for the BCU based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. There are no other OUs that fall within the BCU.

Unidentified Substance Waste Site (IAAP-022 and IAAP-022G)

The Unidentified Substance Waste Site (USWS) is located in the central portion of the IAAAP (Figure 3). This Proposed Plan includes both soil and groundwater at the USWS, which fall under IRP sites IAAP-022 and IAAP-022G, respectively. Note, although the 1992 SI (JAYCOR and CDM, 1992) concluded that was not widespread or significant contamination present, the IRP site for groundwater (IAAP-022G) was created in 2012 to facilitate the management of environmental work at the IAAAP.

The USWS is an area of approximately 20 feet by 20 feet and located approximately 15 to 20 feet south of the railroad track bed. The Construction Debris Landfill (CDL) is located to the south. The site is located within a forested area that is designated for recreational use..

Figure 3 – Layout of Unidentified Substance Waste Site (IAAP-022 and IAAP-022G)

Background

The USWS area was not used as an operational line and has no associated buildings. The area was defined after an unidentified substance was discovered on July 16, 1985, in an area about 15 to 20 feet south of the railroad track bed. The spill was thought to be road surfacing oil that had leaked from a railroad tank car. According to site personnel, the spill area was later covered with approximately 10 feet of fill sloping away from the railroad tracks (Tetra Tech, 2006).

Previous Investigations

The USWS has been characterized as part of several investigations since 1987. No remedial actions have been completed at the USWS. Documents detailing previous site investigations are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the 2021 OU-11 RI (CH2M, 2021), which can be found in the OU-11 folder of the Administrative Record.

Conclusions from previous investigations pertinent to soil and groundwater at the USWS are summarized as follows:

- **1986 RCRA Facility Assessment:** Five soil samples (aliquots) were collected from the spill area and homogenized into a single soil sample and analyzed for VOCs, SVOCs, and PCBs. No significant levels of contamination were identified in the sample (Ecology and Environment, 1987).
- **1991 SI:** The SI noted that the unidentified substance appeared to be asphalt or tar with no soil staining or leaching in the area. Two soil samples were collected immediately adjacent to the unidentified substance location and in the drainage ditch downgradient. Samples were analyzed for explosives, metals, VOCs, SVOCs, pesticides, and PCBs. Analytical results indicated no significant soil contamination. It was recommended that the USWS does not warrant inclusion in the RI for the IAAAP (JAYCOR and CDM, 1992).
- **2006 Comprehensive Watersheds Evaluation:** No data gaps were identified for the USWS. Based on the nature of the contamination, groundwater contamination was not considered a potential pathway.

- **2018–2020 RI:** The RI for the USWS evaluated records, including personnel interviews with an IAAAP employee familiar with the USWS, to identify the approximate location of the historical spill. At the spill site, debris including concrete pieces and a culvert were visible and partially covered with soil. A soil boring was advanced and a soil sample was collected. The sample was analyzed for VOCs, SVOCs, and metals. The soil/dry sediment sample was evaluated against site characterization PALs. Metals, PAHs, SVOCs, and VOCs were detected, but no explosives, PCBs, or pesticides were detected in the soil samples.

Arsenic and selenium were the only metals to exceed their site characterization PALs and BTVs, with arsenic in 1991 and selenium in 2019. PAHs were detected at low concentrations, with only bis(2-ethylhexyl) phthalate (BEHP) exceeding the PAL in 1991, which was based on the conservative ESV, but were still less than the EPA residential RSL. Acetone and toluene were detected in soil samples at the USWS, but only acetone exceeded the PAL in 2019. Acetone is a common laboratory contaminant, so this detection is likely not site-related.

It was identified that clean soil placed over the spill site at the USWS reduced the risk of contaminant transport by volatilization, fugitive dust, or surface runoff. Metals are unlikely to leach into groundwater because of their strong adsorption to soil, while BEHP degrades slowly and acetone volatilizes more than it leaches, degrading rapidly in soil (EPA, 1999).

Groundwater was not collected during the RI, as it was deemed not of concern based on the lack of soil impacts, and there was no evidence of a release. The RI concluded that NFA was warranted for the USWS (JAYCOR and CDM, 1992).

Site Characteristics

The USWS surface is relatively flat, with surface water runoff collecting in a drainage depression parallel to the track bed. The spill area is moderately to densely vegetated with small to medium trees and is about 450 feet north of the nearest tributary of Long Creek. Area-specific geology information for the USWS is unavailable, but soil borings from the adjacent CDL suggest the geological formation (Kellerville Till) is over 26 feet thick. Groundwater is assumed to flow southwest towards Long Creek.

USWS site characteristics supporting an NFA decision for soil and groundwater include the relatively flat topography with a fill cover thickness of approximately 10 feet, combined with the minimal contamination observed for metals, PAHs, and VOCs, limit the potential migration of any contaminant. Additionally, no source materials constituting principal threat waste are or were ever present at the USWS.

Summary of Risks

Potentially unacceptable risks or hazards from exposure to contaminants in site groundwater and soil were evaluated in the HHRA and SLERA. These evaluations are summarized in the following subsections.

Human Health Risk Assessment

An HHRA was conducted for the USWS to evaluate potential risks from exposure to chemicals in surface and subsurface soil. Potential current and future human receptors include hunters/recreators, site workers, construction/utility workers, and hypothetical residents.

The risk characterization followed a four-step process detailed in the OU-11 RI Report (CH2M, 2021). Although COPCs were identified in soil, the final COC determination, which was based on the residential receptor, found no COCs for the USWS as the ***hazard indices*** (HIs) calculated for hypothetical future residential exposures were within the ***target limit***. Because risks and hazards

for residential receptors at the USWS are acceptable, risks for other scenarios like hunters/recreators, site workers, and construction/utility workers are also considered acceptable. Groundwater was not deemed to be of concern based on the CSM and conclusions defined in the OU-11 RI Report (CH2M, 2021) indicating no soil impacts. Therefore, soil and groundwater at the USWS qualify for an NFA decision.

Ecological Risk Assessment

The SLERA for the USWS evaluated potential ecological hazards from historical activities. There are no perennial surface water features within the USWS boundary and there are no complete exposure pathways for sediment or surface water. Although groundwater is present onsite, ***ecological receptors*** are not exposed. Groundwater can serve as a transport mechanism, but because of the lack of significant soil contamination, there are no potential exposure pathways to ecological receptors. Overall, the site has negligible and acceptable adverse effects for ecological receptors. Therefore, the USWS qualifies for NFA from an ecological perspective.

Scope and Role of Response Actions

No further CERCLA action is necessary for the USWS based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. There are no other OUs that fall within the USWS site.

Explosive Waste Incinerator (IAAP-025 and IAAP-025G)

The Explosive Waste Incinerator (EWI) is currently inactive and is located in the southwest corner of the Explosives Disposal Area (EDA), in the northeastern portion of the IAAAP site (Figure 4). This Proposed Plan includes both soil and groundwater at the EWI, which fall under IRP sites IAAP-025 and IAAP-025G, respectively.

The EWI is enclosed in Building BG-199-1. The EWI is in a recreational area and covers approximately 2 acres. Adjacent land consists of agricultural tracts, heavily forested areas, and grassy coverage with isolated tree clusters. There are no permanent water features or wet sediment within the site boundary.

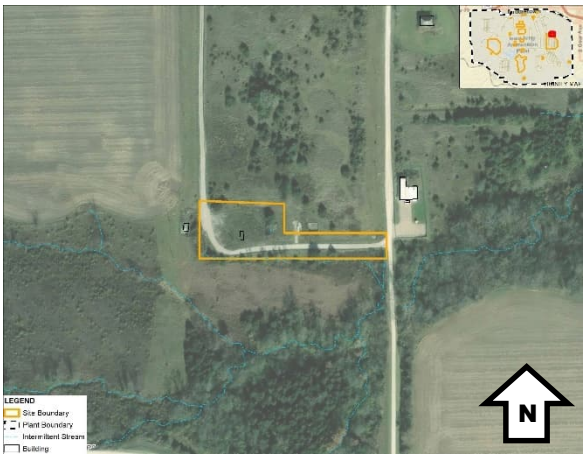


Figure 4 – Layout of Explosive Waste Incinerator (IAAP-025 and IAAP-025G)

Background

The EWI operated from November 1981 to June 1997, incinerating outdated ammunition, hazardous wastes, wastewater treatment sludges from manufacturing and processing of explosives, and spent carbon from treatment of wastewater containing explosives. All operations occurred inside the building, except for the containerization and temporary storage of ash. Drums were then transferred to the RCRA accumulation area of the contaminated waste processor and managed as reactive hazardous waste (Tetra Tech, 2011). Wastewater from floor washdowns was pumped into sumps, pumped into a liquid waste dumpster, and then transported to Line 2 for treatment.

The EWI underwent ***RCRA closure*** in 1998 (PDC, 1998), and the decontaminated incinerator was subsequently removed in 1999 per EPA approval (EPA, 1998). Following RCRA closure of the EWI, periodic groundwater sampling was initiated to

monitor the integrity of the unit closure and to ensure continued protection of the surrounding environment.

Previous Investigations

The EWI has been characterized as part of several investigations since 1991. No soil excavation or removals have been completed at the EWI. Documents detailing previous site investigations are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the OU-11 RI Report (CH2M, 2021), which can be found in the OU-11 folder of the Administrative Record.

Conclusions from previous investigations pertinent to soil and groundwater at the EWI are summarized as follows:

- **1991 Preliminary Site Characterization:** Low levels of metals and a VOC were detected in soil and sediment samples; no explosives, PCBs, PAHs, pesticides, or SVOCs were detected. It was concluded that no significant contaminant release had occurred in association with the EWI (JAYCOR, 1993a).
- **1998 RCRA Closure:** Surface and subsurface soil samples were collected from 19 locations at the EWI and analyzed for metals and explosives. No indication of a release was detected in surface soil or subsurface soil samples. EPA determined that the closure was complete (EPA, 1998).
- **2005 Soil Data Collection:** Soil and dry sediment samples were collected from grassy drainage ditches and analyzed for VOCs, SVOCs, explosives, and metals. Arsenic was the only metal detected greater than the screening criterion; however, the concentrations were less than the IAAAP OU-1 soil RGs. No VOCs, SVOCs, or explosives were detected (MKM Engineers, 2005).
- **2003–2010 Periodic *Groundwater Monitoring*:** Groundwater samples have been collected from shallow ***overburden*** and ***bedrock*** groundwater intervals downgradient of the EWI, located in the Fire Training Pit (FTP). In 2003, one explosive compound (RDX) was detected, but no other explosives or VOCs were found. In 2007 and 2010, Freon-113 was detected in the same well, with no other VOCs present (Tetra Tech, 2011).
- **2018–2020 RI:** The RI for the EWI provided a comprehensive review and risk assessment of existing analytical data. No additional samples were collected as part of the 2018–2020 RI activities because previous investigations had adequately characterized the area.

Twenty-one metals, 12 PAHs, 6 VOCs, and 1 SVOC were detected in soil and dry sediment samples collected at the EWI between 1995 and 2004. Three explosives (1,3,5-trinitrobenzene [TNB], cyclotetramethylene-tetranitramine [HMX], and RDX) were detected at one surface soil sample location in 1995. Explosives were not detected in subsequent surface soil samples collected in the immediate vicinity during 1998 and 2004. Although four metals (barium, cadmium, mercury, and selenium) exceeded the PALs and BTVs, none exceeded the EPA residential screening criteria. [Note that metal compounds often exceed their PALs, but the elevated concentrations can be attributed to natural occurrence, hence the use of BTVs.]

Naphthalene was the only SVOC detected at concentrations exceeding the PAL; however, the detected concentration of 0.58 milligrams per kilogram (mg/kg) was less than the EPA residential screening criterion of 3.8 mg/kg. The only VOC to exceed the PAL was 1,1,2,2-tetrachloroethane, which was detected in a surface soil sample collected near a deluge sump (at the same location where the naphthalene exceedance was observed). However, the concentration of 0.26 mg/kg did not exceed the

EPA residential screening criterion of 0.6 mg/kg. Pesticides, herbicides, and PCBs were not detected in any soil or dry sediment samples.

Groundwater was sampled at two ***monitoring*** wells at the EWI, one shallow overburden and one bedrock monitoring well. Although 1 explosive, 12 metals, and 1 VOC were detected in groundwater, none of the analytes exceeded PALs. Therefore, there is no indication of groundwater contamination exceeding risk-based standards because of operations at the EWI.

Site Characteristics

The EWI site is mostly flat with a gentle slope to the south. Water drains from the EWI via ditches around the building, which join a larger ditch and tributary that ultimately flows to Spring Creek.

The geology at the EWI consists of silty clay and sandy clay with occasional sand seams. Limestone bedrock is encountered between 6 and 34 feet bgs.

Groundwater generally flows southeast toward Spring Creek but can vary seasonally. Groundwater is typically encountered shallower than 13 feet bgs at the EWI.

Although explosives, metals, VOC, SVOCs and PAHs have been detected in soil and dry sediment; and an explosive, a VOC, and metals were detected in groundwater, concentrations were generally less than screening criteria (or similar to background levels). No source materials constituting a principal threat waste are present at the site. Additionally, the relatively flat topography and lack of significant surface water features at the EWI limits the potential for contamination migration and supports the NFA decision.

Summary of Risks

Potentially unacceptable risks or hazards from exposure to contaminants in site groundwater and soil were evaluated in the HHRA and SLERA. These evaluations are summarized in the following subsections.

Human Health Risk Assessment

An HHRA was conducted for the EWI to evaluate potential risks from exposure to chemicals in soil and groundwater. Potential current and future human receptors include hunters/recreators, site workers, construction/utility workers, and hypothetical residents.

The risk characterization followed a four-step process, which is detailed in the OU-11 RI Report (CH2M, 2021). Although several COPCs were identified in soil, the HIs calculated for all COPCs in the EWI were within target limits. The final COC determination, which was based on the hypothetical residential receptor, identified no COCs for the EWI. Because risks and hazards for hypothetical residents at the EWI are acceptable, risks for other scenarios like hunters/recreators, site workers, and construction/utility workers are also considered acceptable. Therefore, the EWI qualifies for an NFA decision for soil and groundwater.

Ecological Risk Assessment

The SLERA for the EWI evaluated potential ecological hazards from historical activities. There are no perennial surface water bodies at the EWI; therefore, wet sediment and surface water are incomplete pathways.

The results of the SLERA indicated that although there were exceedances of ESVs in soil and dry sediment samples, potential ecological hazards are not likely to affect populations of ecological receptors given the small size of the site. Based on the weight of evidence, the EWI qualifies for NFA from an ecological perspective for both soil and groundwater.

Scope and Role of Response Actions

No further CERCLA action is necessary for the EWI based on the RI conclusions. This response is consistent with the overall proposed action for

OU-11 and the IAAAP remedial strategy. There are no other OUs that fall within the EWI site.

Construction Debris Disposal Area (IAAP-028 and IAAP-028G)

The Construction Debris Disposal Area (CDDA) is located in the central portion of the IAAAP (Figure 5). This Proposed Plan includes both soil and groundwater at the CDDA, which fall under IRP sites IAAP-028 and IAAP-028G, respectively.

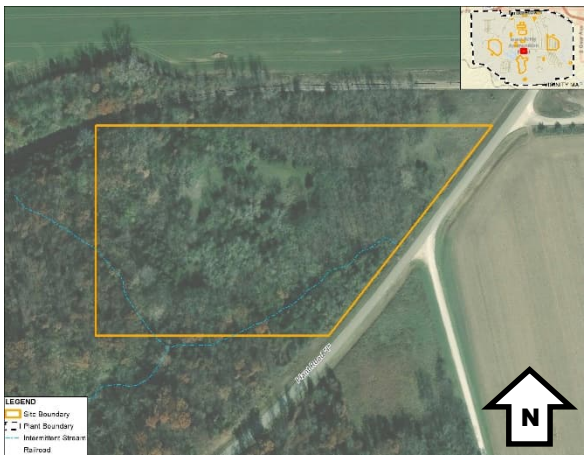


Figure 5 – Layout of Construction Debris Disposal Area (IAAP-028 and IAAP-028G)

The CDDA is in a recreational area and consists of a 5.7-acre inactive disposal site located in the central portion of the IAAAP, within the Long Creek ***watershed***. It has been historically referred to as the CDL in historical documents. The site previously was used for debris disposal and storage, but it was never designated as a landfill nor operated as such under any regulatory framework.

The CDDA is a grassy area with woodlands at the edges, bordered by a railroad to the north, steep embankments with intermittent tributaries to the south and west, and Road M to the east-southeast, with no existing structures.

Background

The CDDA operated from the 1940s to 1992. It was used to dispose of construction debris such as concrete, masonry, dirt, and ***fly ash***; wood or organic materials were excluded. A 1941 aerial photo showed agricultural use, and by 1957 three disturbed areas suggested disposal activities. These areas, located south, southwest, and west of the CDDA driveway, covered parts of the central drainage visible in a 1941 photo. In 1996, the debris was leveled and clean fill material was used to allow vegetation to be established. The thickness of the clean fill ranges from 1 to 3 feet (Miller, 2007). There is no liner beneath the debris. Because activities stopped in 1992, the CDDA was grandfathered in without completing state closure paperwork and post-closure documentation and monitoring.

Previous Investigations

The CDDA has been characterized as part of several investigations since the 1980s. Actions that have been completed at the CDDA include leveling of the construction debris (concrete, brick, and stone brought in from other sites) with a clean fill cover placed on top in 1996. Documents detailing previous site investigations are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the OU-7 RI (Jacobs, 2026), which is currently being finalized but will soon be posted to the OU-7 folder of the Administrative Record.

Conclusions from previous investigations pertinent to soil and groundwater at the CDDA are summarized as follows:

- **1991 Facility-Wide SI:** Soil samples collected from a suspected disposal area at the CDDA showed the presence of pesticides, PCBs, and explosives. The SI concluded that the detections of PCBs and explosives needed further investigation (JAYCOR, 1994).
- **1992–1993 Follow-On RI:** During the start of the RI, the CDDA was actively used for

disposal, and surface conditions changed over time. Samples of soil, surface water, sediment, and groundwater were collected. The results indicated elevated levels of metals, particularly arsenic, cadmium, chromium, lead, mercury, selenium, and silver, in the soil and groundwater. The RI recommended ongoing compliance monitoring at the CDDA (JAYCOR, 1996).

- **1994–2000 Regular Groundwater Monitoring:** Groundwater samples were collected at the CDDA following the 1996 RI Report recommendations, and the results indicated the presence of metals, pesticides, VOCs, and SVOCs. Only metals were found at elevated concentrations (multiple reports).
- **2004–2007 OU-7 Supplemental RI (SRI):** Several soil, surface water, and groundwater samples were collected for explosives, metals, VOCs, SVOCs, PAHs, and pesticides. Although explosives, metals, PAHs, pesticides, and PCBs were detected in soil in isolated occurrences, the majority were less than OU-1 soil RGs. Groundwater had detections of SVOCs, VOCs, and metals, with several metals and BEHP exceeding screening criteria. The HHRA determined there was no unacceptable risk for soil; however, the groundwater required additional evaluation (Tetra Tech, 2009 and 2011).
- **2018–2020 RI Activities:** Additional fieldwork at the CDDA was conducted in 2018 and 2019 to resolve data gaps for groundwater and sediment. Groundwater was sampled for RCRA metals and sediment was sampled for RCRA metals and PCBs. No exceedances were observed in sediment or groundwater during the 2018 and 2019 sampling events.

Site Characteristics

The CDDA is located on the edge of a flat upland plateau with a slight rise in the west, sloping gently to steep tributaries to the west and south. The terrain is uneven because of the disposal activities, with grassy areas and woodlands in the ravines.

Surface water drains south and west into two tributaries that flow into Long Creek. The upland plateau's surface soil is mostly fill material (silt, sand, and clay) overlying a mix of soil, construction debris, coal, and fly ash. The construction debris, coal, and fly ash fill depth varies, with some areas having construction fill material only extending to 6.5 feet bgs. The full depth of fly ash is unknown as the excavator was only able to extend to 18 feet bgs. Beneath and around the fill layer, the native soil is primarily clay and silt. Bedrock has not been encountered at the site but is anticipated to be approximately 50 to 60 feet bgs based on nearby soil borings.

Shallow groundwater ranges from 2 to 19 feet bgs at the CDDA, with varying depths across the site. Groundwater flow direction has shifted from west to southwest over time and varies seasonally. Groundwater is unlikely to interact with surface water because the drainage ditches are usually dry except during heavy rain or snowmelt. Groundwater levels at monitoring wells are typically below the ditch elevations, and generally follow the surface topography, indicating that groundwater does not discharge into the ditches, and thereby limiting potential contaminant migration.

Although metals, VOCs, SVOCs, PAHs, pesticides, PCBs, and explosives have been detected in CDDA media, concentrations were generally less than OU-1 RGs and ultimately were determined by the HHRA to have no unacceptable risks. No source materials constituting a principal threat waste are present at the site. Additionally, the thick native clay lithology underlying the fill material restricts any potential contaminant migration, further justifying the NFA decision.

Summary of Risks

Potentially unacceptable risks or hazards from exposure to contaminants in site groundwater,

soil, and fly ash were evaluated in the HHRA and SLERA. These evaluations are summarized in the following subsections.

Human Health Risk Assessment

An HHRA was conducted for the CDDA to evaluate potential risks from exposure to chemicals in site soil, fly ash, and groundwater. Current and potential future human receptors including hunters/recreators, site workers, construction/utility workers, and hypothetical residents were used.

The risk characterization followed a four-step process, which is detailed in the OU-7 RI Report (Jacobs, 2026). The HHRA evaluated risks considering exposure to soil, fly ash, and groundwater, including potential vapor intrusion if buildings are constructed. Although potential COCs were initially identified in groundwater at the CDDA, concentrations were less than the respective MCLs except for BEHP, which is a common plasticizer that is not known to be used at the IAAAP. Therefore, BEHP was not identified as a site-related COC because its presence was attributed to laboratory or sampling cross-contamination and was not considered a CERCLA release at the site.

No COCs were identified for soil, fly ash, or groundwater at the CDDA; therefore, the site qualifies for an NFA decision.

Ecological Risk Assessment

The SLERA for the CDDA evaluated potential ecological hazards from historical activities. The ecological habitats at the CDDA are limited to the intermittent stream running through the site, mowed grassy areas that surround the site, and the adjacent shrub habitat. Although boron, zinc, TNB, and some pesticides exceeded ESVs, there were no adverse effects on ecological receptors identified during the site risk estimation (food web exposure) and no actions are required. Therefore, the CDDA qualifies for NFA from an ecological perspective.

Scope and Role of Response Actions

No further CERCLA action is necessary for the CDDA based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. There are no other OUs that fall within the CDDA site.

Abandoned Coal Storage Yard (IAAP-042 and IAAP-042G)

The Abandoned Coal Storage Yard (ACSY) is located in the north-central portion of the IAAAP (Figure 6). The ACSY includes the location of a former coal pile and bounded on the north and east by railroad tracks and on the southeast by Line 1 (Line 1 includes the buildings and infrastructure shown on Figure 6). This Proposed Plan includes both soil and groundwater at the ACSY, which falls under IRP sites IAAP-042 and IAAP-042G, respectively.

This area is approximately 15 acres and is abandoned with unmaintained forest and grasses. The ACSY is located within a recreational area. An intermittent tributary of Brush Creek is located in the southern portion of the ACSY. A tributary of Brush Creek is located west of the ACSY. However, there are no permanent streams, rivers, or water bodies that flow continuously within the site boundary.

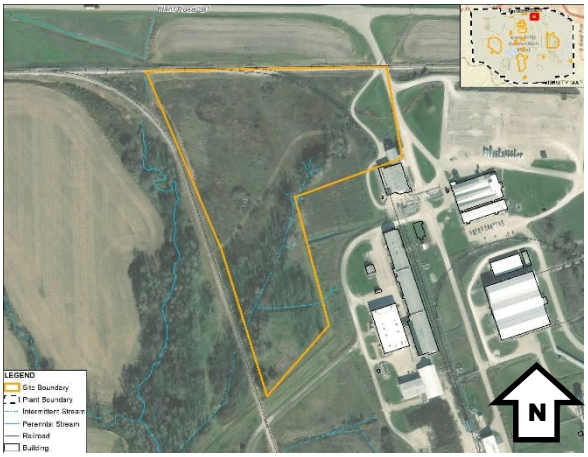


Figure 6 – Layout of Abandoned Coal Storage Yard (IAAP-042 and IAAP-042G)

Background

The ACSY was primarily used to receive coal delivered by rail cars for the steam-generating plant at Line 1 beginning in the 1940s through 1968. Raw coal was stored on approximately 3 to 4 acres at the site. This coal was left uncovered and unlined, allowing potential leaching. The plant switched to No. 2 fuel oil in 1968. The site was identified as an Area of Concern in the Interagency Agreement (JAYCOR, 1996).

In February 1992, a proposal for the removal of the coal pile was submitted to the Iowa Department of Natural Resources because the main heating plant had converted from coal to natural gas, making the coal pile unnecessary. The coal pile was abandoned and stayed at the ACSY until it was removed in 1993. The coal pile was placed at the IAAAP main heating plant as a base for new coal, because the old coal had little or no heating value due to weathering (JAYCOR, 1996). Following the removal and soil sampling, the former coal pile area was covered with topsoil and seeded with native grass.

Previous Investigations

The ACSY has been characterized by several investigations since 1991. Soil/coal excavation and removals have been conducted at the ACSY, most notably the coal pile removal in 1992 (JAYCOR, 1996). Documents detailing previous site investigations are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the OU-7 RI (Jacobs, 2026), which is currently being finalized but will soon be posted to the OU-7 folder of the Administrative Record.

Conclusions from previous investigations pertinent to soil and groundwater at the ACSY are summarized as follows:

- **1991 SI:** Soil, surface water, and sediment samples were collected to determine if the coal pile was leaching or if runoff from the coal pile is occurring. The historical surface water samples collected from the Brush Creek tributary west of the ACSY had several metals detections, but these concentrations were less than regulatory screening levels used during the SI (Safe Drinking Water Act MCLs, EPA Federal Ambient Water Quality Criteria, and/or Superfund Removal Level[3]). A review of the 1991 data concluded there was no significant contamination from the abandoned coal pile (JAYCOR, 1996).
- **1995 RI:** After the coal pile was removed, soil samples were collected from the former coal pile area. These samples were analyzed for nitrates, sulfates, and metals. No exceedances of the contemporaneous EPA risk-based concentration levels for industrial soils were observed; industrial land use was the most reasonable use at the time of the evaluation (JAYCOR, 1996).
- **2012 Line 1 Investigation:** Surface water samples were collected from a tributary located in the southeastern boundary of the ACSY during an investigation of Line 1. These samples were analyzed for explosives. No explosives were detected in the surface water samples.
- **2018–2020 RI Activities:** Additional surface soil samples were collected from the coal pile area to evaluate for PAH compounds. Surface water and sediment had already been adequately characterized by previous investigations, and in 2006, the Comprehensive Watersheds Evaluation concluded that based on the minimal soil contamination present, groundwater was not like impacted (Tetra Tech, 2006). Therefore, only surface soil samples were collected during the 2018 field event. One PAH (benzopyrene) exceeded the site characterization PALs in two of the 2018 soil samples.

[3] Superfund Removal Action Levels were superseded by EPA Regional Removal Management Levels in 2010.

Site Characteristics

The ACSY land surface is mostly flat with a gentle slope to the south. A tributary south of the former coal pile ultimately drains to Brush Creek. Before the 1992–1993 coal pile removal, precipitation would run off from the coal pile and into tributaries feeding Brush Creek. The former coal pile area is now characterized by tall grasses and trees, with no permanent surface water or wet sediment.

Nearby monitoring wells and soil borings indicate that geology below the clean fill at the ACSY likely consists of glacial till (silt, clay, and fine sand). Based on historical potentiometric surface data, groundwater is estimated to be less than 10 feet bgs at the ACSY with flows to the southeast towards Brush Creek.

Soil, sediment, and surface water have been evaluated for contamination associated with the former coal pile; no significant contamination has been identified in any of the media evaluated. No principal threat waste is present at the ACSY, and since the removal of the coal pile, the generally flat topography restricts any potential contamination migration, further justifying the NFA decision.

Summary of Risks

Potentially unacceptable risks or hazards from exposure to contaminants in soil were evaluated in the HHRA and SLERA. These evaluations are summarized in the following subsections.

Human Health Risk Assessment

An HHRA was conducted for the ACSY to evaluate potential risks from exposure to chemicals in surface soil. The HHRA also considers potential future exposure to groundwater; however, groundwater has not been sampled at the ACSY because of the absence of significant soil contamination and the surficial nature of the coal, which has since been removed. Potential future human receptors include (current and future) hunters/recreators, site workers, construction/utility workers, and hypothetical residents.

The risk characterization followed a four-step process, which is detailed in the OU-7 RI Report (Jacobs, 2026). Although initial COPCs were identified, the combined risks and hazards from site-related contaminants and ***naturally occurring chemicals*** (for example, arsenic and cadmium) were found to be protective of a hypothetical future residential use scenario. Because the initial evaluation showed risks within acceptable limits, no COCs were identified for the ACSY. Because risks and hazards for residents at the ACSY are acceptable, risks for other scenarios like hunter/recreational, site workers, and construction/utility workers are also considered acceptable. Therefore, soil and groundwater at the ACSY qualifies for an NFA decision.

Ecological Risk Assessment

The SLERA for the ACSY site evaluated potential ecological hazards from historical activities. The site is characterized by grasses and trees, with an adjacent intermittent tributary feeding Brush Creek. COPECs were initially identified but based on the low magnitude of exceedances in the SLERA and the removal of the coal pile with a clean fill cover in place, it is unlikely that significant ecological effects will occur on any receptors at the ACSY. The SLERA found no adverse effects on ecological receptors, so no additional actions are required. Based on the weight of evidence, the ACSY qualifies for NFA from an ecological perspective.

Scope and Role of Response Actions

No further CERCLA action is necessary for the ACSY based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. There are no other OUs that fall within the ACSY site.

Lines 4A/4B Ammo Assembly (IAAP-005G)

The Ammo Assembly (Lines 4A/4B) is located in the north-central portion of the IAAAP site, straddling the Brush Creek and Long Creek watersheds, and comprises production Lines 4A and 4B (Figure 7). This Proposed Plan addresses groundwater at Lines 4A/4B Ammo Assembly, which is designated under IAAP-005G. Soil (IAAP-005) is addressed under the OU-1 remedial action and is not part of this Proposed Plan.

The Ammo Assembly covers 57.8 acres, with Line 4A encompassing 21 acres and Line 4B encompassing 16 acres. Line 4A is located within the Brush Creek watershed and Line 4B within the Long Creek watershed. Lines 4A/4B are closed for recreational activities and land use is designated as industrial.

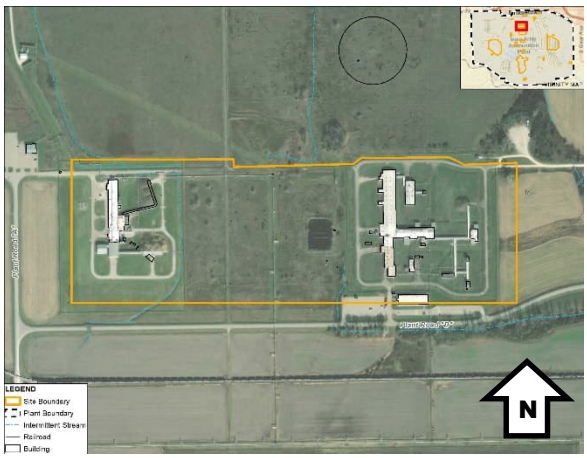


Figure 7 – Layout of Lines 4A/4B Ammo Assembly (IAAP-005G)

Background

Line 4A was constructed in 1941 and was used to manufacture fuzes for ammunition production. Between 1946 and 1954, the site was used to disassemble, detonate, and convert fuzes. In an attempt to restart operations, between 1967 and 1970 many changes to Line 4A were proposed but never fully implemented. These changes included installation of a tank farm intended to store solvent, alcohol, and liquid nitrogen; however, these tanks were removed and appeared to be unused. Line 4A was reconstructed and subsequently reopened in 1984 to serve as a detonator assembly facility, with 14 new treatment tanks installed. Settled sludge from the bottom of each tank was removed and shipped offsite for disposal in accordance with EPA regulations. The treatment tanks were not used after 1991 (TN & Associates, 2003). Concrete holding sumps for RDX-contaminated wastewater periodically used carbon filters to treat explosives-contaminated wastewater, which then discharged to the sanitary sewer system (JAYCOR, 1996). Line 4A was renovated in 1996 for a private industry to produce automotive airbag charges (TN & Associates, 2003) and was shut down in 1998. Line 4A is currently inactive.

Line 4B was constructed in 1941 as an assembly facility and ceased operations in 1945. In 1962, production resumed, and by the late 1960s the line was being used for missiles assembly. Line 4B is currently active and used for warhead production. Wastewater generated at Line 4B is stored in underground and aboveground tanks and is removed for activated carbon treatment. Hazardous waste substances associated with Line 4B include TNT, RDX, and Composition B.

Previous Investigations

Numerous investigations and actions have been conducted at Lines 4A/4B since the 1980s, including sump removals. Documents detailing previous site investigations are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the 2021 OU-11 RI (CH2M, 2021), which can be found in the OU-11 folder of the Administrative Record.

Conclusions from previous investigations pertinent to groundwater at Lines 4A/4B are summarized as follows:

- **1981–1987 RCRA Facility Assessment:** Groundwater samples were collected and

analyzed at five new monitoring wells at Line 4A during multiple sampling events. No contamination was detected in the groundwater. No sampling activities were completed at Line 4B (Ecology and Environment, 1987).

- **1992–1996 Follow-On RI:** Groundwater samples were collected from two new monitoring wells (one at Line 4A and one at Line 4B). Manganese was detected greater than its screening level at Line 4A; BEHP, iron, and manganese were detected greater than screening levels at Line 4B (JAYCOR, 1996).
- **1996–2003 Periodic Groundwater Monitoring:** Groundwater samples were collected at two wells during multiple sampling events between 1996 and 2003. BEHP was detected above its screening level from 2000 to 2003. Iron and manganese were previously detected above screening levels but were not identified as facility-related constituents and are considered naturally occurring (multiple reports).
- **2018–2020 RI:** Existing groundwater data were evaluated under the most current RI. No additional RI sampling activities were conducted for groundwater at Lines 4A/4B because sufficient groundwater samples had been collected for the site during previous investigations (CH2M, 2018a). No explosives, VOCs, or metals were detected in groundwater above their site characterization PALs during the last sampling events (2003). Therefore, no COCs were identified for groundwater at Lines 4A/4B.

Site Characteristics

Lines 4A/4B feature flat topography with a gentle slope to the east and the southwest at Line 4A with surface water runoff flowing into nearby ditches and intermittent tributaries of Spring Creek. Surface water runoff at Line 4B is through overland flow and a southward-trending ditch that eventually flows to the headwaters of a Long Creek tributary.

Lines 4A/4B consist of overburden with a heterogeneous mix of clay and silty clay and variable amounts of fine- to medium-grained sand (glacial till). The overburden is underlain by limestone bedrock, which was not encountered at Lines 4A/4B because of shallow boring advancement depth.

Overburden groundwater is found at depths of 3 to 12 feet bgs at Line 4A and from 1 to 11 feet bgs at Line 4B. A hydraulic divide is present at Lines 4A/4B, with Line 4A in the Brush Creek watershed and Line 4B in the Long Creek watershed. Overburden groundwater at Line 4A east of the hydraulic divide flows east-southeast toward Brush Creek. Overburden groundwater at Line 4B west of the hydraulic divide flows west-southwest toward Long Creek.

Drainage ditches at Lines 4A/4B are relatively shallow, suggesting limited (if any) surface water/groundwater interaction where surface water is present (Tetra Tech, 2012). Lines 4A/4B are closed to recreational activities.

No principal threat waste or COCs exist at Lines 4A/4B groundwater; therefore, site characteristics and factors are not necessary to support NFA decisions.

Summary of Risks

Potentially unacceptable risks or hazards from exposure to contaminants in site groundwater were evaluated in the HHRA and SLERA. These evaluations are summarized in the following subsections.

Human Health Risk Assessment

An HHRA was conducted for Lines 4A/4B to evaluate potential risks from current and future risks from exposure to chemicals in site groundwater. Potential future human receptors include site workers, construction/utility workers, and future hypothetical residents.

The risk characterization followed a four-step process, which is detailed in the OU-11 RI Report (CH2M, 2021). Two metals, barium and chromium, were identified as COPCs in groundwater for a potable use scenario. The final COC determination, which was based on the residential receptor, found no COCs for Lines 4A/4B. Because risks and hazards for hypothetical residents at Lines 4A/4B are acceptable, risks for other scenarios like site workers and construction/utility workers are also considered acceptable. Therefore, Lines 4A/4B qualify for an NFA decision.

Ecological Risk Assessment

The SLERA for the Lines 4A/4B site evaluated potential ecological hazards from historical activities and assessed potentially unacceptable risk to ecological receptors. There are no perennial surface water features within the Lines 4A/4B boundary; as a result, there are no complete exposure pathways for sediment or surface water.

Though groundwater is present onsite, ecological receptors are not directly exposed to groundwater. Though drainage ditches are onsite, these are not perennial waterbodies and do not provide suitable habitat for ecological receptors. As previously noted, there is limited (if any) connection between ditches and groundwater at Lines 4A/4B.

The SLERA process involved screening-level problem formulation, exposure estimates, and risk calculations. The results indicated that no complete exposure pathways are present for ecological receptors and Lines 4A/4B qualify for NFA from an ecological perspective.

Scope and Role of Response Actions

No further CERCLA action is necessary for groundwater at Lines 4A/4B based on the HHRA, ERA, and conclusions presented in the OU-11 RI Report (CH2M, 2021). This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. Note that response actions for soil at the Lines 4A/4B are addressed under OU-1 (Leidos, 2018). The remedy for soil (IRP Site IAAP-005) is addressed under OU-1, the remedy includes soil removal and ***land use controls*** (LUCs).

Line 6 Ammo Production (Detonator) (IAAP-007G)

The Line 6 Ammo Production (Detonator) is located in the north-central portion of the IAAAP site (Figure 8). The Line 6 area consists of environmental restoration and munitions response sites (MRSs). This Proposed Plan includes groundwater at the Detonator site, which falls under IAAP-007G. Soil is addressed under the remedy for OU-1 (Site IAAP-007) (Leidos, 2018) and munitions and explosives of concern (MEC) and munitions constituents (MC) are addressed under the remedy for OU-5 (IAAP-002-R-01 and IAAP-002-R-02) (CB&I, 2014).

Line 6 comprises 95.2 acres and is surrounded by agricultural lands and vegetated drainage ditches. Line 6 historically included 34 buildings and 97 structures; all buildings and most structures have since been demolished. Hunting and recreation are not allowed at Line 6 and the land use is designated as industrial. There is an intermittent tributary at Line 6 that leads to Brush Creek.

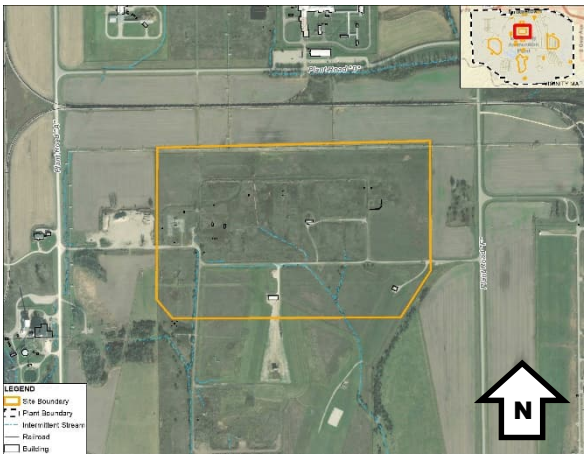


Figure 8 – Layout of Line 6 Ammo Production (Detonator) (IAAP-007G)

Background

Operations at Line 6 began in 1941 with production, storage, and shipping of detonators, delays, and relays. Starting in the 1960s, Line 6 produced primers, detonators, rocket igniters, grenade fuzes, and mines. Starting in the 1980s, Line 6 produced a range of munitions, which required wastewater treatment before discharging into limestone filter gravel beds onsite. Production decreased in the 1980s, until operations ended in 1992. Since 1992, all buildings have been demolished and no wastewater has been generated.

Previous Investigations

Line 6 has been characterized as part of several investigations since the 1980s. Soil excavation and removals have been implemented at Line 6, most notably the soil removal remedial actions associated with the OU-1 remedy (Leidos, 2018). Documents detailing previous site investigations and removals are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the OU-11 RI Report (CH2M, 2021) and the OU-11 SRI Report for Line 6 (Jacobs, 2024), which are found in the OU-11 folder of the Administrative Record.

Conclusions from previous investigations pertinent to groundwater at Line 6 are summarized as follows:

- **1981–1984 Groundwater Quality Assessment:** ***Groundwater sampling*** was performed at five newly installed monitoring wells. The results indicated concentrations of contaminants (metals) were similar to background values (AEHA, 1985).
- **1986 RCRA Facility Assessment:** Groundwater sampling was performed at new and existing monitoring wells at Line 6 during the RCRA Facility Assessment; no explosives were detected, and no chemicals were detected above screening criteria in groundwater (Ecology and Environment, 1987).
- **1996 Follow-On RI:** Groundwater samples were collected from existing wells during multiple sampling events. Only iron and antimony were detected sporadically greater than respective screening levels (JAYCOR, 1996).
- **2005–2006 Periodic Groundwater Monitoring:** Groundwater samples were collected from existing wells. Only manganese exceeded screening levels (Tetra Tech, 2005 and 2009).
- **2018–2020 RI:** The RI for the Line 6 groundwater provided a comprehensive review and risk assessment of existing analytical data. No additional samples were collected as part of the 2018–2020 RI activities because previous investigations were initially considered to have adequately characterized the site. However, upon further review of the 2005 and 2006 data, additional sampling for manganese was required to reassess previous elevated concentrations and complete the RI (CH2M, 2021).
- **2022 and 2023 SRI:** Seven existing monitoring wells were redeveloped and then sampled for manganese. Two of the seven locations had manganese concentrations in exceedance of the site characterization PAL and BTV; however, the concentrations of manganese were within the same order of magnitude as the BTV for the region. The 2022 and 2023 concentrations were also lower than those observed in 2005 and 2006, and were more consistent with concentrations in earlier (pre-2005) sampling events. Therefore, elevated concentrations observed in 2005 and 2006 were concluded to be associated with temporary, localized conditions rather than a site release. Manganese concentrations in groundwater at Line 6 are therefore

attributed to naturally occurring conditions (Jacobs, 2024).

Site Characteristics

Line 6 has relatively flat topography, sloping generally to the south-southeast. Surface drainage is provided by a series of ditches that flow southward into an intermittent tributary of Brush Creek.

Line 6 is underlain by stiff/dense clayey glacial till with wind-blown loess occurring occasionally. Underlying the loess and glacial till is interbedded limestone and shale bedrock.

Shallow groundwater at the site ranges from 4 to 25 feet bgs. Groundwater flow in this area is generally to the south.

No principal threat waste or COCs exist for Line 6 groundwater (only naturally occurring metals); therefore, site characteristics and factors are not necessary to support NFA decisions.

Summary of Risks

Potentially unacceptable risks or hazards from exposure to contaminants in site groundwater were evaluated in the HHRA and ERA. These evaluations are summarized in the following subsections.

Human Health Risk Assessment

An HHRA was conducted for Line 6 to evaluate potential risks from exposure to chemicals in groundwater. Potential future human receptors include site workers and hypothetical residents.

The risk characterization followed a four-step process, which is detailed in the OU-11 RI Report (CH2M, 2021), and updated in the OU-11 Line 6 SRI Report (Jacobs, 2024). The updated HHRA concluded that no unacceptable risks are associated with manganese in groundwater at Line 6. Therefore, Line 6 groundwater qualifies for an NFA decision.

Ecological Risk Assessment

The SLERA for the Line 6 site evaluated potential ecological hazards from historical activities. Step 1 of the process determined that there are no complete exposure pathways to ecological receptors as there are no perennial surface water features within the Line 6 boundary. As a result, there are no complete exposure pathways for sediment or surface water. Although groundwater is present onsite, ecological receptors are not directly exposed to groundwater, and because there are no surface water bodies or sediment, the exposure pathway for groundwater to ecological receptor are incomplete. As a result of no complete exposure pathway to ecological receptors, the SLERA process concludes that there are negligible (acceptable) adverse effects and Line 6 groundwater qualifies for an NFA decision from an ecological perspective.

Scope and Role of Response Actions

No further CERCLA action is necessary for Line 6 groundwater based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. Soil at Line 6 (IRP Site IAAP-007) is addressed under OU-1; the remedy includes soil removal and LUCs. MEC and MC at Line 6 (IRP sites IAAP-002-R-01 and IAAP-002-R-02) are addressed under OU-5, and the remedy includes LUCs.

Line 7 Ammo LAP (Fuze/Blank) (IAAP-008G)

Line 7 is located in the central portion of the IAAAP site (Figure 9). This Proposed Plan includes groundwater at Line 7, which falls under IAAP-008G. Soil at Line 7 (IAAP-008) will be addressed in a future ***Feasibility Study*** (FS) under OU-7 (Jacobs, 2026).

Line 7, which comprises approximately 25 acres, is surrounded by agricultural fields, vegetation and trees, and is within the boundary of the active

40-millimeter (mm) test range (constructed in 2013). Line 7 is located within a restricted area; no hunting or recreation is allowed and land use is designated as industrial. Surface water and sediment are not present at Line 7.

Figure 9 – Layout of Line 7 Ammo LAP (Fuze/Blank) (IAAP-008G)

Background

Line 7, also known as the "primer line," was constructed in 1941 and consisted of 10 buildings from 1941 to the 1960s and 13 buildings from the late 1960s to 1970. Line 7 was inactive after approximately 1970, and by 2006 all Line 7 buildings and concrete slabs were removed.

Primary compounds used in Line 7 processes include explosives (namely TNT and RDX) and polishing compounds used in fuze production, including the VOCs acetone, toluene, xylene, and ethanol. Gun powder was also used in munitions preparations. During production, wastewater from building washdowns was discharged to gravel-lined sumps and allowed to leach into the ground (JAYCOR, 1993a).

Previous Investigations

Line 7 has been characterized as part of several investigations since 1991. Sump removals and contaminated soil excavation and removals have been performed at Line 7. Documents detailing previous site investigations and actions are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the OU-7 RI Report (Jacobs, 2026), which is currently being finalized but will soon be posted to the OU-7 folder of the Administrative Record.

Conclusions from previous investigations pertinent to groundwater at Line 7 are summarized as follows:

- **1996 Follow-On RI:** Groundwater samples were not collected during this RI. However, the report concluded that given low levels of metals in soils are confined to depths of less than 3 feet, the clay-rich till at the site is relatively impermeable and precludes migration of soil constituents to groundwater, and the presence of metals in soils is indicative of small surface source areas, groundwater impacts are not expected at Line 7 (OHM, 1996).
- **2006 Post-Demolition Sampling:** During building demolition activities in late 2005 and early 2006, a groundwater sample was collected from the basement of Building 7-36. No chemicals were detected greater than the applicable comparison criteria (Tetra Tech, 2006). Following demolition of the Line 7 buildings, 23 soil samples were collected beneath the former buildings and at other areas of concern. No explosives or VOCs were detected; PCBs were detected below RGs set forth in the OU-1 ***Record of Decision*** (ROD) and metals were detected less than BTVs (Tetra Tech, 2010).
- **2006 Comprehensive Watersheds Evaluation and SRI:** During the 2006 review of Line 7, it was concluded that three direct-push technology (DPT) groundwater samples should be collected downgradient of the site for analysis of explosives and VOCs to resolve data gaps in the CSM (Tetra Tech, 2006).

  Based on the recommendation, an attempt was made to collect groundwater samples using DPT in 2006, but because of the low permeability of the geology, boreholes were

dry. Therefore, four temporary monitoring wells were installed downgradient of the site. Three of the four wells were sampled for VOCs and explosives; the fourth well could not be sampled because it was dry. No explosives were detected in groundwater and VOC detections were all less than the screening criteria (Tetra Tech, 2006 and 2012).

- **2018–2020 RI:** Per the site evaluation conducted during the UFP-QAPP (CH2M, 2017), no additional groundwater sampling was performed as groundwater was adequately characterized in previous investigations, most notably the 2006 SRI (Tetra Tech, 2012). Although three VOCs were detected (1,1-dichloroethane, 2-butanone, and acetone), none exceeded their respective PALs. No explosives were detected; therefore, it was concluded that no groundwater contamination exceeding risk-based criteria is present at Line 7 (Jacobs, 2026).

Site Characteristics

Topography at Line 7 generally slopes toward the southeast with surface drainage occurring via drainage ditches and intermittent tributary feeding Brush Creek. The site is well-vegetated, primarily with grasses.

Based on the lithology at nearby Line 9 (800 feet north), the subsurface lithology is characterized by loess underlain by clayey till and glacial outwash. Limestone and shale bedrock is anticipated between 60 to100 feet bgs.

Shallow groundwater at Line 7 occurs at depths ranging from 2.7 to 11 feet bgs. Groundwater to surface water interaction may be occurring based on the depth of drainage ditch (9 feet) and the shallow groundwater depth. Groundwater is expected to flow to the southeast and southwest.

No principal threat waste or COCs exist for Line 7 groundwater; therefore, site characteristics and factors are not necessary to support an NFA decision.

Summary of Risks

No further CERCLA action is necessary for Line 7 groundwater based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy.

Human Health Risk Assessment

An HHRA was conducted for Line 7 to evaluate potential risks from exposure to chemicals in groundwater. Potential future human receptors include site workers, construction/utility workers, and hypothetical residents.

The risk characterization followed a four-step process, which is detailed in the OU-7 RI Report (Jacobs, 2026). The final COC determination, which was based on the hypothetical residential receptor, found no COCs for Line 7 groundwater. Because risks and hazards for residential receptors at Line 7 are acceptable, risks for other scenarios like site workers and construction/ utility workers are also considered acceptable. Therefore, Line 7 qualifies for an NFA decision.

Ecological Risk Assessment

The SLERA for Line 7 evaluated potential ecological hazards from historical activities. The site was determined to have limited attraction for many ecological receptors based on primarily grass vegetation, limited tree cover, and many disturbances from human activity. Additionally, there are no complete pathways from groundwater to ecological receptors onsite.

The ecological risk assessment concluded that based on the weight of evidence and the SLERA, there were no COPECs or COCs identified from exposure to groundwater. Therefore, groundwater at Line 7 qualifies for NFA from an ecological perspective.

Scope and Role of Response Actions

This section outlines the proposed response actions for groundwater at Line 7 under OU-11 at the IAAAP. The actions selected will be the final CERCLA response action. The preferred alternative will allow for UU/UE to groundwater at Line 7. Soil (IRP Site IAAP-008) will be addressed under OU-7 in a forthcoming FS.

Line 8 Ammo LAP (Fuze/ Rocket) (IAAP-009G)

The Line 8 Ammo LAP site is located in the central portion of the IAAAP (Figure 10). This Proposed Plan addresses groundwater at Line 8, which is designated as IAAP-009G. Soil (IAAP-009) is addressed under the OU-1 remedial action and is not part of this Proposed Plan. Note, although the 1996 RI (JAYCOR) concluded that contamination was only present in shallow soil, the IRP site for groundwater (IAAP-009G) was created in 2012 to facilitate the management of environmental work at the IAAAP.

Line 8 comprises approximately 22 acres and encompasses a former production line located in the central portion of the IAAAP facility on the western edge of the 40-mm fragmentation zone, approximately 0.375-mile west of Lines 7 and 9. All buildings have been demolished and the site is currently inactive. An intermittent tributary to Long Creek also runs north-south, parallel to the road.

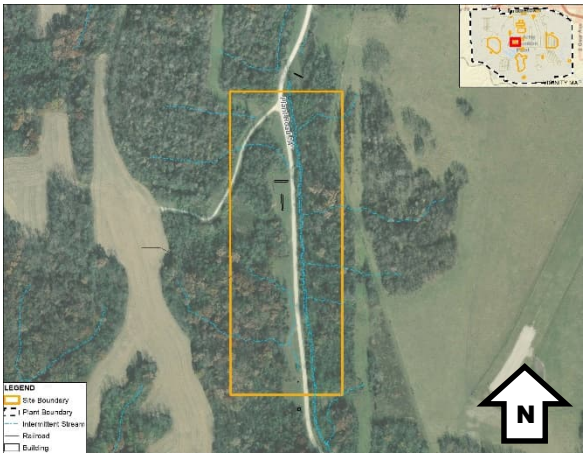


Figure 10 – Layout of Line 8 Ammo LAP Site (Fuze/Rocket) (IAAP-009G)

Background

Line 8 was used for producing Amatol (an explosive composed of TNT and ammonium nitrate) during World War II, and for fertilizer manufacturing and fuze and rocket ignitor LAP operations following the war. The site contained several buildings and a tank farm consisting of 13 aboveground tanks used to store ammonium nitrate liquor. Operations ceased at Line 8 around 1950, and the tank farm was removed and the two buildings burned down.

Previous Investigations

Line 8 has been characterized as part of several investigations since the 1980s. Documents detailing previous site investigations are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the OU-11 RI Report (CH2M, 2021), which is found in the OU-11 folder of the Administrative Record.

Conclusions from previous investigations pertinent to groundwater at the Line 8 Ammo LAP site are summarized as follows:

- **1992–1996 Follow-On RI:** Extensive soil, surface water, and sediment samples were collected and analyzed for explosives and metals; soils were also analyzed for SVOCs, PCBs, and nitrates. Phase I RI soil screening

data and historical information indicated that only shallow soil contamination existed at Line 8. Therefore, no groundwater wells were deemed necessary during the follow-on RI. The RI concluded that no groundwater impact was expected (JAYCOR, 1996).

- **2006 Comprehensive Watersheds Evaluation and Supplemental Data Collection:** The data gap evaluation concluded that surface water, sediment, and soil had been adequately characterized at Line 8. The soil at Line 8 has a high clay content and retards migration of metals to groundwater. The report concluded that groundwater impact was unlikely, and that no further investigation or remediation was warranted for Line 8 (Tetra Tech, 2006).
- **2018–2020 RI Activities:** Per the site evaluation conducted during the UFP-QAPP (CH2M, 2018a), no groundwater investigation was conducted at Line 8. This was because the most recent RI found that lead concentrations in soil at Line 8 exceeded the SI criterion at only two locations, were considered present because of local variability, were limited to a depth of 2 feet bgs (groundwater is typically encountered at 10 feet bgs), and their migration was impeded by the high clay content of the overburden. As part of the RI under OU-1, lead was the only COC identified for soil and was attributed to local variability in soil conditions (JAYCOR, 1996). Lead concentrations in sediment and surface water from the intermittent tributaries were generally less than BTVs, indicating a release requiring cleanup has not occurred. Based on the environmental setting and its chemical properties, it was determined that lead in soil would not have impacted groundwater at Line 8 (CH2M, 2021).

Site Characteristics

Line 8 is located in the Long Creek watershed. Surface topography slopes downward from both the eastern and western boundaries of the site, converging in a topographic low represented by an intermittent tributary of Long Creek that parallels the service road. All surface water runoff in the area flows into this tributary, eventually emptying into Mathes Lake approximately 2,000 feet south of the Line 8 boundary. No perennial surface water features are associated with the site.

Limited site-specific geologic and hydrogeologic information is available for Line 8, given that few soil borings have been advanced and no groundwater monitoring wells have been installed at the site. Based on soil sampling, overburden at the site was identified as high-clay-content loess (Tetra Tech, 2006). This is consistent with the facility-wide geology, which is underlain by a sequence of unconsolidated glacial deposits overlying sedimentary bedrock.

Groundwater was not encountered during previous soil investigations to 3 feet bgs at Line 8. The depth to groundwater at the nearest overburden well (450 feet north of Line 8) was measured at 37 feet bgs. Facility-wide groundwater levels and potentiometric data suggest that the overall flow direction in this area is to the southeast.

No principal threat waste or contamination exist at Line 8; therefore, site characteristics are not a factor for justification of NFA decision.

Summary of Risks

Based on the CSM for Line 8 and the chemical properties of lead, there is no basis for contaminant release to groundwater. Therefore, an HHRA or SLERA were not required. Line 8 qualifies for an NFA decision from a human health and ecological perspective.

Scope and Role of Response Actions

No further CERCLA action is necessary for Line 8 groundwater based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. Soil (IRP Site IAAP-009) is addressed under OU-1, the remedy includes soil removal and LUCs.

Incendiary Disposal Area East Yard D (IAAP-013G)

The Incendiary Disposal Area (InDA) East Yard D is located in the southeast portion of the IAAAP site (Figure 11). This Proposed Plan includes groundwater at the InDA East Yard D, which falls under IRP Site IAAP-013G and is located within the larger InDA site boundary. Soil is addressed under the remedy for OU-1 (IAAP-013) (Leidos, 2018). MEC and MC are addressed under the remedy for OU-5 (IAAP-006-R-01) (CB&I, 2014).

The InDA, which originally comprised approximately 3.6 acres before subsequent investigations expanded the MRS area to approximately 34 acres, is a densely wooded area and is adjacent to an intermittent tributary of Spring Creek. Remnants of physical structures remain onsite, such as an old fence at the central portion of the site. The land surrounding the InDA is a recreational area; however, new fencing was installed around the perimeter of the InDA associated with OU-5 RI fieldwork (EPA, 2014; Shaw, 2013), which inhibits any recreation within the InDA.

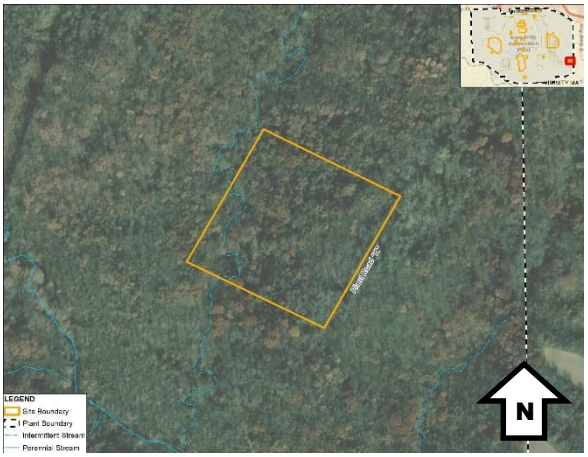


Figure 11 – Layout of Incendiary Disposal Area East Yard D (IAAP-013G)

Background

The InDA was used by a contractor from 1940 to 1946 as a high-explosives demolition area and for burial of unknown materials (USATHAMA, 1980). There are no records identifying specific types of munitions detonated or definitive mention of period of use; however, based on historical documents and discussions with plant workers in the 1980s, the InDA was fenced with signs and had World War II material buried within (Mason & Hanger, 1989).

Previous Investigations

The InDA East Yard D has been characterized as part of several investigations at the IAAAP since 1980. Based on the results of previous investigations, soil excavation and removals have been conducted. Documents detailing previous site investigations and actions are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the 2021 OU-11 RI (CH2M, 2021), which is found in the OU-11 folder of the Administrative Record.

Conclusions from previous investigations pertinent to groundwater at the InDA are summarized as follows:

- **1991 Facility-Wide SI and Preliminary Assessment:** Soil sampling was recommended to evaluate for incendiary

material, but the SI concluded that the InDA did not contain contamination requiring groundwater sampling or additional soil sampling under the RI (JAYCOR, 1992 and 1994).

- **2005–2006 Additional Site Characterization:** Two borings were advanced for groundwater grab sampling using DPT. At the first location, a boring was advanced to 60 feet bgs, but groundwater was not encountered. At the second location, groundwater was encountered between 4 and 8 feet bgs (within the floodplain of the adjacent tributary); a groundwater sample was collected and analyzed for explosives, total and dissolved metals, and perchlorate. The groundwater grab sample did not contain any exceedances of screening criteria for any organic chemicals. Twelve total metals exceeded their respective criteria; however, no dissolved metals exceeded criteria and the total metals exceedances were attributed to high turbidity, which is a result of sampling via DPT (no developed sand filter pack, as would normally be found in a monitoring well). Groundwater at the InDA was eliminated from further consideration in the OU-7 SRI (Tetra Tech, 2009 and 2011). However, in a letter dated May 2012, EPA indicated that groundwater was not adequately characterized at the site and a more robust evaluation of lead associated with InDA operations was warranted.
- **2018–2020 RI:** Additional fieldwork at the InDA East Yard D was conducted in 2020 to further characterize lead in groundwater. Per the site evaluation conducted during the UFP-QAPP (CH2M, 2018a), new monitoring wells were proposed up to a relatively shallow depth of approximately 25 feet bgs. The proposal was based on the fact that the geology at the site is predominantly clay and lead is not anticipated to have migrated far into the subsurface; this is indicated by the fact that elevated lead concentrations were only observed in soil up to a depth of 2 feet bgs. Three new monitoring wells were advanced at the InDA. However, two of the wells, which were drilled to 27 feet bgs, did not have groundwater even after allowing the well screens ample time to equilibrate overnight. The third well was moved was moved to higher topographic area and installed to a depth of 49 feet bgs to account for the difference in ground elevation. Although the well was moved, it still met its objective of being located adjacent to/downgradient of the detonation craters. This well was sampled for metals. No metals were observed to exceed their site characterization PALs (CH2M, 2021).

Site Characteristics

The InDA topography slopes moderately to the west towards the adjacent tributary. Some areas near the central and western portions of the site have more aggressive topography with steeper slopes. Anthropogenic features are observed near the slope facing the tributary, such as craters and undulating terrain, presumed to be caused by former operations at the site. The adjacent tributary feeds Spring Creek, which is approximately 900 feet downstream of the InDA.

The InDA is underlain by fill material consisting of miscellaneous debris and silty clay. Wind-blown, non-stratified, silts and clays (loess) are located beneath the fill material. Underlying the loess is a glacial till consisting of clay and silt with discontinuous sand and gravel seams. Bedrock was not encountered during any InDA boring advancements, but is assumed to be limestone, consistent with surrounding site geology.

The depth to shallow groundwater at the InDA varies based on the location and topography. During the 2005-2006 fieldwork, groundwater was encountered at 4 feet bgs within a floodplain, but not encountered at a depth of 60 feet bgs at a higher topographic area. During the 2018-2020 RI, two temporary monitoring wells

advanced to 27 feet bgs did not encounter groundwater. The third monitoring well was located in an elevated topographic area (approximately 25 feet higher than surrounding InDA) had a depth to groundwater of 41 feet bgs. Groundwater flow in this area of the IAAAP varies seasonally, generally moving south-southwest to east-southeast.

No principal threat waste exists at the InDA East Yard D and no contamination of any organic chemicals was identified. Although several metals were detected at levels exceeding screening criteria, dissolved metals were all below criteria, demonstrating that the metals were likely the result of sample collection procedures and not indicative of metals contamination. Additionally, the silt and clay lithology at the InDA greatly restricts migration of any potential contaminants, further justifying the NFA decision for groundwater.

Summary of Risks

Potentially unacceptable risks or hazards from exposure to contaminants in site groundwater were evaluated in the HHRA and SLERA. These evaluations are summarized in the following subsections.

Human Health Risk Assessment

An HHRA was conducted for the InDA East Yard D to evaluate potential risks from exposure to chemicals in site groundwater. Potential future human receptors include site workers and hypothetical residents.

The risk characterization followed a four-step process, which is detailed in the OU-11 RI Report (CH2M, 2021). Two site-related COPCs were identified (barium and cobalt) but neither were carried forward as COCs as no unacceptable risk or hazards were identified for the hypothetical residential receptor. Because risks and hazards for residential receptors at the InDA are acceptable, risks for other scenarios like site workers and construction/utility workers are also considered acceptable. Therefore, the InDA qualifies for an NFA decision.

Ecological Risk Assessment

The SLERA for the InDA East Yard D site evaluated potential ecological hazards from historical activities. There are no perennial water features within the InDA boundary; therefore, there is no complete exposure pathway for sediment or surface water. Although groundwater is present onsite, there is no direct exposure pathway for ecological receptors. Given the lack of water bodies, there is no complete exposure pathway; therefore, the SLERA concludes there are negligible (acceptable) adverse effects on ecological receptors. The InDA qualifies for NFA from an ecological perspective.

Scope and Role of Response Actions

No further CERCLA action is necessary for the InDA East Yard D groundwater based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. Soil (IRP Site IAAP-013) is addressed under OU-1, the remedy includes soil removal and LUCs; MEC and MC (IRP Site IAAP-006-R-01) are addressed under OU-5, the remedy includes LUCs.

Old Fly Ash Waste Pile (IAAP-015G)

The Old Fly Ash Waste Pile (OFAWP) is located in the southeastern portion of the IAAAP site (Figure 12). This Proposed Plan includes groundwater at the OFAWP, which is designated as IAAP-015G. Soil, ash, sediment, and surface water at the OFAWP (IAAP-015) will be addressed in a future FS under OU-7 (Jacobs, 2026).

The OFAWP, which comprises 6.3 acres, is well-vegetated with mostly grasses and some small trees and shrubs, and is adjacent to Brush Creek to the east, Road H to the west, and drainages to the north and south. The OFAWP is located in a recreational hunting area.

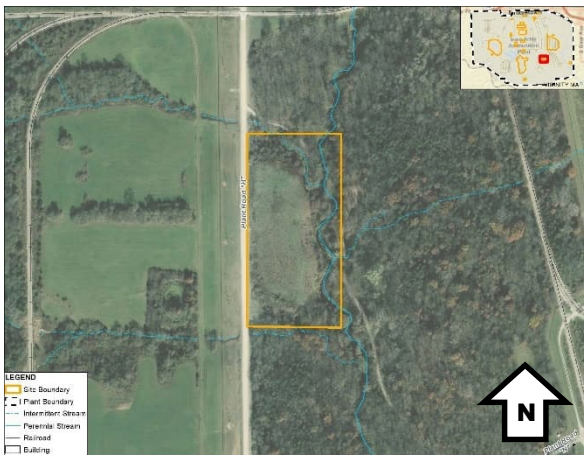


Figure 12 – Layout of Old Fly Ash Waste Pile IAAP-015G)

Background

Fly ash from the coal-fired heating plants at the IAAAP were deposited on the ground surface at the OFAWP from 1940 to 1976. The fly ash primarily consists of unburned coal particles and inorganic coal residue. Historical records indicate that sludge from the main sewage treatment plant drying beds was deposited at the OFAWP as well; however, records do not indicate the volume of fly ash or sludge deposited. The extent and volume of the fly ash pile has varied over time because of additional deposits and removal of fly ash for use at other IAAAP sites. At its peak in 1977, it was estimated the fly ash pile had a top surface area of 3.5 acres, a bottom surface area of 5.3 acres, and a maximum height of 45 feet (USACE, 1977). In 1999, it was discovered that the waste pile had begun to erode into Brush Creek and there was evidence of uncontrolled dumping of solid wastes (e.g., bricks, tires, 5-gallon cans, and vegetation).

Previous Investigations

The OFAWP has been characterized as part of several investigations since the 1980s. Documents detailing previous site investigations are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the OU-7 RI (Jacobs, 2026), which is currently being finalized but will soon be posted to the OU-7 folder of the Administrative Record.

Conclusions from previous investigations pertinent to groundwater at the OFAWP are summarized as follows:

- **1991–1997 SIs and RIs:** Several SIs and RIs were performed evaluating fly ash, soil, sediment, and surface water at the OFAWP. Silver exceeded the criterion in sediment and RDX exceeded the criterion in surface water. Because silver was not detected in soil or surface water at the OFAWP, and RDX was detected at similar concentrations upstream, it was concluded that the OFAWP was not the source for either constituent's exceedance (JAYCOR, 1992, 1996; MWH, 2001).
- **2004 to 2006 OU-7 SRI:** Additional fly ash, soil, and sediment samples were collected in addition to three groundwater samples from temporary monitoring wells. Silver exceeded the criterion in sediment and surface water upstream and downstream of the OFAWP; therefore, it was concluded to be from upstream sources. Groundwater samples were highly turbid due to temporary monitoring well construction compared to standard permanent wells (developed sand filter pack). Total arsenic and total lead concentrations exceeded criteria; however, there were no exceedances in any dissolved phase analytes. Therefore, the exceedances in total arsenic and lead in groundwater were attributed to high turbidity. Fly ash at the OFAWP was recommended to be carried forward to the OU-7 FS (Tetra Tech, 2005 and 2011).
- **2013–2014 OU-7 FS Supplemental Data Collection:** Additional fly ash and surface water samples were collected in addition to installation and sampling of three new monitoring wells. PAHs were detected in fly ash samples at concentrations exceeding criteria; however, based on the leaching model predictions, concentrations of PAHs

were concluded to be protective of groundwater (in other words, not leaching). No PAHs were detected in groundwater samples, confirming that PAHs were not leaching from ash to groundwater. No exceedances were observed in the surface water sample (Tetra Tech, 2014).

- **2018–2020 RI:** The nature and extent of potential contamination in all media (ash, soil, sediment, surface water, and groundwater) was adequately characterized by previous investigations; therefore, no additional sampling was conducted.

Previous groundwater sampling was conducted and analyzed for metals and PAHs. PAHs were not detected at any monitoring wells at the OFAWP. Seven metals were detected in groundwater, but only lead exceeded its PAL and BTV. However, very high turbidity was noted in the sample, which was collected with a bailer and has a tendency to disturb sediment that may have settled at the bottom of the well. Dissolved lead was not detected in the sample; therefore, the exceedance of total lead is attributed to high turbidity and the presence of sediment in the sample and is not considered representative of groundwater conditions. All other metals detected in groundwater were attributed to natural occurrence.

Site Characteristics

Because the lateral extent of the OFAWP may have shifted over time because of sloughing, a site restoration effort was conducted in 2018 and 2019 to reshape the disturbed area (eastern slope, northern slope, top of the ash pile, and east of the creek banks). The area was revegetated with buffalo grass. Weirs and stream bank protections were installed along Brush Creek to protect from further sloughing and erosion.

The top of the OFAWP is relatively flat, but the slope from the pile to Brush Creek is steep, as it slopes approximately 30 to 40 feet to Brush Creek. Surface runoff flows directly into Brush Creek, as well as drainage ditches that ultimately lead to Brush Creek.

The subsurface of the OFAWP is characterized by fly ash (up to 25 feet thick on the east side) underlain by clayey silt to lean clay with fine to coarse sand. Bedrock depth has not been encountered at the site but is estimated to be limestone greater than 60 feet bgs (35 feet below native soil).

Shallow groundwater at the OFAWP ranged from 12 to 32 feet bgs (approximately 6 feet below native ground surface). Groundwater flows toward Brush Creek to the east.

No principal threat waste or COCs exist at the OFAWP; therefore, no site characteristics or factors are necessary for justifying the NFA decision for groundwater.

Summary of Risks

Potentially unacceptable risks or hazards from exposure to contaminants in site groundwater were evaluated in the HHRA and ERA. These evaluations are summarized in the following subsections.

Human Health Risk Assessment

An HHRA was conducted for the OFAWP to evaluate potential risks from exposure to chemicals in groundwater. Potential future human receptors include hunters/recreators, site workers, construction/utility workers, and hypothetical residents.

The risk characterization followed a four-step process, which is detailed in the OU-7 RI Report (Jacobs, 2026). The final COC determination, which was based on the residential receptor, found no COCs for groundwater at the OFAWP. Because risks and hazards for residents at the OFAWP are acceptable, risks for other scenarios like hunter/recreational, site workers, and construction/utility workers are also considered acceptable. Therefore, groundwater at the OFAWP qualifies for an NFA decision.

Ecological Risk Assessment

The SLERA for the OFAWP site evaluated potential ecological hazards from historical activities. The ecological habitats at the OFAWP include Brush Creek and its tributaries, plus the terrestrial habitat of the grassy areas of the site. The assessment identified some metals (chromium, mercury) exceeding ESVs in surface soil/fly ash samples. The SLERA concluded that additional sampling should be incorporated into the OU-7 FS predesign investigation to better evaluate remedial alternatives for site-related COCs in fly ash and further document NFA for surface water and sediment. However, as there are no potential pathways for exposure of ecological receptors to groundwater, groundwater at the OFAWP qualifies for an NFA decision.

Scope and Role of Response Actions

No further CERCLA action is necessary for the OFAWP groundwater based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. Soil, fly ash, surface water and sediment at the OFAWP will be addressed under OU-7 in a forthcoming FS.

Possible Demolition Site South Yard G (IAAP-018G)

The Possible Demolition Site (PDS) South Yard G is located near the southern IAAAP property boundary (Figure 13) within the Long Creek watershed. Although soil and MEC are present at the PDS, they are not part of this Proposed Plan. Soil (IAAP-018) is addressed under the OU-1 remedial action, and MEC and MC in soil and groundwater (IAAP-004-R-01) are addressed under the OU-5 remedial action. This Proposed Plan addresses groundwater associated with IAAP-018G (PDS South Yard G groundwater).

South Yard G is an approximately 15-acre area within the PDS (approximately 40-acre area) to the south of Plant Road K and is associated with demolition activities. Plant Road K runs east-west to the north of PDS South Yard G and Long Creek flows along the western boundary of South Yard G. South Yard G is closed to recreational activities and is designated industrial land use.

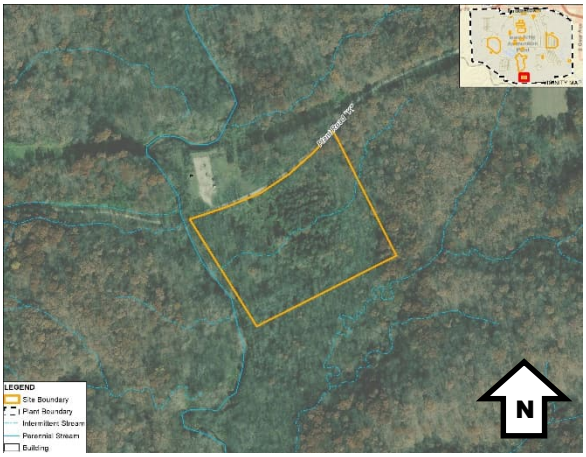


Figure 13 – Layout of Possible Demolition Site (South Yard G) (IAAP-018G)

Background

Operational activities that supported the IAAAP's primary mission were conducted in the South Yard G portion of the PDS. South Yard G was used as a demolition area for ammunition items and demilitarizing white phosphorus rounds during the 1940s and possibly into the early 1950s. The original site (IAAP-018G), an area approximately 128 feet by 105 feet, was located east of Long Creek and south-southwest of Plant Road K (Day & Zimmerman, 1945). There are no site records to substantiate demolition activities or the kind of ammunition items disposed of at the site (JAYCOR, 1996). During an historical records review, few interviewees recalled this area as a possible disposal site but noted they had heard a lot of material being exploded, and there was the potential for unexploded ordnance (UXO) buried about 3 feet bgs. PDS South Yard G overlaps with a portion of the MRS (IAAP-004-R-01), which has been evaluated for potential MEC and munitions debris (MD).

Previous Investigations

The PDS has been characterized as part of several investigations since the 1980s. Soil excavation and removals have been conducted at the PDS (including 3,953 cubic yards of soil removed in 2006 and 2007). Documents detailing previous site investigations and actions are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the OU-11 RI Report (CH2M, 2021), which is found in the OU-11 folder of the Administrative Record.

Conclusions from previous investigations pertinent to groundwater at the PDS South Yard G are summarized as follows:

- **2004–2005 OU-7 SRI:** RI activities included site reconnaissance; UXO avoidance measures, including a magnetometer sweep; soil sampling; and collection of one DPT groundwater sample. Several craters were identified across the PDS. The magnetometer sweep identified high metal and ferrous content in the northeastern portion of the PDS. Four explosives were detected at concentrations less than screening criteria in groundwater. An additional groundwater investigation was recommended (Tetra Tech, 2011).
- **2008 OU-5 Military Munitions Response Program (MMRP) RI:** RI activities included a visual survey, surface clearance, geophysical survey, soil sampling, and collection of one DPT groundwater sample. No impacts to groundwater were observed and it was concluded that the vertical extent of explosives was sufficiently defined and RDX was not migrating vertically to groundwater (URS, 2011b).
- **2018–2020 RI:** Four new monitoring wells were installed and sampled at the PDS South Yard G in July and August 2018 to further characterize metals and explosives (CH2M, 2021). Only two explosives were detected in groundwater, both of which were orders of magnitude less than their respective site characterization PALs. Metals were detected, but all were less than site characterization PALs and BTVs and therefore are considered to be naturally occurring.

Site Characteristics

The PDS South Yard G is located within the Long Creek floodplain and features generally flat topography with a gentle slope toward Long Creek and steeper slope in the far northeastern portion. A west-southwest-flowing intermittent drainage cuts through the center of the PDS and South Yard G, providing drainage for rain events and snow melt. A southwest-flowing intermittent stream is present on the southeastern flank of the site. The PDS South Yard G is characterized by dense vegetation and tree cover.

The PDS South Yard G subsurface is mostly characterized by silty clay (glacial till). Along Long Creek and north of the intermittent drainage line, alluvium is present, which is composed of silty clay at the surface and a sand and gravel layer encountered at approximately 8 feet bgs. These overburden units are underlain by bedrock (assumed to be limestone), which was not encountered in the area as borings were only advanced to a depth of 20 feet bgs.

Groundwater flow direction is west-southwest toward Long Creek, based on topography and facility-wide water level gauging and potentiometric data (CB&I, 2013). Groundwater depth is approximately 10 feet bgs but likely varies within the site. Groundwater in this area likely discharges to Long Creek through seeps at the glacial till and bedrock outcrops.

No principal threat waste or significant contamination exists within the PDS South Yard G. Although explosives and metals have been detected, concentrations have consistently been less than screening criteria. Additionally, the silty clay lithology onsite restricts migration of

potential contaminants, further justifying an NFA decision for groundwater at PDS South Yard G.

Summary of Risks

Potentially unacceptable risks or hazards from exposure to contaminants in site groundwater were evaluated in the HHRA and SLERA. These evaluations are summarized in the following subsections.

Human Health Risk Assessment

An HHRA was conducted for the PDS South Yard G to evaluate potential risks from current and future health risks and hazards from exposure to chemicals in site groundwater. Potential future human receptors include site workers, construction/utility workers, and future hypothetical residents.

The risk characterization followed a four-step process, which is detailed in the OU-11 RI Report (CH2M, 2021). One metal, chromium, was identified as a COPC in groundwater for the potable use scenario. The final COC determination, which was based on the residential receptor scenario, found no COCs for the PDS South Yard G as there is no basis for contaminant release to groundwater. In addition, no potentially unacceptable noncarcinogenic hazards or risks were identified from site-related chemicals in groundwater. Because risks and hazards for residential receptors at the PDS South Yard G are acceptable, risks for other scenarios such as site workers and construction/utility workers are also considered acceptable. Therefore, the PDS South Yard G qualifies for an NFA decision.

Ecological Risk Assessment

The SLERA for the PDS South Yard G evaluated potential ecological hazards from historical activities. There are no perennial surface water features within IAAP-018G. Because multiple IAAAP sites may contribute to chemicals present in the creeks at the IAAAP facility, surface and sediment samples collected from Long Creek were evaluated as part of a separate watershed risk assessment (CH2M, 2018b). The site features an intermittent tributary and drainage feature, and complete pathways from the site groundwater to Long Creek are considered insignificant. Because there are no complete exposure pathways for ecological receptors, the SLERA concluded there were negligible (acceptable) adverse effects.

The SLERA process involved screening-level problem formulation, exposure estimates, and risk calculations. The results indicated that while some metals exceeded ESVs, their spatial distribution and bioavailability were limited, reducing the potential ecological risk. Based on the results of the SLERA, PDS South Yard G qualifies for NFA from an ecological perspective.

Scope and Role of Response Actions

No further CERCLA action is necessary for the PDS South Yard G groundwater based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. Soil (IRP Site IAAP-018) is addressed under OU-1, the remedy includes soil removal and LUCs; MEC and MC (IRP Site IAAP-004-R-01) are addressed under the remedy for OU-5, which includes soil removal and LUCs.

Building 600-86 Septic System (IAAP-038G)

The Building 600-86 Septic System is located in the northeast-central portion of the IAAAP site (Figure 14). This Proposed Plan includes groundwater at the Building 600-86 Septic System, which falls under IAAP-038G. Soil at the Building 600-86 Septic System (IAAP-038) will be addressed in a future FS under OU-7 (Jacobs, 2026).

The Building 600-86 Septic System is a 1.7-acre site located within a recreational area that was initially used between 1941 and 1986 as a chemical laboratory and to store hazardous waste.

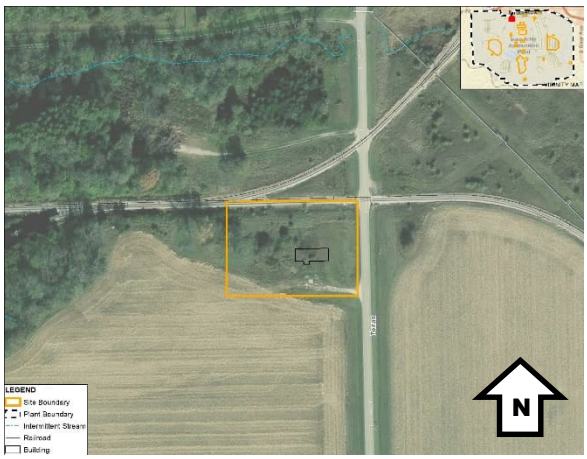


Figure 14 – Layout of Building 600-86 Septic System (IAAP-038G)

Background

Building 600-86, a 2,400-square-foot building built in 1941, was constructed with floor drains and its own septic system. Liquids from the septic system percolated to soil through a leach bed extending approximately 750 feet west from the building towards a ditch along the railroad tracks.. The ditch joins a west-flowing intermittent tributary approximately 880 feet west-southwest of the former building.

Building 600-86 served several roles between 1941 to 1986. The building was in operation from 1941 to 1953 as the Central Chemical analytical laboratory for drinking water and wastewater analysis, as well as analysis of primer mixes containing lead azide. Waste from the primer tests was deactivated with ceric ammonium nitrate and the resultant waste was disposed of in the EDA. Starting in 1953, Rooms A, B, and C in Building 600-86 were used to store solvents, corrosive wastes, spent non-halogenated solvents, and explosives-contaminated laboratory chemicals and solvents.

In 1983, the septic tank and leach bed were decommissioned; the sludge was removed and disposed of at the sewage collection system and the empty septic tank and leach bed were disposed of in place (USATHAMA, 1991).

The three rooms of Building 600-86 were included in the 1989 RCRA Hazardous Waste Management Permit and were subject to RCRA closure in 2000. To evaluate if site media were impacted by historical operations, a CERCLA RI was also conducted following the RCRA closure. Building 600-86 was demolished in 2007.

Previous Investigations

The Building 600-86 Septic System has been characterized as part of several investigations since the 1980s. Documents detailing previous site investigations are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the OU-7 RI (Jacobs, 2026), which is currently being finalized but will soon be posted to the OU-7 folder of the Administrative Record.

Conclusions from previous investigations pertinent to groundwater at the Building 600-86 Septic System are summarized as follows:

- **1991 Preliminary Site Characterization:** Soil samples were collected from the septic drain outfall at one location and analyzed for VOCs, SVOCs, pesticides, PCBs, explosives, metals, and radionuclides. Chromium, cadmium, and mercury exceeded the SI evaluation criteria. No VOCs, SVOCs, pesticides, or PCBs were detected. Radionuclides were detected at background levels in one sample, and low levels of PAHs were also detected but not considered significant. Further investigation was scheduled under the RI (JAYCOR, 1993c).
- **1992–1995 RI:** Between 1992 and 1995, groundwater samples were collected at three locations downgradient from the outfall pipe and analyzed for explosives, metals, PAHs, pesticides, PCBs, SVOCs, and VOCs. No explosives, PAHs, pesticides, PCBs, or SVOCs were detected. However, metals of concern (cadmium, chromium, mercury, selenium) were observed at elevated levels. One VOC (toluene) was detected in one sample but

was not considered significant. In 1995, two monitoring wells were installed and sampled between 1995 and 1997 and analyzed for metals. Lead was the only metal reported as elevated in groundwater samples; however, based on the investigation that included soil and groundwater sampling, it was determined the site and its operations were not contributing to metals contamination and the elevated metals are likely because of naturally occurring conditions (JAYCOR, 1996).

- **2000 RCRA Closure Report:** Three rooms of Building 600-86 were subject to RCRA closure in 2000. The rooms stored a variety of solvents, corrosive wastes, spent non-halogenated solvents, and explosives-contaminated laboratory chemicals and solvents. Thirteen locations outside of Building 600-86 and adjacent to the three rooms were selected for surface and subsurface soil sampling and analyzed for explosives, VOCs, SVOCs, and metals. Analytical results were less than the detection level for all compounds except for metals (arsenic and lead), which exceeded the Iowa Land Recycling Program and Response Action Standards. Lead was detected at a maximum concentration of 564 parts per million (ppm), which was attributed to historical use of lead paint and is not considered a result of historical waste management activities (Terracon, 2000).
- **2018–2020 RI:** Additional fieldwork at the Building 600-86 Septic System was conducted in 2018 and 2019 to resolve data gaps in groundwater and soil. Groundwater samples were collected in 2018 and 2019 from two existing monitoring wells, and one from a DPT boring location to the east of Building 600-86. Groundwater samples were analyzed for VOCs and RCRA metals, as groundwater was not previously analyzed for VOCs at the Building 600-86 Septic System. One VOC (acetone) was detected but did not exceed the PAL, and no metals were detected greater than their PALs (Jacobs, 2026). Three soil samples were collected in 2018. Several metals were detected. Low levels of PAHs, nitrate, and sulfate were detected but did not exceed the site characterization PALs. No explosives were detected in soil samples near the former septic tank. The RI recommended that NFA was warranted for groundwater at the Building 600-86 Septic System.

Site Characteristics

The Building 600-86 Septic System site features generally flat topography with a slight slope to the southwest. The septic tank is located within part of an agricultural tract that may be used for row crops. The location of the former building is moderately vegetated with grasses and small trees and densely vegetated near the railroad tracks. The area is located in a recreational zone.

Surface water and sediment are not found in the Building 600-86 Septic System area. Surface drainage in the vicinity of former Building 600-86 likely flows north and east into ditches along the road and railroad or south toward a drainage feature.

The site is underlain by fill material consisting of silty clay and deposits of non-stratified silts and clays (loess). Underlying the loess is a glacial till.

Shallow groundwater near the former Building 600-86 Septic System was found at depths of 5 to 6.5 feet bgs. Surface water and groundwater interaction is not likely to occur based on the depth to groundwater and the depth of the ditches (less than 3 feet deep).

No principal threat waste exists at Building 600-86. Although metals have been detected in soil and groundwater at concentrations exceeding screening criteria, the CSM determined that these metals were likely because of natural occurrence rather than contamination. Additionally, the silt and clay lithology coupled with lack of surface

water features greatly restricts the migration of any potential contaminants, further justifying NFA decision for groundwater.

Summary of Risks

Potentially unacceptable risks or hazards from exposure to contaminants in site groundwater and soil were evaluated in the HHRA and SLERA. These evaluations are summarized in the following subsections.

Human Health Risk Assessment

An HHRA was conducted for the Building 600-86 Septic System site to evaluate potential risks from current and future risks from exposure to chemicals in site groundwater. Potential future human receptors include site workers, construction/utility workers, and future hypothetical residents. The HHRA also evaluated for potential current hunters/recreators.

The risk characterization followed a four-step process, which is detailed in the OU-7 RI Report (Jacobs, 2026). The final COC determination, which was based on the residential receptor, found no COCs in groundwater for Building 600-86 Septic System. Because risks and hazards for residents at the site are acceptable, risks for other scenarios like hunters/recreators, site workers, and construction/utility workers are also considered acceptable. Therefore, Building 600-86 Septic System groundwater qualifies for an NFA decision.

Ecological Risk Assessment

The SLERA for the Building 600-86 Septic System site evaluated potential ecological hazards from historical activities. Because the ditch does not provide a suitable habitat for ecological receptors and there are no perennial waterbody features within the Building 600-86 boundary, there are no complete exposure pathways for sediment or surface water. Ecological receptors are not exposed directly to groundwater, and the groundwater to surface water exposure pathway is incomplete.

The SLERA process involved screening-level problem formulation, exposure estimates, and risk calculations. The SLERA concluded that no adverse effects on ecological receptors were identified, and no actions are required from an ecological perspective; therefore, the groundwater component at Building 600-86 Septic System site qualifies for NFA.

Scope and Role of Response Actions

No further CERCLA action is necessary for Building 600-86 Septic System groundwater based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. Soil (IRP Site IAAP-038) will be addressed under OU-7 in a forthcoming FS.

Roundhouse Transformer Storage Area (IAAP-040G)

The Roundhouse Transformer Storage Area (Roundhouse) is located in the northeast-central portion of the IAAAP site (Figure 15). The Roundhouse includes groundwater, which is designated as IRP Site IAAP-040G. Soil (IAAP-040) is addressed under the OU-1 remedial action and is not part of this Proposed Plan. Note, although the Comprehensive Watersheds Evaluation (Tetra Tech, 2006) concluded that groundwater was unlikely to have been impacted, the IRP site for groundwater (IAAP-040G) was created in 2012 to facilitate the management of environmental work at the IAAAP.

The Roundhouse is located in the northeast-central portion of the IAAAP facility, approximately 1,000 feet from the northern site boundary and within the Spring Creek watershed. The site is approximately 4.5 acres and encompasses a graded, flat storage area with a compacted clay foundation overlain by crushed stone; the area is designated for industrial land use.

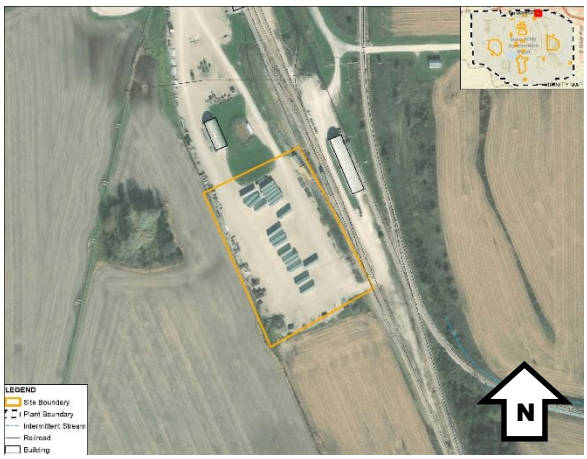


Figure 15 – Layout of Roundhouse Transformer Storage Area (IAAP-040G)

Background

Before 1980, the Roundhouse was used for storing all unused transformers from the IAAAP. Transformer fluid, which contained PCBs such as Aroclor-1254 and Aroclor-1260, was used to top-off transformers and was brought in by the contractor performing maintenance but was not stored onsite (JAYCOR, 1996). In 1980, IAAAP operations moved transformers that contained greater than 500 mg/kg of PCBs to an offsite warehouse, while all other transformers remained at the outside storage area. Eventually, the remaining transformers were also moved to the offsite warehouse. No transformers are currently being stored at the Roundhouse site.

Previous Investigations

The Roundhouse site has been characterized as part of several investigations since the 1980s. Documents detailing previous site investigations are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the 2021 OU-11 RI (CH2M, 2021), which can be found in the OU-11 folder of the Administrative Record.

Conclusions from previous investigations pertinent to groundwater at the Roundhouse are summarized as follows:

- **1996 Follow-On RI:** Groundwater samples were not collected during the Phase II (Follow-On) RI. Low-level PCB contamination was identified in shallow soil (less than 2 feet bgs). In general, PCB concentrations were less than 2 mg/kg, and PCBs are expected to be immobile in soil and not transferred to groundwater or surface water (JAYCOR, 1996).
- **2006 Comprehensive Watersheds Evaluation and Supplemental Data Collection Work Plan:** The data gap evaluation concluded that groundwater investigation was not warranted for the Roundhouse. This was based on the relatively insoluble nature of PCB-containing oils and PCBs would have been more likely to migrate via surface runoff as opposed to infiltration and leaching (Tetra Tech, 2006).
- **2018–2020 RI:** No additional fieldwork was conducted at the Roundhouse as part of the recent RI, as previous investigations concluded investigation of groundwater was not warranted at the Roundhouse. Based on the environmental setting and the chemical properties of PCBs, Aroclor-1254 and Aroclor-1260 in soil would not have impacted groundwater at the Roundhouse. Groundwater was not collected as it was deemed not of concern based on the lack of soil impacts and properties of PCBs. The RI recommended that NFA was warranted for the Roundhouse.

Site Characteristics

The Roundhouse is covered in 6 inches of gravel overlying compacted clay. The site is consistent with the facility-wide geology, underlain by a sequence of unconsolidated glacial deposits (lean clay and silt) overlying sedimentary bedrock (typically limestone). Limited site-specific geology and hydrogeologic information is available for the Roundhouse, given soil borings have been relatively shallow and no

groundwater monitoring wells have been installed.

Groundwater was not encountered during previous investigations to 2 feet bgs. At the closest environmental IAAAP sites (Line 1 and Lines 5A/5B, which are 1,500 to 4,000 feet from the Roundhouse site), the depth to groundwater in the overburden was observed within 10 feet bgs.

There are no perennial surface water features within the site boundary. Runoff from the storage area flows to the sewer system, where it is treated by the wastewater treatment plant. The remaining runoff flows into drainage ditches east of the site or into agricultural fields south and west of the compacted clay foundation. Surface water in intermittent tributaries, located outside of the Roundhouse boundary, eventually flows into Spring Creek.

No principal threat waste exists at the Roundhouse. Although PCBs have been detected in soil, the insoluble nature of PCBs combined with the dense clay layer at the site greatly restrict any potential contaminant migration, further justifying NFA decision for groundwater at the Roundhouse.

Summary of Risks

It was determined an HHRA and SLERA for potentially unacceptable risks or hazards from exposure to contaminants in site groundwater are not warranted for the Roundhouse.

Scope and Role of Response Actions

No further CERCLA action is necessary for the Roundhouse groundwater based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. Soil (IRP Site IAAP-040) is addressed under OU-1; the remedy includes soil removal and LUCs.

Fly Ash Disposal Area (IAAP-043G)

The Fly Ash Disposal Area (FADA) is an inactive site located in the west-central area of the IAAAP site (Figure 16). This Proposed Plan includes groundwater at the FADA, which is designated as IAAP-043G. Soil (IAAP-043) is addressed under the OU-7 and is not part of this Proposed Plan.

The FADA comprises an approximately 6-acre area, located adjacent to and directly west of the existing Fly Ash Landfill. The FADA is located in a recreational zone.

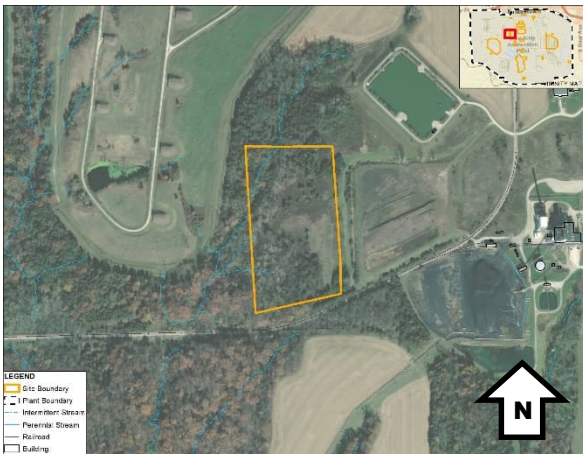


Figure 16 – Layout of Fly Ash Disposal Area (IAAP-043G)

Background

During the 1940s and 1950s, the FADA was used for disposal of fly ash, residual coal, clinkers, and other residue from the coal-fired power plant. The site is abandoned and covered with natural vegetation, but it has no soil cover or clay cover.

Previous Investigations

The FADA has been characterized as part of several investigations since the 1990s. Documents detailing previous site investigations are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in

the OU-7 RI (Jacobs, 2026), which is currently being finalized but will soon be posted to the OU-7 folder of the Administrative Record.

Conclusions from previous investigations pertinent to groundwater at the FADA are summarized as follows:

- **1992 RI:** Surface water and sediment samples were collected at three locations upstream and downstream of the FADA and analyzed for explosives, metals, pesticides, PCBs, PAHs, SVOCs, and VOCs. Samples collected during the RI confirm offsite migration of contamination has not occurred at the FADA because of surface water runoff to the intermittent stream (JAYCOR, 1996).
- **2006 Comprehensive Watersheds Evaluation and SRI for Onsite Groundwater at OU-6:** Surface soil samples were collected at the FADA and analyzed for explosives, metals, and SVOCs to characterize any potential discharges to Long Creek tributary from runoff. Sediment samples were collected from the tributary of Long Creek adjacent to the site, upgradient and downgradient, and analyzed for explosives, metals, and SVOCs. Surface water was not present in the tributary at the time of sampling, so samples were unable to be collected. No explosives, SVOCs, or PAHs were detected in the soil or sediment samples, and metals were detected less than the OU-1 RGs, Region 9 Industrial Soil Preliminary Remediation Goals (PRGs), and less than respective background concentrations. It was determined there was no indication of contamination from the FADA (Tetra Tech, 2006 and 2012).
- **2018–2020 RI:** A site reconnaissance was conducted in 2018 to determine the extent of the fly ash. The lateral extent of the fly ash piles was identified by visual observations and the vertical extent by probing through the ash to native soil. Based on the results of the reconnaissance, four surface soil samples were collected at locations near the margins of the delineated fly ash body where historical samples did not exist to characterize possible soil impacts. Samples were analyzed for RCRA metals, and two overburden wells were installed at the southern boundary of the FADA and sampled for select metals. Although metals were detected in soil, there were no exceedances of site characterization PALs in groundwater (or sediment/surface water) (Jacobs, 2026).

Site Characteristics

The FADA features flat topography with surface water runoff flowing into nearby ditches and an intermittent tributary of Spring Creek.

The FADA is underlain by fill material consisting of miscellaneous debris and silty clay. Wind-blown, non-stratified, silts and clays (loess) are located beneath the fill material. Underlying the loess is a glacial till consisting of clay and silt with discontinuous sand and gravel seams.

Shallow groundwater at the adjacent site south of the FADA has been found at depths of 1.2 to 11.5 feet bgs. Groundwater flow in this area of the IAAAP varies seasonally, generally moving south-southwest to east-southeast.

No principal threat waste or COCs exist at the FADA; therefore, site characteristics are not a factor in justifying the NFA decision for groundwater.

Summary of Risks

Potentially unacceptable risks or hazards from exposure to contaminants in the site were evaluated in the HHRA and SLERA. These evaluations are summarized in the following subsections.

Human Health Risk Assessment

An HHRA was conducted for the FADA groundwater to evaluate potential risks from current and future risks from exposure to chemicals in groundwater. Potential future

human receptors include hunters/recreators, site workers, construction/utility workers, and hypothetical residents. Current hunters/recreators were also evaluated.

The risk characterization followed a four-step process, which is detailed in the OU-7 RI Report (Jacobs, 2026). One metal (arsenic) site-related chemical was identified as a COPC in groundwater for a potable use scenario. The HHRA determined that the arsenic in groundwater was naturally occurring based on comparisons of maximum detected concentrations of arsenic with its BTV; therefore, it was not retained as a COC in groundwater. The final COC determination, which was based on the residential receptor, found no COCs for groundwater at the FADA. Because risks and hazards for residents at the site are acceptable, risks for other scenarios like hunters/recreators, site workers, and construction/utility workers are also considered acceptable. Therefore, the FADA qualifies for an NFA decision.

Ecological Risk Assessment

The SLERA for the FADA site evaluated potential ecological hazards from historical activities. No chemicals were retained as COCs as there are negligible effects on ecological receptors. The SLERA process involved screening-level problem formulation, exposure estimates, and risk calculations. There are no direct pathways from ecological receptors to groundwater; where groundwater discharges to seeps, wet sediment and surface water are also incomplete pathways to ecological receptors. Based on the weight of evidence, the FADA groundwater qualifies for NFA from an ecological perspective.

Scope and Role of Response Actions

No further CERCLA action is necessary for the FADA groundwater based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. Soil (IRP Site IAAP-043) is addressed under OU-7 and will be included in a forthcoming FS.

Central Test Area (IAAP-047G)

The Central Test Area (CTA) is located in the north-central portion of the IAAAP (Figure 17). This Proposed Plan includes groundwater at the CTA, which is designated as IAAP-047G. Soil is addressed under the remedy for OU-1 (Site IAAP-047) (Leidos, 2018), and MEC and MC are addressed under the remedy for OU-5 (IAAP-001-R-01) (CB&I, 2014).

The CTA is approximately 31 acres and is a largely inactive site that comprises the former Central Testing Laboratory (CTL) and two former test areas. The CTA is closed to recreational activities and is designated industrial land use. The northeast portion of the site is the former test-fire area, while an occupied building to the southwest is leased by a contractor of the Army to dispose of explosive wastes, ammunition, propellants, fuzes, and other reactive waste items at the IAAAP (RCRA Permit A7213820445) (EPA, 2018).

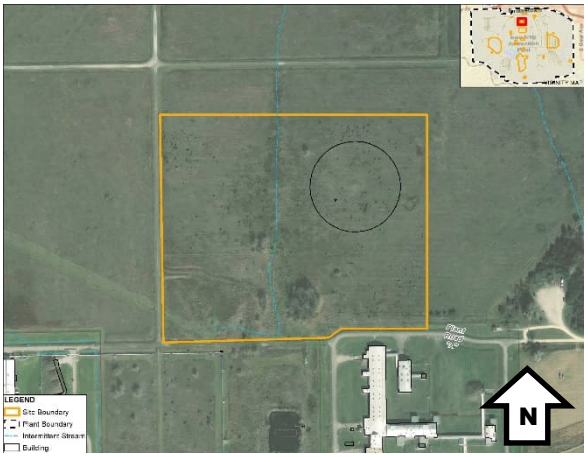


Figure 17 – Layout of Central Test Area (IAAP-047G)

Background

The CTA was used for testing components such as primers, fuzes, and detonators. The building onsite (Building 600-84) and the walled-in area to the south of it were collectively referred to as the CTL. Grenades, adapter boosters, and aerial

mines were test-fired at the CTL and fields north and east of the CTL. The walled-in area south of Building 600-84 was also used for testing the inside charge of grenades, which were composed of lead styphnate, black powder, and tetryl booster, while the outer charge was composed of TNT and RDX. Historical records from 1941 to 1950 show the original layout of the testing areas included fencing with wooden walls covered by steel plates, an earthen floor and concrete walkway. Northwest of the fenced test-fire area was a metal tripod on a concrete pad used to hold components to be test detonated. Historical records do not definitively state the operation timeframe, but review of historical documents concluded that the CTA was estimated to be active from 1941 to 1963.

Previous Investigations

Numerous investigations have been conducted at the CTA that have led to soil removals. Documents detailing previous site investigations are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the 2021 OU-11 RI (CH2M, 2021), which can be found in the OU-11 folder of the Administrative Record.

Conclusions from previous investigations at the CTA that are pertinent to groundwater are summarized as follows:

- **2005–2006 OU-4 and OU-7 SRIs:** Groundwater samples collected using DPT screen point sampling identified one location with concentrations of TNT that exceeded the screening level; however, TNT was not detected in the confirmation sample collected 2 feet away. Total metals exceeded screening criteria; however, no dissolved metals exceeded screening criteria. Elevated total metals concentrations were attributed to suspended solids due to the sampling technique. The 2011 investigation determined that groundwater may have been impacted at the CTL (Tetra Tech, 2011).
- **2008 OU-5 MMRP RI:** Groundwater sampling was not warranted based on the results of the visual survey, surface clearance, geophysical survey, and soil sampling conducted. Significant MD was recovered from the upper 12 inches of soil; however, no MEC were recovered. The RI recommended NFA for MC in groundwater (URS, 2011a). The subsequent ROD documented that there was no action necessary to address MC in groundwater at the CTA (CB&I, 2014).
- **2018–2020 RI:** The most recent RI for the CTA resolved data gaps identified for groundwater in the 2018 UFP-QAPP (CH2M, 2018a). Three temporary monitoring wells were installed and sampled at the CTA; TNT was not detected in any of the three temporary monitoring wells, defining the extent of TNT in groundwater. Although total metals were detected at concentrations exceeding site characterization PALs and BTVs, the samples were very turbid because of the lack of well filter pack in the temporary monitoring wells. It was concluded that because the dissolved metals did not exceed criteria (except for manganese, which is frequently found at elevated concentrations at the IAAAP), the elevated total metals concentrations were due to elevated turbidity and not representative of groundwater at the CTA. Because of the lack of explosives in groundwater and the fact that manganese use was not associated with former operations at the CTA, the presence of manganese in groundwater is not associated with a CERCLA release.

Site Characteristics

The CTA is generally flat but is divided between both Brush Creek and Long Creek watersheds; the eastern portion of the site slopes to the east where runoff leads to tributaries feeding Brush

Creek, and the southwestern portion of the site slopes to the southwest where runoff leads to tributaries that feed Long Creek. Vegetation at the CTA consists of grassy fields with minimal woody tree cover. Lithology at the CTA is characterized by till consisting of lean clay and occasional sand lenses. Limestone bedrock is anticipated around 80 feet bgs; however, no borings onsite have reached bedrock to confirm (deepest boring was to 35 feet). Groundwater is generally encountered between 9 to 13 feet bgs and flows to the southeast.

No principal threat waste exists at the CTA and contamination is insignificant; metals exceedances were not observed in dissolved samples, indicating that the metals were likely attributed to high turbidity and natural occurrence. TNT was only found at one location and confined to a small area. Additionally, the generally flat topography combined with the lean clay lithology greatly restricts any potential contaminant migration.

Summary of Risks

Potentially unacceptable risks or hazards from exposure to contaminants in site groundwater were evaluated in the HHRA and ERA. These evaluations are summarized in the following subsections.

Human Health Risk Assessment

An HHRA was conducted for the CTA to evaluate potential future health risks and hazards from exposure to chemicals in site groundwater. Potential current and future human receptors include site workers and hypothetical residents.

The risk characterization followed a four-step process, which is detailed in the OU-11 RI Report (CH2M, 2021). Seventeen metals (aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, vanadium, and zinc) were identified as COPCs in groundwater for the potable use scenario. The COPCs did not exceed the EPA HI threshold and were not carried over to final site COCs. The final COC determination, which was based on the residential receptor, found no COCs for the CTA in groundwater; therefore, the CTA qualifies for an NFA decision for groundwater.

Ecological Risk Assessment

The SLERA for the CTA indicated that ecological receptors are not exposed directly to groundwater, and because there are no perennial surface water bodies at the CTA, the groundwater to surface water pathway is incomplete. Because there are no complete exposure pathways for ecological receptors, the CTA SLERA concluded that adverse effects are negligible (acceptable) and that the site qualifies for NFA from an ecological perspective.

Scope and Role of Response Actions

No further CERCLA action is necessary for groundwater at the CTA based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. Soil (IRP Site IAAP-047) is addressed under OU-1; the remedy includes soil removal and LUCs. MEC and MC (IRP Site IAAP-001-R-01) are addressed under OU-5; the remedy includes LUCs.

Yard L (Unassigned)

Yard L is located in the north-central portion of the IAAAP site (Figure 18), approximately 1,000 feet south of the northern plant boundary. This Proposed Plan includes groundwater at Yard L, which is not assigned a designated identification number.

The 12-acre Yard L contains three long, rectangular buildings parallel to railroad tracks. The site is surrounded by administrative buildings to the west, Lines 5A and 5B to the south and the Roundhouse to the east. The site is located in a restricted zone and is closed to all recreational use. Surface water and sediment are not present at Yard L.

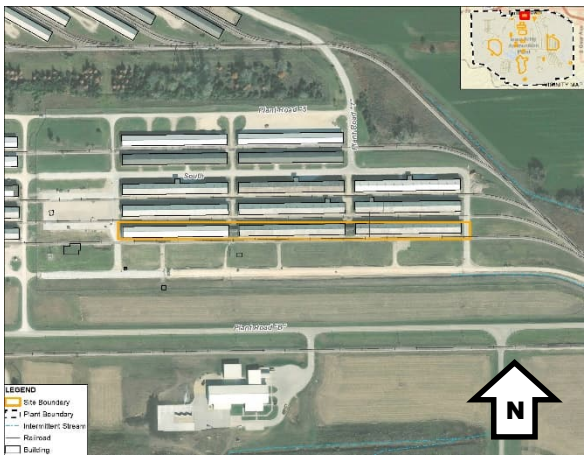


Figure 18 – Layout of Yard L

Background

Yard L was used by the US Atomic Energy Commission (AEC) to provide storage space for classified component parts. The three warehouse buildings were used to facilitate receipt and shipment of finished products used in the production at Line 1, which was used to assemble nuclear weapons. Radioactive materials handled on Line 1 were received in a sealed configuration and were swipe-tested before use. There is no evidence that raw explosive materials were stored in these warehouses, or that any components were worked, machined or fabricated at Yard L (USACE, 2008a). Yard L is currently used for storage of inert parts and materials.

Previous Investigations

Several investigations have been conducted at Yard L to characterize the site. Documents detailing previous site investigations are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the 2021 OU-11 RI (CH2M, 2021), which can be found in the OU-11 folder of the Administrative Record.

Conclusions from previous investigations pertinent to groundwater at Yard L are summarized as follows:

- **2002 Aerial Radiological Survey**: Portions of the IAAAP used by the AEC including Yard L were evaluated by aerial radiological survey using a helicopter-mounted sodium iodine detector system. No indication of radioactive contamination was found at Yard L (US Army Joint Munitions Command, 2003).
- **2003 Site Reconnaissance Surveys:** Radiological investigations were conducted at the three warehouses of Yard L. Building exterior and interiors were radiologically scanned and smear samples collected. No indication of radioactive contamination was found (USACE, 2003).
- **2005 Formerly Utilized Sites Remedial Action Program (FUSRAP) RI:** Gamma walkover surveys and soil sampling for alpha/gamma spectroscopy were performed in the area around the three warehouse buildings. No evidence of residual radioactive contamination was identified in soil (USACE, 2008b).
- **2018–2020 RI:** Based on the historical document review and previous FUSRAP radiological investigations, it was determined that no groundwater sampling was warranted at Yard L. There are no indications of a CERCLA release, soil contamination, or presence of any radiological contamination in Yard L.

Site Characteristics

Yard L consists of relatively flat terrain. Overland surface flow around the three warehouses drains southward into tributaries leading to Brush Creek.

No borings have been advanced at Yard L, but surrounding areas are underlain by deposits of clayey silt that are expected to be 5 to 15 feet thick. Beneath the clayey silt layer is expected to be a thick layer of glacial till, which can be as great as 70 feet thick in the area.

Shallow groundwater in the area is expected to follow the surface flow patterns to the south towards the Brush Creek tributaries. The

anticipated depth to water at Yard L is approximately 5 feet bgs.

No principal threat waste or COCs exist at Yard L; therefore, site characteristics are not a factor in justifying the NFA decisions for groundwater.

Summary of Risks

It was determined an HHRA and SLERA for potentially unacceptable risks or hazards from exposure to contaminants in site groundwater was not warranted for Yard L.

Scope and Role of Response Actions

No further CERCLA action is necessary for Yard L groundwater based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. There are no other OUs that fall within Yard L.

Line 3A Pond (IAAP-041)

The Line 3A Pond is located in the Skunk River watershed in the southwestern quadrant of the IAAAP (Figure 19). This Proposed Plan includes soil at the Line 3A Pond, which is designated as Site IAAP-041. Groundwater at the Line 3A Pond (IAAP-041G) will be addressed in a future FS under OU-7; the OU-7 RI is forthcoming.

The Line 3A Pond is an approximately 2.5-acre site immediately south of Plant Road I and to the south of the eastern portion of Line 3A. The site is closed to recreational activities and is designated industrial land use. Although called a "pond," the site is actually a former leach field with an adjacent raw chemical disposal pit. The combined size of these two features is less than half an acre. The site is currently covered by grass and cedar trees. There is no surface indication of the former leach field and raw chemical disposal pit.

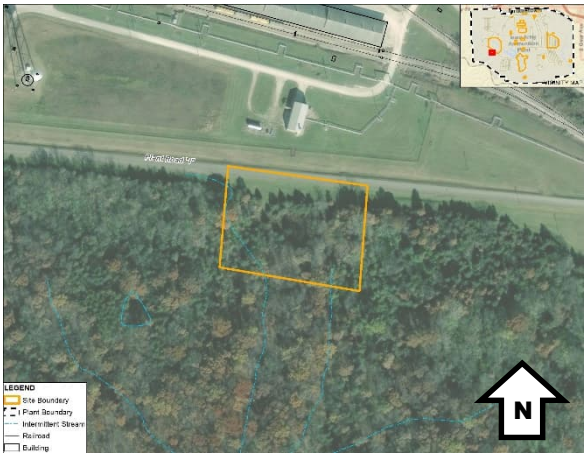


Figure 19 – Layout of Line 3A Pond (IAAP-041)

Background

The Line 3A Pond (leach field and disposal pit) was constructed in 1956 and closed in either 1958 or 1959 (JAYCOR, 1996). The leach field was a sand-filled structure on the ground surface, approximately 40 feet by 60 feet with 4-foot-high walls. According to site drawings, the leach field was associated with a floor drain in the western section of Building 3A-001, located to the north of the site. The raw chemical disposal pit was apparently not connected to the leach field. According to the OU-7 SRI (Tetra Tech, 2011), there are no records indicating the material used to line the raw chemical disposal pit.

From 1977 to 1985, sludge generated in the bottom of the sulfuric acid dip tank from metal cleaning operations at Building 3A-01 was treated with sodium hydroxide and disposed of in the Line 3A Pond. Metal cleaning operations are believed to have included a stratified solvent paint stripper, rinse tanks, a hydrochloric acid-pickling tank, and phosphatizing and chromic acid rinse tanks. The phosphoric and pickling acids were neutralized by using spent alkaline material from the paint-stripping operations, then pumped across the road into the Line 3A Pond.

Interviews during the facility-wide RI (JAYCOR, 1996) indicated that wastewater from other operations at Line 3A were not disposed of at the

Line 3A Pond. Interviews during the historical records review (Shaw, 2005) indicated that TNT-contaminated water was believed to have been disposed of at the site.

Based on interviews, when the disposal pit was closed, soil samples were collected until a dark blue-gray soil was encountered; the pit was excavated (JAYCOR, 1996) and the pH of the soil was tested and then neutralized using sodium hydroxide and disposed of in the onsite landfill.

Previous Investigations

The Line 3A Pond has been characterized as part of several investigations since the 1980s. Excavation and removals have also been performed at Line 3A Pond. Documents detailing previous site investigations and actions are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the OU-7 RI (Jacobs, 2026), which is currently being finalized but will soon be posted to the OU-7 folder of the Administrative Record.

Conclusions from previous investigations pertinent to soil at the Line 3A Pond are summarized as follows:

- **1991 Facility-Wide SI:** Three surface soil samples were collected and analyzed for explosives and metals at the Line 3A Pond. Chromium was detected in two of the samples (JAYCOR, 1992).
- **1992 to 1996 Follow-On RI**: Additional soil, sediment, and surface water samples were collected during the RI. Lead, arsenic, and cobalt were detected in surface water and sediment; however, contamination was not believed to be sourced from the Line 3A Pond. No concentrations were detected above respective screening levels in soil (JAYCOR, 1996).
- **2005 OU-7 SRI:** Soil and groundwater samples were collected during the OU-7 SRI. Seven VOCs and two metals were detected above background in the soil. VOCs were detected less than applicable screening levels and metals were less than applicable OU-1 RGs and screening levels. It was recommended that soil and groundwater at the Line 3A Pond be evaluated in FSs (Tetra Tech, 2009 and 2011).
- **2014 OU-7 FS Supplemental Data Collection:** Six additional soil samples were collected and analyzed for Synthetic Precipitation Leaching Procedure. The ***leachate*** concentrations were considered protective of groundwater, and no further evaluation was recommended (Tetra Tech, 2013 and 2014).
- **2018–2020 RI:** Additional fieldwork was conducted at the Line 3A Pond to address data gaps needed to complete the RI for groundwater; however, no additional investigation was warranted for soil, which had been adequately characterized in previous investigations. The RI recommended that NFA was warranted for soil at Line 3A Pond.

Previous soil samples were analyzed for explosives, metals, PAHs, SVOCs, and VOCs. Only three VOCs (1,2-dichloropropane, chloroform, and methylene chloride) were detected greater than their respective PALs. All exceedances were observed in the same soil sample which was collected from the depth interval 8 to 12 feet bgs. The RI concluded that the VOCs were isolated and limited to the southern portion of the former leach field. Four metals were detected at concentrations exceeding BTVs and PALs, as follows:

- Arsenic exceeded its BTV and PAL at two locations but was observed at similar concentrations as the BTV (maximum detection observed was 14.1 mg/kg, while the BTV is 13.6 mg/kg); therefore, arsenic is not considered site-related.
- Chromium was detected above its BTV and PAL at two locations, both of which were in

the southern portion of the leach field; the highest concentration was collected from 4 to 6 feet bgs with the sample interval above it having chromium detection less than the BTV.

- Mercury was detected above its BTV and PAL at two locations; however, the PAL is based on the conservative ESV. Both PAL exceedances were less than the EPA residential screening criteria.
- Zinc was detected above its BTV and PAL at one location in the middle of the former leach field; however, the PAL is based on the conservative ESV and the exceedance observed was less than the EPA residential screening criterion.

Additionally, VOCs and RDX were detected in soil leachate samples from Line 3A Pond; however, none of the detected concentrations exceeded the PALs for groundwater.

Site Characteristics

The Line 3A Pond features relatively flat topography. From the former leach field and chemical disposal pit, the terrain slopes gently to the southeast toward a drainage swale. The drainage swale is located approximately 15 feet east of the leach field/disposal pit area. Surface drainage from the leach field/disposal pit flows toward this drainage swale. The drainage swale joins a drainageway approximately 750 feet south of the site, where it forms an intermittent stream that joins the Skunk River approximately 0.8 mile southwest of the site and approximately 200 feet south of the IAAAP facility boundary. The western portion of the Line 3A Pond slopes gently to the south-southwest and drains into the western intermittent tributary.

Subsurface overburden at the Line 3A Pond is characterized by till, consisting of a homogenous mix of clay and varying amounts of silt and sand. The overburden is underlain by bedrock, which was encountered between 28 to 41 feet bgs. Bedrock at the Line 3A area consisted of shale and limestone. Groundwater at the Line 3A Pond was encountered between 5 and 35 feet bgs.

There are no perennial features at the Line 3A Pond. Surface water/groundwater interaction is not anticipated because of the depth of groundwater and the expected shallowness of the intermittent drainages in the vicinity of the site.

No principal threat waste exists at the Line 3A Pond. The only evidence of potential VOCs contamination was isolated to one soil sample approximately 8 feet bgs. Additionally, the relatively flat topography, till lithology, and lack of perennial surface water features greatly restricts potential contaminant migration, further justifying the NFA decision for soil.

Summary of Risks

Potentially unacceptable risks or hazards from exposure to contaminants in site soil were evaluated in the HHRA and SLERA. These evaluations are summarized in the following subsections.

Human Health Risk Assessment

An HHRA was conducted for the Line 3A Pond to evaluate potential risks from current and future risks from exposure to chemicals in site soil. Groundwater interaction is not anticipated because of the depth of groundwater and the expected shallowness of the intermittent drainages in the vicinity of the site. Potential future human receptors include site workers, construction/utility workers, and future hypothetical residents.

The risk characterization followed a four-step process, which is detailed in the OU-7 RI Report (Jacobs, 2026). Arsenic, chromium, and iron in soil were identified as site-related COPCs for future site workers, construction workers, and hypothetical residents. The final COC determination, which was based on the residential receptor, found no COCs for Line 3A

Pond soil. Because risks and hazards for residents at the site are acceptable, risks for other scenarios like site workers and construction/ utility workers are also considered acceptable. Therefore, the Line 3A Pond qualifies for an NFA decision.

Ecological Risk Assessment

The SLERA for the Line 3A Pond site evaluated potential ecological hazards from historical activities. The assessment identified one COPEC, chromium, in soil. Although chromium exceeded its ESV and BTV, it did not exceed the lowest observed adverse effect level in the SLERA; therefore, the potential for ecological hazards is low. Line 3A Pond soil qualifies for NFA from an ecological perspective.

Scope and Role of Response Actions

No further CERCLA action is necessary for Line 3A Pond soil based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. Groundwater (IRP Site IAAP-041G) will be addressed under OU-7 in a forthcoming FS.

Firing Sites Area (IAAP-030)

The Firing Sites Area (FSA) is located in the western portion of the IAAAP site (Figure 20). This Proposed Plan includes surface water at the FSA, which is assigned to IAAP-30. Soil is currently being addressed under FUSRAP (OU-8); groundwater and sediment are currently under OU-7 but recommended for transfer to the FUSRAP program (OU-8) soon (Jacobs, 2026).

The FSA, which comprises approximately 437 acres, is a fully fenced area approximately 1 mile from the western border of the IAAAP boundary. The FSA is largely a cleared area consisting of grasses, shrubs, and isolated small trees, along with a dense wooded area surrounding the individual firing sites; the FSA is an active firing range used for large munitions testing. Drainage ditches are located on the east end of the site and two perennial branches of Long Creek tributaries flow through the FSA. The southwestern portion of the FSA is located within a recreational hunting zone (for IAAAP employees only); the eastern portion does not allow hunting or recreation and is designated industrial land use.

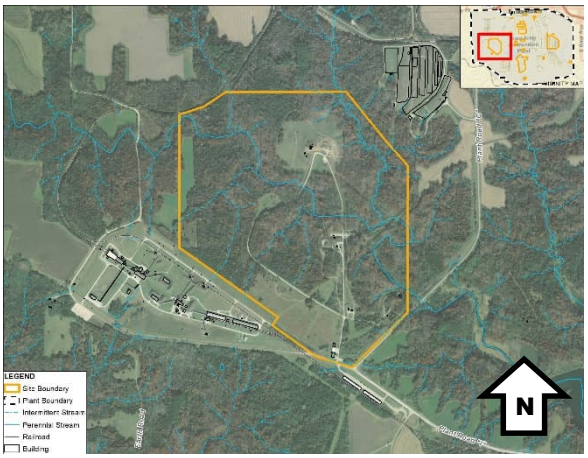


Figure 20 – Layout of Firing Sites Area (IAAP-030)

Background

The FSA was developed by the AEC to support test firing of depleted uranium munitions and was operational between 1948 and 1974. Since 1974, the FSA has remained active for munitions testing; however, munitions containing depleted uranium are no longer used (USACE, 2008b). Several individual firing sites are included in the FSA, but the surface water being evaluated for remedial decision making spans the entire IAAP-030 area.

Previous Investigations

The FSA has been characterized as part of several investigations since 1974. Excavation and removals have also been performed at the FSA. Most RI activities for soil, sediment, and groundwater are associated with FUSRAP. Documents associated with FUSRAP can be found in the OU-8 Administrative Record (https://www.mvs.usace.army.mil/Missions/Centers-of-Expertise/Formerly-Utilized-Sites-

Remedial-Action-Program/Iowa-FUSRAP-Administrative-Record/).

Documents detailing previous site investigations are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the OU-7 RI (Jacobs, 2026), which is currently being finalized but will soon be posted to the OU-7 folder of the Administrative Record.

Conclusions from previous investigations pertinent to surface water at the FSA are summarized as follows:

- **1991 Preliminary Site Characterization**: Surface water samples were collected from drainageways to Long Creek within the FSA and analyzed for explosives, metals and radionuclides. Nitrobenzene was detected but no applicable exceedances were identified in the surface water samples (JAYCOR, 1993b).
- **1993–1995 RI:** Surface water samples were collected along Long Creek within and downstream of the FSA and analyzed for explosives, metals, PAHs, pesticides, VOCs and SVOCs. No explosives, PAHs, pesticides, or VOCs were detected. No metals exceedances were observed; and only one SVOC analyte was detected (BEHP), but did not exceed criteria (JAYCOR, 1996).
- **2006 Comprehensive Watersheds Evaluation:** Surface water samples collected upstream, onsite, and downstream of the FSA and analyzed for explosives and total and dissolved metals (including uranium). No explosives were detected in any surface water samples. Metals were detected at or less than background levels downstream of the FSA. Upstream and onsite, aluminum, chromium, iron, manganese, and uranium were detected at elevated levels; however, because they were detected similarly upstream as onsite, and downstream was at background levels, the elevated concentrations of metals were determined to be from an upstream source (Tetra Tech, 2006).
- **2008–Present Annual Environmental Monitoring:** Surface water and sediment samples are collected biannually at 10 locations at the FSA and Long Creek and analyzed for gross alpha/beta and uranium isotopes under FUSRAP. No exceedances in gross alpha, gross beta, or uranium (234, 235, or 238) have been observed (multiple FUSRAP reports are available in the Administrative Record).
- **2018–2020 RI:** In 2019, a surface water sample near the FSA boundary was collected to verify the absence/presence of metals. Metals were detected in the surface water sample at concentrations at or below the background values. Additionally, eight existing monitoring wells were sampled for radionuclides; one of the eight was also sampled for explosives. The RI recommended that NFA was warranted for surface water at the FSA.

Site Characteristics

The FSA is located within the Long Creek watershed; two branches of Long Creek cut through the site. Surface drainage onsite is towards the two branches of Long Creek that run through it. Rock bluffs flank Long Creek on both the southerly and northerly sides at various segments of Long Creek.

The FSA is underlain by clayey silt (loess) that are typically less than 15 feet thick; and beneath the loess is a thick layer of glacial till (greater than 30 feet thick). Bedrock consists of limestone and varies in depth onsite but is typically 14 to 44 feet bgs.

Shallow groundwater onsite varies based on topography and ranges from less than 3 feet bgs to 20 feet bgs. Groundwater flow at the FSA is generally towards the western and northern branches of Long Creek and is characterized by a

semiradial flow pattern towards the creek branches.

No principal threat waste or COCs exist at the FSA surface water; therefore, site characteristics are not necessary to justify an NFA decision.

Summary of Risks

Potentially unacceptable risks or hazards from exposure to contaminants in site surface water were evaluated in the HHRA and SLERA. These evaluations are summarized in the following subsections.

Human Health Risk Assessment

An HHRA was conducted at the FSA to evaluate potential risks from exposure to chemicals in surface water. Potential future human receptors include hunters/recreators, site workers, construction/utility workers, and hypothetical residents.

The risk characterization followed a four-step process, which is detailed in the OU-7 RI Report (Jacobs, 2026). The final COC determination, which was based on the hunters/recreators swimming in Long Creek at the FSA, found no COCs for surface water at the FSA. Because risks and hazards for recreators swimming in Long Creek are acceptable, risks for other scenarios like hypothetical residents, site workers, and construction/utility workers are also considered acceptable. Therefore, the FSA qualifies for an NFA decision.

Ecological Risk Assessment

The SLERA for the FSA site evaluated potential ecological hazards in surface water. Because multiple sites may contribute to chemicals present in the creeks at the IAAAP, surface water and sediment samples collected from Long Creek within the FSA and from outside the FSA were evaluated as part of the separate watershed ecological risk assessment (CH2M, 2022). The SLERA for the FSA concluded that there are no adverse effects on ecological receptors identified and no additional actions are required from an ecological perspective at the FSA as part of the Long Creek watershed. Therefore, surface water at the FSA qualifies for an NFA decision from an ecological perspective.

Scope and Role of Response Actions

No further CERCLA action is necessary for the FSA surface water based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. Soil is currently being addressed under FUSRAP (OU-8); groundwater and sediment are currently under OU-7 but recommended for transfer to the FUSRAP (OU-8) in a forthcoming OU-7 RI Report (Jacobs, 2026).

Yard C (Unassigned)

Yard C is located in the eastern portion of the IAAAP (Figure 21). This Proposed Plan includes both surface water and groundwater at Yard C; neither are assigned an identification number. Soil and sediment at Yard C are being addressed under FUSRAP (OU-8).

Yard C, which comprises approximately 301 acres, is primarily an open field containing over 40 storage igloos and several support buildings; the open field is used for agriculture and often harvested for hay. Yard C is fully enclosed by a security fence. The site is surrounded by wooded and agricultural lands and is closed to hunters and recreators.

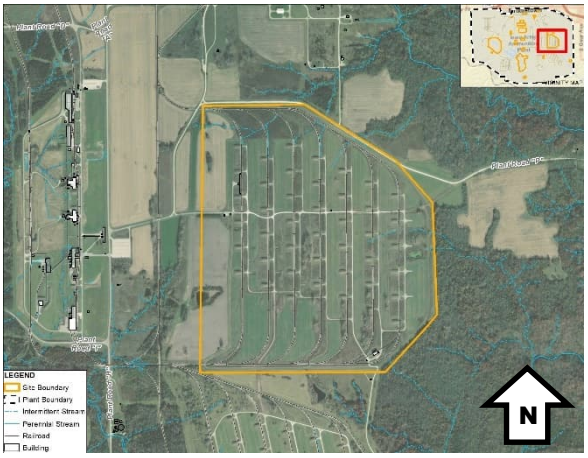


Figure 21 – Layout of Yard C

Background

Yard C began construction in 1941 and served as a storage yard. In 1947, the AEC began using Yard C for storage of raw explosive materials and sealed radiological components that were placed into warheads. The materials were contained in cardboard boxes with plastic liners and transported to Yard C via railroad. The AEC discontinued use of Yard C in 1975. Yard C is currently used and maintained by the Army, which includes 43 storage igloos within a secure and restricted zone.

Previous Investigations

Yard C was identified in 2001 as warranting further investigation for potential contamination under FUSRAP, and site investigations were subsequently conducted. Because FUSRAP investigations did not include surface water or groundwater investigation, these media were investigated during the OU-7 RI Report (Jacobs, 2026). Documents associated with FUSRAP can be found in the OU-8 Administrative Record (https://www.mvs.usace.army.mil/Missions/Centers-of-Expertise/Formerly-Utilized-Sites-Remedial-Action-Program/Iowa-FUSRAP-Administrative-Record/).

Documents detailing previous site investigations are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the OU-7 RI (Jacobs, 2026), which is currently being finalized but will soon be posted to the OU-7 folder of the Administrative Record.

The RI activities pertaining to surface water and groundwater are summarized as follows:

- **2006–2007 FUSRAP RI:** Detections of explosives in two soil samples collected during FUSRAP RI required groundwater and surface water sampling at Yard C to identify if contaminants had leached from soil to groundwater and/or surface water at Yard C (USACE, 2008a).
- **2019 RI:** Grab groundwater samples were proposed using a DPT drilling rig at Yard C; however, because of fine lithology and low permeability in the area, two temporary piezometers were installed and sampled for explosives and metals in the vicinity of the two FUSRAP soil samples with elevated explosives concentrations. Additionally, one surface water sample was collected from the pond located on the east side of Yard C to verify the presence or absence of explosives and metals in surface water onsite. At Yard C, barium and selenium were detected in groundwater, and barium and RDX were detected in surface water. However, none of the analytes exceeded their site characterization PALs. The RI recommended that NFA was warranted for surface water and groundwater at Yard C.

Site Characteristics

Yard C is located within two watersheds (Brush Creek and Spring Creek). Surface runoff from the eastern part of Yard C leads to Spring Creek and runoff from the western portion leads to Brush Creek. Drainage swales are located along the rail lines. Some site drainage discharges into the small pond located near the eastern fence line

The geology at Yard C consists of unconsolidated glacial deposits consisting of clayey silt with sand (loess) underlain by a thick layer of glacial till (30 to 70 feet thick). Limestone bedrock is encountered approximately 50 feet bgs but varies across the site as the bedrock slopes to the south.

Shallow groundwater at Yard C is approximately 4 to 11 feet bgs and flows to the southeast, towards Spring Creek.

No principal threat waste or groundwater/surface water COCs exist at Yard C greater than screening criteria. Therefore, site characteristics factors are not necessary for justification of an NFA decision.

Summary of Risks

Potentially unacceptable risks or hazards from exposure to contaminants in site groundwater and surface water were evaluated in the HHRA and SLERA. These evaluations are summarized in the following subsections.

Human Health Risk Assessment

An HHRA was conducted for Yard C to evaluate potential risks from exposure to chemicals in surface water and groundwater. Potential future human receptors include hunters/recreators, site workers, construction/utility workers, and hypothetical residents.

The risk characterization followed a four-step process, which is detailed in the OU-7 RI Report (Jacobs, 2026). The final COC determination, which was based on the residential receptor, found no COCs for Yard C based on noncarcinogenic effects. Because risks and hazards for residents at Yard C are acceptable, risks for other scenarios like hunter/recreational, site workers, and construction/utility workers are also considered acceptable. Therefore, the Yard C qualifies for an NFA decision.

Ecological Risk Assessment

The SLERA for Yard C evaluated potential ecological hazards from historical activities. The drainage ditches located at Yard C are not perennial waterbodies and therefore do not provide suitable habitat for ecological receptors. No analytes exceeded screening criteria in surface water. Because there are no perennial surface water features associated with the ditches and the surface water sample did not contain any exceedances, there are no complete exposure pathways for surface water. Ecological receptors are also not directly exposed to groundwater. Given the lack of perennial surface water bodies within the drainage ditches and the absence of exceedances in surface water, the surface water to groundwater exposure pathway is incomplete. The SLERA determined that no adverse effects on ecological receptors were identified, and no additional actions are required from an ecological perspective; therefore, NFA is warranted for both groundwater and surface water.

Scope and Role of Response Actions

No further CERCLA action is necessary for Yard C surface water and groundwater based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. Soil and sediment are addressed under OU-8 and the FUSRAP.

Yard G (Unassigned)

Yard G is located in the southern portion of the IAAAP site (Figure 22). This Proposed Plan includes both surface water and groundwater at Yard G; neither are assigned an identification number. Soil and sediment at Yard G are being addressed under FUSRAP (OU-8).

Yard G, which comprises approximately 259 acres in a heavily forested valley of Long Creek, is a storage yard containing multiple igloos along the main access road. Mathes Lake is located directly north of Yard G with Yard K to the west and Yard E to the east. The site is closed to hunters and recreators.

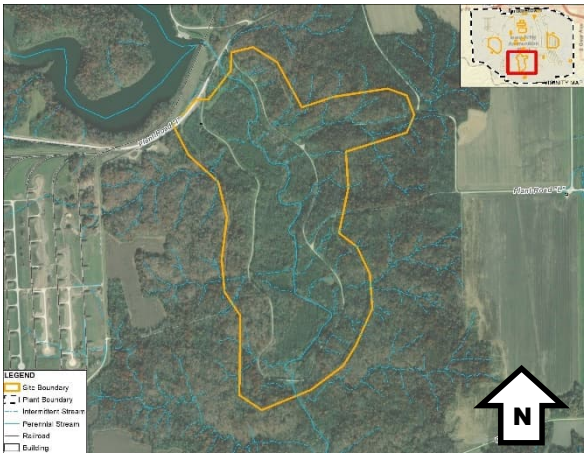


Figure 22 – Layout of Yard G

Background

Yard G was constructed in 1942 and served as a storage area for the finished castings of

munitions and munition components. The AEC took control of Yard G in 1947 and stored classified finished products from 1948 to 1954 in seven of the onsite igloos. Yard G was returned to Army control in 1975 and is currently not being used or maintained.

The site is only accessible by vehicle; therefore, any historical shipments had to be transported by truck to the loading point.

Previous Investigations

Yard G has been characterized as part of several investigations since the 1990s. It was also identified in 2001 as warranting further investigation under FUSRAP. Because the FUSRAP investigations did not include groundwater, this medium was investigated during the OU-7 RI Report (Jacobs, 2026). No remedial actions have been conducted at Yard G. Documents detailing previous site investigations are available in the Administrative Record (https://iaaaprestoration.com/adminrecord/). A summary of previous investigations is outlined in the OU-7 RI (Jacobs, 2026), which is currently being finalized but will soon be posted to the OU-7 folder of the Administrative Record.

The RI activities pertaining to surface water and groundwater are summarized as follows:

- **1992 RI:** Five surface water samples were collected at Yard G. No explosives, PAHs, pesticides, PCBs, SVOCs, or VOCs were detected; metals (aluminum and iron) were detected at elevated levels in the surface water samples.
- **2019 RI:** Three surface water samples were collected from Long Creek and analyzed for explosives and metals. Barium and lead were detected, but neither exceeded PALs. Groundwater sampling was proposed via DPT grab sampling; however, bedrock refusal was encountered prior to groundwater at the two locations that had historical soil sample exceedances. Step-out locations 20 to 30 feet away (downgradient) were advanced until refusal but also did not encounter groundwater. Therefore, no groundwater samples were collected. The RI recommended that NFA was warranted for surface water and groundwater at Yard G.

Site Characteristics

Surface runoff from Yard G flows into Long Creek, which cuts through the center of the site. Within Yard G, the ground surface is steep, generally rising rapidly behind each igloo and drops steeply from the edge of the access road towards Long Creek. The general ground surface slope is towards Long Creek.

The geology at Yard G consists of unconsolidated glacial deposits consisting of clayey silt with sand (loess) underlain by a layer of glacial till. Given the aggressive topography at Yard G, overburden composition and thickness varies. Limestone bedrock was encountered approximately 5 to 9 feet bgs but varies across the site, as the bedrock slopes to the southwest.

Groundwater was not encountered in any of the borings advanced at Yard G; however, based on potentiometric surface data at nearby sites, it is anticipated that groundwater beneath Yard G would flow from the perimeter inward towards Long Creek.

No principal threat waste or surface water COCs exist at Yard G; groundwater does not occur at Yard G. Therefore, site characteristic factors are not necessary for justification of an NFA decision for groundwater and surface water.

Summary of Risks

Potentially unacceptable risks or hazards from exposure to contaminants in site groundwater and surface water were evaluated in the HHRA and SLERA. These evaluations are summarized in the following subsections.

Human Health Risk Assessment

An HHRA was conducted for Yard G to evaluate potential risks from exposure to chemicals in surface water and groundwater. Potential future

human receptors include hunters/recreators, site workers, construction/utility workers, and hypothetical residents.

The risk characterization followed a four-step process, which is detailed in the OU-7 RI Report (Jacobs, 2026). The final COC determination, which was based on the future hypothetical residential receptor and future hunter/recreators, found no COCs for Yard G. Only barium and lead were detected in surface water, but both were below their respective risk-based screening levels; no groundwater was encountered onsite. Because risks and hazards for residents and hunters/recreators at Yard G are acceptable, risks for other scenarios like site workers, and construction/utility workers are also considered acceptable. Therefore, the Yard G qualifies for a NFA decision for both surface water and groundwater.

Ecological Risk Assessment

The SLERA for Yard G evaluated potential ecological hazards from historical activities. Groundwater was not encountered at any of the borings advanced; therefore, the SLERA primarily evaluated ecological exposure to surface water at Yard G. No analytes exceeded screening criteria in surface water and no potentially unacceptable risks or hazards were identified. Additionally, multiple IAAAP sites contribute to chemicals present in the creeks at the IAAAP facility; therefore, the surface water and sediment samples collected from Long Creek within Yard G and from upstream and downstream of Yard G concluded that Yard G was not a contributing factor to Long Creek contamination. The SLERA determined that no adverse effects on ecological receptors were identified, and no additional actions are required from an ecological perspective; therefore, NFA is warranted for both groundwater and surface water at Yard G.

Scope and Role of Response Actions

No further CERCLA action is necessary for Yard G groundwater and surface water based on the RI conclusions. This response is consistent with the overall proposed action for OU-11 and the IAAAP remedial strategy. Soil and sediment are being addressed under the FUSRAP (OU-8).

Preferred Remedy

As discussed in this Proposed Plan, NFA is proposed for the OU-11 environmental sites. The RIs and comprehensive risk assessment conclusions indicate there is either no evidence of a site release, site-related chemicals do not pose potentially unacceptable noncarcinogenic hazards or carcinogenic risks, potential COCs do not exceed their MCLs, or there are no complete exposure pathways between media and ecological receptors. Therefore, the development of remedial action objectives was not warranted and no remedial alternatives were developed or required. No CERCLA action is necessary for OU-11.

Modifying Criteria

The Iowa Department of Natural Resources and EPA have accepted the assessment and concur with NFA for OU-11. The community acceptance modifying criteria will be evaluated in the forthcoming ROD, following public comments on this Proposed Plan.

Community Participation

Detailed information regarding this proposed NFA is available in the Administrative Record, which is located online at https://iaaaprestoration.com/adminrecord/. A hard copy is located in the IAAAP Restoration Repository at 17571 DMC Highway 79, Middletown, Iowa 52638-5000. The Burlington Public Library has computers available to the public for those interested in viewing the electronic version of the Administrative Record. An announcement of the availability of this Proposed Plan was published in *The Hawk Eye*

newspaper during the week of April 7, 2026, in accordance with CERCLA.

The Army is seeking comments on the Preferred Remedy identified in this Proposed Plan. During the public comment period from April 1 through 30, 2026, comments will be accepted and considered before a final decision is made for OU-11. In addition, a public meeting will be held at the West Burlington City Hall, 122 Broadway Street, West Burlington, Iowa, at 10:00 a.m. on April 21, 2026, to further explain this Proposed Plan and to answer questions from the public and receive comments. A comment form has been included at the end of this document to submit input on the Proposed Plan.

For additional information, please contact:

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Acronyms and Abbreviations

ACSY	Abandoned Coal Storage Yard
AEC	US Atomic Energy Commission
AEDB	Army Environmental Database
Army	US Army
BCU	Boxcar Unloading Area
BEHP	bis(2-ethylhexyl) phthalate
bgs	below ground surface
BTV	background threshold value
CDDA	Construction Debris Disposal Area
CDL	Construction Debris Landfill
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	chemical of concern
COPC	chemical of potential concern
COPEC	chemical of potential ecological concern
CSM	conceptual site model
CTA	Central Test Area
CTL	Central Testing Laboratory
DERP	Defense Environmental Restoration Program
DPT	direct-push technology
EDA	Explosives Disposal Area
EPA	US Environmental Protection Agency
ESV	ecological screening value
EWI	Explosive Waste Incinerator
FADA	Fly Ash Disposal Area
FFA	Federal Facility Agreement
FS	Feasibility Study
FSA	Firing Sites Area
FTP	Fire Training Pit
FUSRAP	Formerly Utilized Sites Remedial Action Program
HI	hazard index
HHRA	Human Health Risk Assessment

HMX	cyclotetramethylene-tetranitramine
IAAAP	Iowa Army Ammunition Plant
InDA	Incendiary Disposal Area
IRP	Installation Restoration Program
LAP	load, assemble, and pack
LUC	land use control
MC	munitions constituents
MCL	maximum contaminant level
MD	munitions debris
MEC	munitions and explosives of concern
mg/kg	milligram(s) per kilogram
mm	millimeter(s)
MMRP	Military Munitions Response Program
MRS	munitions response site
NFA	No Further Action
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
OFAWP	Old Fly Ash Waste Pile
OU	operable unit
PAH	polycyclic aromatic hydrocarbon
PAL	project action limit
PCB	polychlorinated biphenyl
PDS	Possible Demolition Site
ppm	part(s) per million
PRG	preliminary remediation goal
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RDX	Royal Demolition Explosive
RG	remedial goal
RI	Remedial Investigation
ROD	Record of Decision
Roundhouse	Roundhouse Transformer Storage Area
RSL	regional screening level

SI	Site Inspection
SLERA	Screening-Level Ecological Risk Assessment
SRI	Supplemental Remedial Investigation
SVOC	semivolatile organic compound
TNB	1,3,5-trinitrobenzene
TNT	2,4,6-trinitrotoluene
UFP-QAPP	Uniform Federal Policy for Quality Assurance Project Plan
USACE	US Army Corps of Engineers
USWS	Unidentified Substance Waste Site
UU/UE	unlimited use/unrestricted exposure
UXO	unexploded ordnance
VOC	volatile organic compound
WEBCASS-E	Web Compliance Assessment and Sustainment System–Enterprise

Glossary of Terms

Administrative Record – A compilation of documents that serve as the basis for the decision in selecting a response action to be taken at a site.

Background Threshold Value – The typical concentration of natural chemicals in soil, such as metals (iron, manganese, etc.), uninhibited by human contribution. Background threshold values are often used to help determine if a release took place or if background soil conditions are the source of elevated concentrations of certain compounds.

Bedrock – The solid, unweathered rock layer underlying soil and superficial materials on the Earth's surface.

Chemical of Concern – A site-related contaminant that poses an unacceptable risk to human health or the environment in an exposure medium, such as soil or groundwater.

Chemical of Potential Concern – A substance that may pose risk and require further assessment because of its potential impact to human health or the environment.

Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) – The federal law that addresses problems resulting from releases of hazardous substances to the environment.

Dunnage Lumber – Scrap wood or material that is placed on the ground to raise construction materials or equipment to allow access for forklifts and hoisting, etc., and to protect the materials and equipment from elements on the ground, notably water.

Ecological Receptor – A living organism or ecological component that may be impacted by environmental contamination.

Ecological Screening Value – A screening number used to check if contaminants in soil, water, sediment, or air might harm plants, animals, and other organisms in the environment. This value helps to determine if the contaminant levels pose a risk to the ecosystem.

Feasibility Study – This CERCLA document develops and evaluates options for remedial action. The Feasibility Study emphasizes data analysis and is generally performed concurrently in an interactive fashion with the Remedial Investigation, using data gathered during the Remedial Investigation.

Fly Ash – The fine powdery material generated by burning coal.

Glacial Till – Unsorted and unstratified sediment deposited directly by glacial ice.

Groundwater – Water located below the ground surface in the ***saturation zone.***

Groundwater Flow – The movement of water through underground soil and rock layers.

Groundwater Monitoring – Systematic observation and measurement of groundwater quality and levels over time.

Groundwater Sampling – Collection and analysis of groundwater samples to monitor contaminant levels.

Hazard Index – A tool used in the human health risk assessment to evaluate the potential for health effects from exposure to contaminants. The hazard index is calculated by summing up the hazard quotients for each chemical and exposure pathway (refer to ***target limits***.)

Land Use Control – A legal and administrative measure used to restrict land use to protect human health and the environment. Examples include restricting access to a site by fencing/signage, and zoning restrictions such as not allowing residential use of an area.

Leachate – A liquid that has percolated through a solid and extracted dissolved or suspended matter.

Maximum Contaminant Level – The highest concentration of a contaminant allowed in drinking water, set by regulatory standards.

Monitoring – The process of regularly checking and observing a site or system for changes or potential issues.

National Priorities List – EPA's list of sites where hazardous substances have been released that present the greatest potential threat to human health or the environment.

Naturally Occurring Chemicals – Chemicals that exist in the environment without human influence or contamination.

No Further Action –The site does not pose an unacceptable risk to human health or the environment; therefore, no additional cleanup actions are required.

Operable Unit – A portion of a site separately considered for remedial or corrective action.

Overburden – The layer of soil and rock above a bedrock formation.

Project Action Limit – A specific limit set for certain chemicals or parameters based on project requirements.

Preferred Remedial Alternative – The remedial alternative selected by the Army and EPA, based on a comparison of various remedial alternatives using specific evaluation criteria.

Proposed Plan – A CERCLA document that summarizes evidence to support the selection of a preferred remedial alternative at a CERCLA site. The document is intended for public distribution to solicit comments on the proposed action(s).

Record of Decision – The CERCLA decision document that presents the cleanup remedy selected by the Army and EPA.

Remedial Investigation – A process under CERCLA to determine the nature and extent of the problem presented by a contaminant release. The remedial investigation includes sampling, monitoring, and gathering of sufficient information to determine the necessity for remedial action.

Remedial Goal – A contaminant concentration used to identify the soil requiring excavation, treatment, and disposal to meet the remedial action objectives and provide protection for human health and the environment.

Resource Conservation and Recovery Act (RCRA) Closure – When a RCRA management unit (for example, a hazardous waste landfill) ceases operation and no longer receives waste. The RCRA closure process includes specific closure standards and requires post-closure monitoring to ensure protection of the surrounding environment.

Saturation Zone – The area below the ground surface where all available spaces are filled with water.

Target Limit – A threshold below which remedial actions are not warranted. The target limits used in IAAAP human health risk assessments to evaluate the potential for health effects from exposure to

contaminants in site media are below EPA's target organ-specific HIs threshold of 1 and the cumulative excess lifetime cancer risk (ELCR) of 1E-04. The target ELCR of 1E-04 represents the upper limit of EPA's National Oil and Hazardous Substances Contingency Plan target risk range of 1E-06 to 1E-04.

Tributary – A smaller stream that feeds into a larger one. Tributaries can be found dry or wet at a given time, depending on weather, seasonal variability etc.

Watershed – A region or area where all the water (groundwater, surface water) flows to a common point, such as a river or stream.

Use this Space to Write your Comments.

Your input to the Proposed Plan process for the 26 Iowa Army Ammunition Plant Sites Proposed for No Further Action (NFA) is important to the Army. The comments that the Army receives are vital to select the cleanup remedy for the site. Changes to the Preferred Remedy can be made based on comments made by the public.

Please use the space below to submit your comments on the Proposed Plan for the 26 Sites Proposed for NFA. If you need more space for your comments, attach additional pages. After you have completed the form, mail to the following address: Iowa Army Ammunition Plant, Attn: Jennifer Busard (JMIA-OSR), Iowa Army Ammunition Plant, 17571 Highway 79, Middletown, Iowa, 52638-5000.

Comments must be postmarked by April 30, 2026.

If you have any questions about the comment period, please contact Jennifer Busard at (319) 753-7339.