ENVIRONMENTAL ASSESSMENT

for

Lead Azide Risk Mitigation

at the Iowa Army Ammunition Plant

Prepared by the U.S. Army

IAAAP-EA-2026-01

Organization

This Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) (42 USC § 4321 et seq.); Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500–1508); Department of War (DoW) NEPA Implementing Procedures (September2026); and Army Regulation (AR) 200-1, *Environmental Protection and Enhancement*.

To facilitate review and informed decision-making by the Command, this EA is organized into four primary chapters, followed by references and supporting appendices, as described below:

Chapter	Title	Description of Contents
Chapter 1	Purpose of and Need for the Proposed Action	Identifies the responsible Army organization, provides historical background on the unserviceable lead azide at IAAAP, defines the specific Purpose and Need of the mission, and outlines the scope of the decision-making process.
Chapter 2	Description of the Proposed Action and Alternatives	Details the "who, what, where, when, and how" of the Proposed Action (Alternative 1); outlines the technical screening criteria; describes the No Action Alternative; and documents the alternative Courses of Action (COAs) considered but eliminated from detailed study.
Chapter 3	Affected Environment and Environmental Consequences	Serves as the core analytical portion of the EA. It provides a combined, resource-by-resource analysis describing the baseline conditions (Affected Environment) and the direct environmental impacts (Environmental Consequences) for both Alternative 1 and the No Action Alternative. It includes specific mitigation measures and Best Management Practices (BMPs) for each resource.
Chapter 4	Findings and Conclusions	Summarizes the findings of the environmental analysis and provides the administrative justification and recommendation for the signing of a Mitigated Finding of No Significant Impact (FONSI).
Chapter 5	References	Contains a comprehensive list of the scientific literature, regulatory standards, and installation planning documents cited in the text.

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Acronyms and Abbreviations

§	Section
ACM	Asbestos-Containing Material
AMC	U.S. Army Materiel Command
ANG	Army National Guard
ASC	U.S. Army Sustainment Command
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best Management Practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
DHA	Defense Health Agency
DDESB	Department of Defense Explosives Safety Board
DoW	Department of War
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EOD	Explosive Ordnance Disposal
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESMP	Endangered Species Management Plan
FONSI	Finding of No Significant Impact
FY	Fiscal Year
HAP	Hazardous Air Pollutant
HASP	Health and Safety Plan
IAAAP	Iowa Army Ammunition Plant

IAC	Iowa Administrative Code
IDNR	Iowa Department of Natural Resources
IDOT	Iowa Department of Transportation
INRMP	Integrated Natural Resources Management Plan
LAP	Load, Assemble, and Pack
LBP	Lead-Based Paint
LUCIP	Land Use Controls Implementation Plan
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
PM_{10}	Particulate Matter less than 10 microns in diameter
$PM_{2.5}$	Particulate Matter less than 2.5 microns in diameter
QD	Quantity Distance
REC	Record of Environmental Consideration
SEA	Supplemental Environmental Assessment
SWPPP	Storm Water Pollution Prevention Plan
U.S.	United States (used as adjective only)
U.S.C.	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USFS	U.S. Forest Service

Chapter 1: Purpose of and Need for the Proposed Action

1.1 Introduction

The Department of the Army, through the Army Sustainment Command (ASC), is evaluating the environmental impacts associated with the emergency disposal of unserviceable explosive material at the Iowa Army Ammunition Plant (IAAAP), located in Middletown, Iowa. IAAAP is a vital military industrial facility responsible for the load, assemble, and pack (LAP) of medium and large-caliber munitions in support of the Department of War (DoW) warfighting missions.

In March 2026, during a proactive facility safety review, IAAAP identified a stockpile of lead azide, a highly sensitive primary explosive used in munitions detonators, that had degraded and crystallized over time. Due to its chemical degradation, the material's legal status transitioned from a viable production component to an unserviceable hazardous waste. Lead azide in a crystallized state becomes extremely shock-and-friction sensitive presenting a serious safety hazard to plant personnel and preventing safe physical transport of the material to standard off-site demilitarization facilities.

The material is currently secured within onsite, explosive-proof earth-covered magazines (ECMs). The facility has coordinated with regulatory agencies to manage the material under a Resource Conservation and Recovery Act (RCRA) emergency framework. However, to permanently abate the explosive safety hazard, the Army must execute a final disposition of the material. This Environmental Assessment (EA) analyzes the proposed operational plan to conduct a controlled, mitigated detonation in place to safely destroy the unserviceable lead azide. The plan is designed to minimize blast overpressure, noise, and the dispersion of environmental contaminants through the use of engineered blast containment barriers and other controls.

1.2 Purpose and Need

The purpose of the proposed action is to safely and permanently dispose of a degraded unserviceable stockpile of lead azide at the IAAAP. Specifically, the objective is to execute a controlled, mitigated detonation in place (Blow-in-Place / BIP) that definitively destroys the shock-sensitive material, thereby eliminating the immediate explosive safety threat to facility personnel and infrastructure, while utilizing engineered mitigation measures to strictly monitor and control blast overpressure, noise, and the dispersion of environmental contaminants.

The proposed action is needed because the current stockpile of unserviceable lead azide presents an unacceptable explosive safety risk to IAAAP personnel, infrastructure, and surrounding operations. Temperature fluctuations can also cause small amounts of

lead azide to dissolve in the alcohol/water solution and then recrystallize into its pure state as needles and platelets, which are significantly more sensitive to shock and friction. Due to its current degraded, crystallized state, the lead azide has become highly sensitive to friction, heat, and shock. Consequently, the material cannot be safely handled, repackaged, or transported over public highways to standard off-site demilitarization facilities. The inability to rule out recrystallized lead azide has created a catastrophically hazardous condition in which has led to the formal recommendation by DoW Explosive Ordnance Disposal (EOD) to not move the material and dispose of it in place.

The Army needs to permanently abate this localized explosive hazard to ensure a safe working environment for plant personnel and maintain compliance with DoD Explosives Safety Board (DDESB) standards. Addressing this deficiency is required to prevent an accidental, uncontrolled detonation that could result in catastrophic loss of life, severe and more unmitigated environmental contamination, and critical disruption to IAAAP's essential munitions production capabilities, which are vital to the military readiness of U.S. ground forces.

1.3 Scope, Coordination, and Decision-making

The U.S. Army has prepared this Environmental Assessment (EA) in order to ensure informed decision making and compliance with the National Environmental Policy Act (Title 42 United States Code ((USC) § 4321 et seq.) (NEPA); Department of War (DoW) NEPA Implementing Procedures (-September 2026); Army Regulation (AR) 200-1 (April 2026), Environmental Protection and Enhancement; and applicable Army NEPA guidance. Per NEPA, this EA is a concise public document prepared to set forth the basis of the Army's Finding of No Significant Impact (FONSI) based on mitigations or determination that an environmental impact statement is necessary. The resulting decision and mitigation commitments that will be undertaken to avoid significant effects, to be made by the **Commander, Iowa Army Ammunition Plant (IAAAP)**, will take into consideration the analysis in this EA and, as applicable, associated comments received from the public and from agency coordination activities.

Chapter 2: Description of the Proposed Action and Alternatives

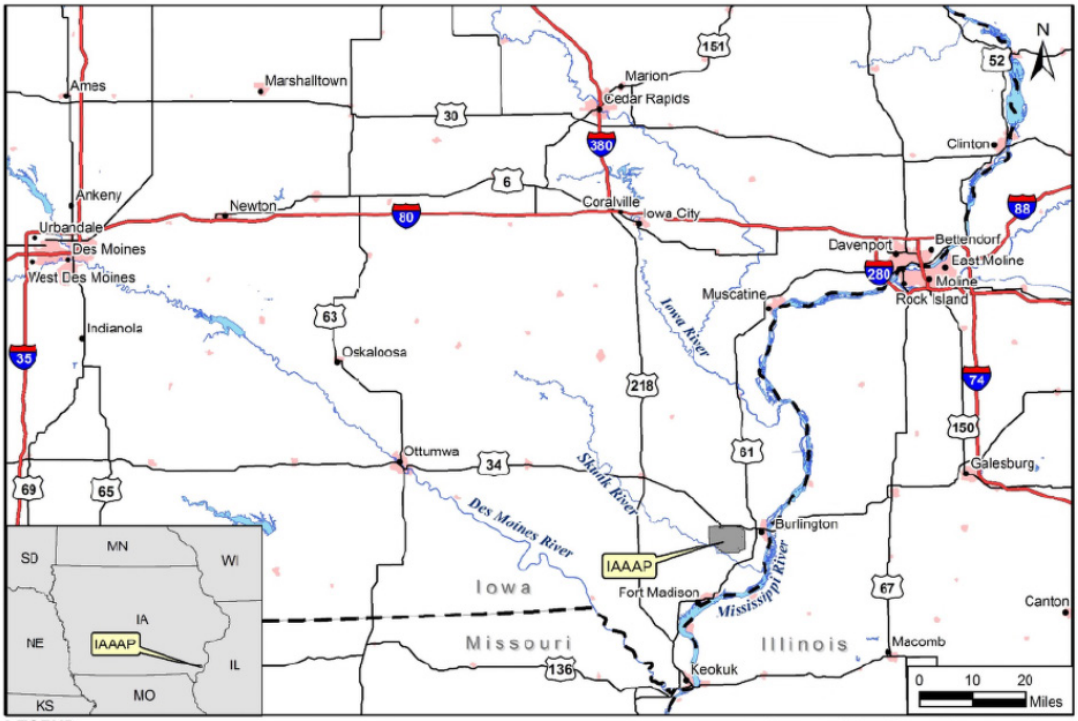
2.1 Proposed Action

The Proposed Action is to develop and execute an operational plan to safely and responsibly dispose of unserviceable lead azide at the IAAAP by conducting a controlled detonation. The mission objective is to destroy the lead azide while mitigating public exposure to the resulting blast and plume.

The project proponent is the U.S. Army. Execution of the Proposed Action is a multi-organizational effort: the EOD team will conduct the detonation (Phase 2), and an Environmental Services contractor will be utilized for initial cleanup (Phase 3) and long-term remediation (Phase 4). Coordination of public information and evacuation plans will be managed by the ASC Public Affairs Office (PAO) and installation leadership.

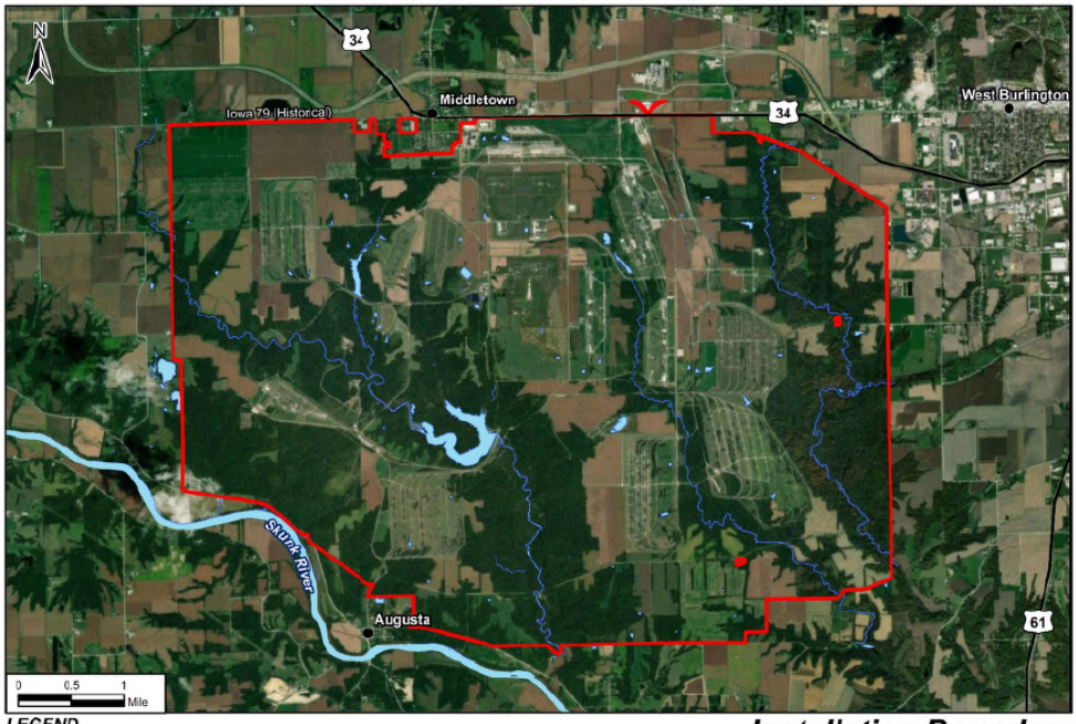
The Proposed Action involves the controlled detonation of the lead azide stockpile to eliminate the explosive hazard. The end state of the action is the total destruction of unserviceable material, minimization of public and personnel exposure, develop an empirical understanding of the extent of environmental contamination, and the restoration of the site for standard operations or long-term remediation.

All activities associated with the Proposed Action will occur within the boundaries of the IAAAP in Middletown, Iowa. The detonation will be localized to the storage ECMs currently containing the material. **Figures 1-1** and **1-2** on page 4 show the installation location and installation boundary, respectively.



Installation Location

Figure 1-1



Installation Boundary

Figure 1-2

The intent is to execute the detonation during the fall to take advantage of periods of reduced thermal cycling and to ensure the lowest impact to facility operations and local agriculture (harvesting). The action will be conducted during daylight hours. The two ECMs will be detonated simultaneously.

The Proposed Action will be implemented through a phased strategy and a series of strict operational controls:

Pre-implementation Activities (Phase I):

- ***Operational Controls***: The Army will implement a **temporary access restriction and safety exclusion zone** for all non-essential plant operations, with only emergency services remaining active.
- ***Donor Sourcing***: Required donor material will be sourced by the DoW EOD (primary) or Army Sustainment Command (ASC) (secondary) and staged on-site.
- **Engineering Control**: Construction of blast containment barriers (lime-fill and sand-filled HESCO barriers) with a designated venting area.
- **Vegetation Clearance**: Brush and vegetation removal will be conducted to reduce potential for fire hazard.
- ***Planning & Modeling***: Optimal weather conditions for execution will be determined based on atmospheric modeling and EOD recommendations (e.g., no precipitation, surface wind speeds not to exceed 15 mph, no thunderstorms, and no temperature inversions).
- ***Go/No-Go Criteria***: A comprehensive checklist must be satisfied prior to execution, including favorable weather, final EOD approval, confirmation of safety controls, and execution of public notification measures.
- ***Communications***: The PAO will execute an approved communication plan, including top-line messaging, news releases, and evacuation and public notification plans. A public open house was conducted on 15 October 2026.

Operational Activities (Phase 2):

- The DoW EOD team will conduct the controlled detonation of the lead azide simultaneously.

Post-operational Requirements (Phases 3 & 4):

- Initial Cleanup (Phase 3): An Environmental Services contractor will be deployed to assess the site and conduct initial cleanup activities to understand the extent of environmental impacts, if any.

- Long-term Remediation (Phase 4): The Environmental Services contractor will execute long-term remediation of the site to return the area to standard operational status.

2.2 Alternatives

2.2.1 Screening Criteria

For an alternative to the proposed action to be considered viable and carried forward for detailed analysis in this EA, it must meet the Purpose and Need identified in Section 1.2. Furthermore, it must satisfy the following technical, safety, environmental, and mission-oriented screening criteria. These criteria were developed by the Army and the ASC to evaluate all potential Courses of Action (COAs) for the disposal of the unserviceable lead azide stockpile:

- **Personnel Safety (Handling Minimization)**: The alternative must drastically limit or eliminate the need for personnel to physically handle, manipulate, or transport the crystallized lead azide. Because the degraded material is highly sensitive to shock, heat, and friction, prolonged or repetitive handling presents an unacceptable risk of a fatal, accidental detonation.

- **Environmental Protection and Regulatory Compliance**: The alternative must incorporate mechanisms to monitor, contain, and mitigate the release of hazardous constituents—specifically airborne lead particulates, unreacted energetics, and toxic gases (e.g., hydrazoic acid). The process must comply with the Resource Conservation and Recovery Act (RCRA) and DoW environmental standards to prevent uncontrolled off-site contamination, including mechanisms to manage post-treatment hazardous waste.

- **Public Health and Off-Installation Impacts**: The alternative must ensure that blast overpressure, noise (impulse decibels), and any residual atmospheric plumes do not exceed safety thresholds or negatively impact the civilian population and agricultural lands outside the IAAAP installation boundaries.

- **Mission Compatibility and Timeline**: The alternative must be executable within a reasonable timeframe to abate the immediate hazard. It must .allow the Army to lift the facility-wide **temporary access restriction** and safely resume its essential medium and large-caliber munitions production mission as quickly as possible.

- **Technical Feasibility**: The alternative must rely on proven, technologically mature disposal methods approved by the DDESB (e.g., standardized EOD detonation protocols or established chemical neutralization) that can be realistically resourced, staged, and executed at the current magazine locations without requiring the construction of new, permanent demilitarization facilities.

2.2.2 Alternative 1 – Mitigated Controlled Detonation (Proposed Action)

Alternative 1 consists of the execution of the Proposed Action as described in Section 2.1. Under this alternative, the Army would conduct a controlled, phased detonation (Blow-in-Place) of drums of unserviceable lead azide at the IAAAP. This action would be executed by the DoW EOD team utilizing donor explosives simultaneous detonation of both ECMs.

This alternative incorporates all operational controls and mitigation strategies detailed in Section 2.1, including atmospheric plume modeling, a comprehensive Go/No-Go checklist, facility-wide **temporary access restrictions**, and a phased environmental cleanup and remediation plan. Alternative 1 is the proponent's preferred alternative because it meets all screening criteria, specifically by minimizing personnel handling of the crystallized material and providing a definitive, safe, and regulated path to hazard abatement and mission restoration.

2.2.3 No Action Alternative

Under the No Action Alternative, the Army would not proceed with the controlled disposal of the drums of unserviceable lead azide. The material would remain in its current storage configuration within the ECMs. This alternative is not viable because it results in two significant, unacceptable outcomes:

- **Increased Safety Risk**: The "No Action" alternative would allow the lead azide to continue its chemical degradation and crystallization process indefinitely. As the crystals grow and dehydrate, the material becomes increasingly sensitive to shock, friction, and thermal changes. The crystallization process is especially evident during colder months, when temperatures are below freezing. This significantly increases the probability of an unintended, accidental detonation, which poses a catastrophic threat to personnel life-safety, installation infrastructure, and the surrounding community.
- **Regulatory Non-Compliance**: Because the lead azide has been declared an "unserviceable hazardous waste," the facility is legally bound by the RCRA permit to manage the material toward a final disposal or treatment pathway. Selecting "No Action" would place the Army in persistent non-compliance with RCRA hazardous waste storage and treatment standards, potentially resulting in regulatory enforcement actions, significant fines, and legal liability.

Furthermore, the No Action Alternative would require the continuation of the temporary **restriction of installation access**, indefinitely halting essential munitions production missions and degrading the military readiness of U.S. ground forces. While the No Action Alternative does not meet the Purpose and Need for the action, it is carried forward in this EA as a baseline against which the impacts of the Proposed Action can be compared.

2.2.4 Alternatives Eliminated from Further Consideration

During the planning process, the Army developed and evaluated multiple Courses of Action (COAs) to address the lead azide hazard. The following alternatives were considered but ultimately eliminated from detailed analysis in this EA because they did not meet critical screening criteria, specifically regarding human safety and regulatory compliance.

Chemical Neutralization (Non-Detonation)

This alternative proposed neutralizing and decomposing the drums of lead azide on-site using a chemical reagent. The objective would be to eliminate the explosive hazard in a controlled, non-detonation manner to prevent environmental contamination and ensure a disposal pathway.

- **Methodology:** The operation would be managed by a single prime contractor for all phases, utilizing U.S. Government (USG) or Army National Guard (ANG) support when feasible. Neutralization would occur during daylight hours, processing an estimated 3 to 10 drums per day (requiring 7 to 22 total operational days). Donor explosives would remain on-site as a contingency "branch plan" to transition back to a detonation COA if neutralization failed.
- **Operational Controls:** Strict Go/No-Go criteria (e.g., high winds, precipitation, critical equipment failure) would dictate daily operations. The Army would issue a **temporary access restriction notification** during active neutralization, accompanied by public PAO messaging and evacuation plans.
- **Reason for Elimination:** While this alternative offered environmental protections by avoiding a blast plume, it was eliminated from detailed study due to unacceptable risk to human safety. Because the lead azide has crystallized, it is highly sensitive to shock and friction. The chemical neutralization process requires significantly more "hands-on" time and physical manipulation of the drums by personnel over a prolonged 7-to-22-day period, drastically increasing the probability of accidental, fatal detonation during handling. Additionally, uncertainty remained for successful neutralization including the existing mixture of water/ethanol the lead azide is contained in.

Transport to On-Site Open Detonation (OD) Unit

This alternative proposed treating the lead azide at IAAAP’s existing, RCRA permitted Open Detonation (OD) unit, which is located in a different area of the installation.

- **Methodology:** This option would have required personnel to physically handle and load all drums of crystallized lead azide from their current storage ECMs. The drums would then be transported across the installation's road network to the permitted OD

area. At the OD unit, crews would bury one to three barrels at a time, cover the buried barrels with donor explosive charges, and then initiate detonation.

- **Reason for Elimination:** This alternative was eliminated because it failed to meet the primary project screening criterion of minimizing or eliminating personnel handling of the shock-sensitive material. The Army determined that the risks associated with moving the drums, including potential sloshing and physical shock during transport, loading, and burial, presented an unacceptable safety risk and a high probability of accidental, uncontrolled detonation. Therefore, any alternative involving transport of the material was deemed not viable.

Unmitigated Controlled Detonation

Under this alternative, EOD would conduct the controlled detonation of the lead azide (similar to the Proposed Action) but without implementing engineered environmental and protective controls (e.g., omitting atmospheric plume modeling, omitting blast/noise mitigation, and foregoing immediate post-blast soil remediation).

- **Reason for Elimination:** This alternative was eliminated because an entirely unmitigated detonation of drums of heavy-metal-based primary explosives would result in the uncontrolled airborne dispersion of toxic lead particulates and energetic residue. This would violate the RCRA and DoW environmental protection standards, presenting an unacceptable hazard to public health, surrounding agricultural lands, and the environment.

Chapter 3: Affected Environment and Consequences

3.1 Introduction

This section describes the affected environment and analyzes the potential environmental impacts associated with the No Action Alternative and the Proposed Action (Alternative 1) described in Chapter 2.

In accordance with 40 CFR 1501.3(d) and the DoW NEPA Implementing Procedures (September 2026), the Army has determined the significance of potential impacts by considering the degree of the effects. This includes evaluating both short-term and long-term effects, beneficial and adverse effects, and the potential impact on public health and safety. The severity of environmental impacts is characterized as follows:

- **None/Negligible**: No measurable impacts are expected to occur.
- **Minor**: Measurable adverse impacts are expected, but they are primarily short-term and do not result in a lasting change to the resource.
- **Moderate**: Noticeable adverse impacts that have a measurable effect on a resource and may have long-term implications.
- **Significant**: Adverse impacts would be obvious and serious. For the purposes of this EA, significant impacts are analyzed to determine if they can be mitigated to a less-than-significant level to support a Mitigated FONSI
- **Beneficial**: Impacts would result in a positive change or improvement to the resource.

The Army utilized both quantitative and qualitative analyses to determine these levels. Where applicable, the analysis identifies whether effects are avoided or minimized through the implementation of the specific mitigation measures defined in the Proposed Action.

The environmental analysis presented in the following sections is quantitatively and qualitatively grounded in the detailed technical plans developed for the associated RCRA emergency treatment permit application. The evaluation of potential impacts and the effectiveness of mitigation measures are based on specific planning documents, including, but not limited to, the Treatment Design and Implementation Plan, the Environmental Sampling and Analysis Plan (SAP), the Waste Analysis Plan (WAP), the Contingency Plan, and the Closure Plan for the treatment area. This approach ensures that the NEPA analysis is fully aligned with the comprehensive engineering, safety, and environmental planning conducted for the Proposed Action.

3.2 Land Use

3.2.1 Definition of the Resource

Land use refers to the management and modification of the natural environment. For this EA, land use is defined by the operational zoning and functional classifications established by the IAAAP military mission and documented in the installation's Integrated Natural Resources Management Plan (INRMP) for 2024-2029.

3.2.2 Existing Conditions

IAAAP encompasses approximately 19,024 acres in Des Moines County, Iowa. According to the INRMP, the installation's primary land use is Military Industrial / Explosives Operations, and its landscape is managed in four distinct categories: Agricultural Outleases, Improved Grounds, Semi-Improved Grounds, and Unimproved/Other.

The Proposed Action will occur entirely within a designated high-security ammunition storage yard on the installation, which falls within the "Improved Grounds" land use category. The area contains multiple ECMs, including the two that house the unserviceable lead azide. The entire storage yard is enclosed by a security fence with access restricted through a controlled gate. This area is strictly governed by DDESB regulations and is fully contained within established Explosive Safety Quantity-Distance (ESQD) arcs, which are pre-determined safety buffers that already restrict this land for high-hazard activities.

Land use immediately surrounding the storage yard's perimeter is a mix of undeveloped and agricultural areas; it is forested to the northwest, with agricultural fields located to the southwest, south, and east. Furthermore, the project area and the land immediately surrounding it have been closed for recreational access, including hunting and fishing.

3.2.3 Impacts of the No Action Alternative

Under the No Action Alternative, the unserviceable lead azide would remain stored in the two ECMs indefinitely. This would result in the immediate and permanent loss of use of these storage facilities for their designated purpose, creating a long-term adverse land-use restriction that conflicts with the military mission.

More critically, this alternative allows the risk of accidental, uncontrolled detonation to persist and increase over time. Such an event would cause catastrophic damage to the ECMs and the surrounding land, creating a large-scale hazardous debris field and potentially rendering adjacent storage facilities, access roads, and natural buffer zones unusable. This would represent a significant, long-term adverse impact on land use at the

installation, requiring extensive and complex remediation before the land could be returned to any productive use.

- Severity Determination**: Significant Adverse**

3.2.4 Impacts of Alternative 1 (Proposed Action)

Under Alternative 1, the mitigated controlled detonation and subsequent cleanup would occur on land already designated as Improved Grounds and zoned for high-hazard explosive storage. The action is fully compatible with the current and planned use of this land as defined by the INRMP.

The temporary disruption from the detonation will be confined to a pre-designated and modeled treatment area. Per the Treatment Area Closure Plan, post-detonation impacts are anticipated to occur in several zones extending from the central blast area. Remediation activities will proceed systematically through these zones to remove demolition debris and contaminated soil, ensuring that the disruption does not permanently affect surrounding land uses, such as agricultural outleases.

Upon completion of the planned remediation, which includes the removal of the destroyed magazine structures, excavation of contaminated soil, backfilling, and site reclamation, the land will be restored to a condition that is safe and fully compatible with its long-term military industrial use. This permanently eliminates a land-use restriction that not only rendered the two ECMs unusable but also posed a catastrophic risk to adjacent lands and infrastructure.

- Severity Determination**: Minor (Short-Term) to Beneficial (Long-Term).** The action is consistent with the established land use, and the long-term impact is beneficial as it restores valuable military real property to a safe and fully mission-capable status.

3.2.5 Mitigation Measures and Best Management Practices (BMPs)

To ensure that the Proposed Action maintains its compatibility with IAAAP's established land-use classifications and achieves a long-term beneficial impact, the Army will implement the following mitigation measures and BMPs:

- **Post-Blast Soil Remediation & Site Restoration (Mitigation):** Following the detonation, the Environmental Services contractor will excavate and properly dispose of contaminated soil exceeding the Regional Screening Level (RSL). This remediation will continue until confirmation sampling demonstrates that all hazardous constituents are below the established cleanup goals, which will follow the U.S. Environmental Protection Agency's (USEPA) RSL for lead. The site will then be backfilled with clean soil and graded to match existing contours, ensuring the land remains viable for its intended military industrial use.

- **Coordination with Off-site Receptors and Land Users (BMP):** Prior to execution, IAAAP will formally notify agricultural outlease holders plant-wide. In addition, the Army will notify homeowners within the established 6,269-foot non-essential personnel exclusion zone and recommend the public vacate to ensure the safety of all surrounding land users during the detonation window.
- **Adherence to Established Safety Buffers (BMP):** The Army EOD team will validate that all engineered blast controls ensure blast effects and fragmentation remain strictly within existing ESQD arcs. This prevents the temporary hazard from encroaching on incompatible land uses (such as administrative areas or public roads).
- **Real Property Inventory Update (BMP):** Upon successful completion of all remediation and verification that cleanup goals have been met, the IAAAP Master Plan and Real Property Inventory will be formally updated. This action will be documented as part of the final Closure Certification Report (CCR) submitted to the EPA to formally close out the land use action.

3.3 Air Quality

3.3.1 Definition of the Resource

Air quality is defined by the concentration of various pollutants in the atmosphere, regulated to protect human health and the environment. Under the Clean Air Act (CAA), the EPA established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO2), ozone (O3), particulate matter (PM10 and PM2.5), and sulfur dioxide (SO2). Areas that meet the NAAQS are designated as in "attainment," while areas that exceed the limits are designated as "nonattainment."

3.3.2 Existing Conditions

The IAAAP is located in Des Moines County, Iowa. According to the EPA and the Iowa Department of Natural Resources (IDNR), Des Moines County is currently in attainment for all NAAQS criteria pollutants. The baseline air quality in the region is generally good, influenced primarily by agricultural activities, vehicle traffic, and the existing permitted industrial emissions from IAAAP's manufacturing and LAP operations. The installation operates under a Title V operating permit managed by the IDNR.

As part of the Proposed Action's planning, a formal pre-treatment sampling event will be conducted in accordance with the project's Environmental SAP. This event is designed to collect baseline soil, surface water, and sediment samples to precisely characterize and document the existing environmental conditions at and around the treatment area prior to the action. These baseline data will provide the benchmark against which all post-treatment environmental effects are measured.

3.3.3 Impacts of the No Action Alternative

Under the No Action Alternative, there would be no immediate, planned emissions from a controlled detonation. However, allowing the drums of crystallized lead azide to remain in storage indefinitely creates an unacceptable risk of an accidental, unmitigated explosion. An accidental detonation would result in the sudden, uncontrolled release of vaporized lead, particulate matter, and toxic combustion gases (such as nitrogen oxides and carbon monoxide). Because an accidental blast would occur without meteorological planning or atmospheric modeling, the resulting toxic plume could be trapped by a thermal inversion or carried directly into populated civilian or agricultural areas, potentially violating NAAQS standards and causing severe health impacts.

- Severity Determination**: Moderate to Significant Adverse.** The persistent risk of an uncontrolled, highly toxic atmospheric release presents a significant threat to regional air quality and public health.

3.3.4 Impacts of Alternative 1 (Proposed Action)

Under Alternative 1, the controlled detonation will result in the immediate, short-term generation of air pollutants, primarily lead (Pb) particulates and combustion gases. Preliminary atmospheric modeling was conducted by the Interagency Modeling and Atmospheric Assessment Center (IMAAC) to predict the worst-case dispersion of the blast plume. This model predicts that under certain meteorological conditions, airborne concentrations of pollutants could exceed the Protective Action Criteria (PAC)-1 level, which may cause temporary and reversible discomfort. Crucially, the model shows that even in this worst-case scenario, airborne concentrations will not reach the more severe PAC-2 or PAC-3 thresholds.

The actual impacts are expected to be less than this unmitigated model predicts because the Proposed Action incorporates several specific engineering and operational controls to minimize airborne emissions. These include the use of water cannons or misters to control fugitive dust and the strict adherence to meteorological "No-Go" criteria (e.g., no execution during high winds or temperature inversions), which will be verified by real-time, on-site weather monitoring stations.

While a final, detailed air monitoring plan will be provided under a separate cover as part of the project's Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP), the preliminary analysis confirms that any impacts will be temporary and localized. The event is a single, discrete operation and will not alter Des Moines County's long-term NAAQS attainment status.

- Severity Determination: **Minor Adverse (Short-Term).** The detonation will create a temporary, localized plume with pollutant concentrations that may cause minor,

reversible effects, but will not result in significant health impacts to the public or the environment.

3.3.5 Mitigation Measures and Best Management Practices (BMPs)

To ensure that impacts to air quality are minimized and remain below the threshold of significance, the Army will implement the following mitigation measures:

- **Final Plume Modeling and Mitigation Planning (Mitigation):** Final plume modeling will be conducted incorporating the effects of engineered environmental mitigations. This final model will be used to confirm the "Go/No-Go" criteria and to develop precise, actionable public notification and safety buffer plans.
- **Meteorological Go/No-Go Criteria (Mitigation):** Detonation will only be authorized under optimal meteorological conditions that promote rapid dispersion of the plume. Strict "No-Go" parameters will be enforced, including but not limited to: surface wind speeds exceeding 15 mph, forecasted precipitation, or the presence of a thermal inversion. These conditions will be verified using data from real-time, on-site weather monitoring stations.
- **Fugitive Dust Suppression (Mitigation):** To minimize airborne particulates from ground disturbance, water will be applied via water cannons or misters to wet the ECMs, containment barriers, and adjacent ground surfaces before detonation and during all post-detonation cleanup and remediation activities.
- **Seasonal and Diurnal Execution (BMP):** As required by existing installation permits for open detonation activities, the operation will be restricted to daylight hours during summer/fall months to take advantage of higher atmospheric mixing heights, maximizing the safe upward dispersion of the plume away from ground-level receptors.

3.4 Noise (Acoustics)

3.4.1 Definition of the Resource

Noise is defined as unwanted sound that interferes with normal activities or diminishes the quality of the environment. In accordance with the installation's approved Environmental Noise Management Program (ENMP) Plan, noise from military operations involving explosives is evaluated as high-amplitude impulse noise.

The primary metric for assessing the environmental impact of impulse noise at IAAAP is the C-Weighted Day-Night Level (CDNL), which is used to define the installation's noise zones (LUPZ, Zone II, and Zone III). For single events, such as the Proposed Action, the potential for public annoyance and noise complaints is evaluated using the peak sound pressure level (PK15[met]). Per the ENMP, peak levels below 115

dBP are considered a low risk for complaints, while levels above 130 dBP are considered a high risk of complaints and potential damage.

3.4.2 Existing Conditions

The ambient acoustic environment at IAAAP is characteristic of a heavy industrial military facility situated within a rural, agricultural landscape. Background noise levels are dominated by routine manufacturing operations, heavy vehicle traffic, freight rail movement, and intermittent impulsive noise from existing permitted test firing ranges and demolition grounds, which are managed under the installation's ENMP.

Noise contours for the installation are developed by the Defense Health Agency (DHA)) using the BNOISE2 noise simulation program. According to the most recent Operational Noise Consultation for IAAAP, the existing noise environment is compatible with the surrounding land use. The ENMP shows that the annual average noise zones, including the LUPZ (57-62 dB CDNL) and Noise Zone II (62-70 dB CDNL), remain almost entirely within the installation boundary (**Figure 3-1**). The dense timberland and significant acreage of the installation provide natural attenuation, making the acoustic environment at the installation boundary compatible with the surrounding communities of Middletown and Danville.

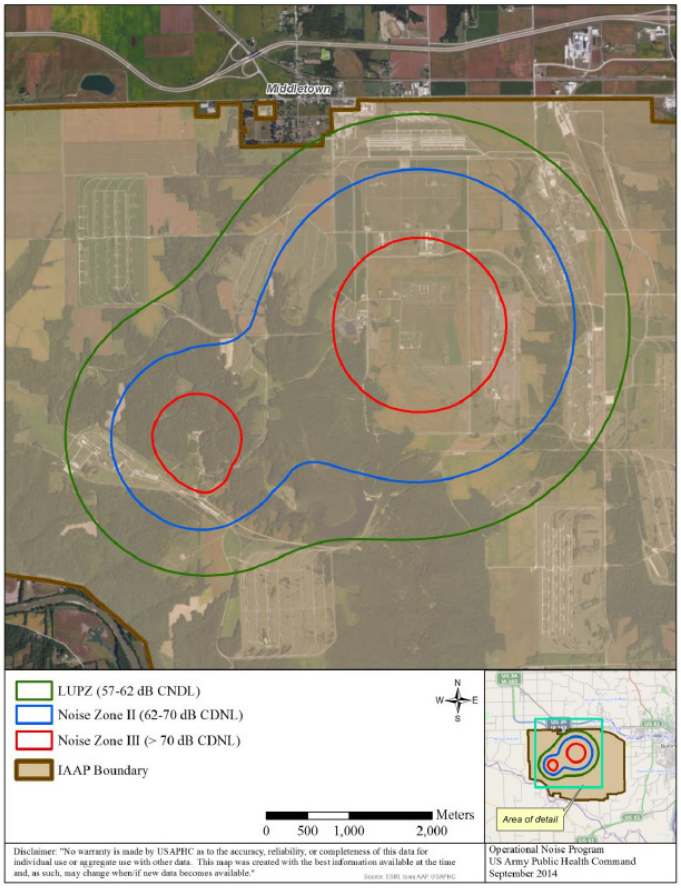


Figure 3-1

3.4.3 Impacts of the No Action Alternative

Under the No Action Alternative, there would be no immediate, planned impulse noise from a controlled detonation. However, the drums of crystallized lead azide would remain in storage, presenting an ongoing risk of an accidental, unmitigated explosion. Because accidental detonation would occur without prior warning or engineered acoustic suppression, the resulting unmitigated blast overpressure and peak decibel levels would likely exceed 140 dBP at the installation boundary. This would cause severe acoustic trauma to on-site personnel and generate significant, unexpected noise complaints and potential structural vibration concerns (e.g., rattling windows) in adjacent civilian communities.

- Severity Determination: **Moderate to Significant Adverse.** The persistent threat of an unmitigated, high-intensity impulse noise event presents a significant risk to the acoustic environment and public welfare.

3.4.4 Impacts of the Alternative 1 (Proposed Action)

Under Alternative 1, the controlled detonation will generate a severe, instantaneous impulse noise event. However, the acoustic impact on the surrounding environment will be highly transient (lasting only fractions of a second) and significantly reduced by multiple engineered and natural features.

The primary acoustic mitigation is the blast containment barriers constructed around each magazine. These barriers, made of lime-fill and sand, are designed to absorb and redirect a significant portion of the initial blast overpressure and acoustic energy. Further attenuation is provided by the natural topography and dense timberland surrounding the treatment area.

While the unmitigated noise at the source would be extreme, the mitigations are designed to reduce the peak impulse noise at the nearest property lines and communities to a level that minimizes the risk of public complaint or structural damage. Because the Proposed Action is a single, planned event, it will not contribute to the annual average C-Weighted Day-Night Level (CDNL) for the installation and therefore will not alter IAAAP's established noise zones.

- Severity Determination: **Minor Adverse (Short-Term).** The event will be audible off-post but is a single, transient event that will not result in a permanent change to the acoustic environment.

3.4.5 Mitigation measures and Best Management Practices (BMPs)

To minimize the impact of the impulse noise on the public and ensure compliance with Army acoustic guidelines, the following measures will be implemented:

- **Public Blast Containment and Acoustic Shielding (Mitigation):** The primary acoustic mitigation is the use of engineered blast containment barriers (lime-fill and sand-filled HESCO barriers) constructed around each magazine. This physical mass is designed to absorb and redirect a significant portion of the initial blast energy and reduce the peak decibel levels that propagate off-site.
- **Execution During Favorable Meteorological Conditions (Mitigation):** In accordance with the ENMP, the detonation will only be executed during "good" meteorological conditions that promote the upward dissipation of sound. The operation will be postponed during "bad" conditions, such as the presence of a low-level temperature inversion or steady winds blowing towards populated areas, which can cause acoustic focusing and increase ground-level noise.
- **Public Notification and Communication Plan (BMP):** A comprehensive, multi-phased communication plan will be executed to notify local communities and emergency responders of the event. This active notification mitigates the "startle effect" and reduces the likelihood of noise complaints. All noise complaints will be managed and documented in accordance with the formal Noise Complaint Management procedures outlined in the ENMP.

3.5 Hazardous Materials and Waste

3.5.1 Definition of the Resource

Hazardous materials are substances that, because of their quantity, concentration, or physical/chemical characteristics, may pose a substantial hazard to human health or the environment when improperly managed. Hazardous waste is a subset of hazardous materials that has been discarded or is no longer fit for its intended use. The management, storage, treatment, and disposal of these substances are strictly governed by the RCRA, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and Army Regulation (AR) 200-1.

3.5.2 Existing Conditions

IAAAP is an active military industrial facility that routinely manages large volumes of hazardous materials and operates as a Large Quantity Generator (LQG) of hazardous waste under multiple RCRA permits.

The existing condition within the project footprint is defined by the presence of drums of crystallized lead azide. While previously categorized as a viable production material, the severe chemical degradation and resulting shock-sensitivity of the azide caused it to be legally reclassified as an unserviceable hazardous waste in March 2026. Due to its hazardous characteristics, the material is assigned the EPA Hazardous Waste Codes D003 (for Reactivity) and D008 (for Toxicity, due to lead content). The material's

immediate instability prevents it from being safely transported off-site for standard disposal, and it is currently managed in place under an emergency RCRA permit framework while a final treatment is executed.

3.5.3 Impacts of the No Action Alternative

Under the No Action Alternative, the drums of highly sensitive lead azide would remain stored in ECMs 1 and 2 indefinitely. This alternative would result in the Army being in persistent, direct violation of RCRA regulations regarding long-term storage and treatment timelines for explosive hazardous waste.

Furthermore, as the material continues to degrade, the risk of accidental detonation increases. An unmitigated explosion would result in the uncontrolled release and scattering of heavy metals (lead), unreacted energetic material, and toxic combustion byproducts across the installation and potentially into the surrounding environment. This would immediately trigger a massive, complex CERCLA (Superfund) emergency response and remediation effort.

- Severity Determination: **Significant Adverse.** The No Action Alternative fails to resolve a serious explosive hazard, guarantees regulatory non-compliance with RCRA, and presents an unacceptable risk of a catastrophic, unmitigated hazardous waste release.

3.5.4 Impacts of the Alternative 1 (Proposed Action)

The Proposed Action is a RCRA-permitted treatment action. Its primary impact is the beneficial destruction of drums of D003/D008 hazardous waste, which permanently eliminates a serious safety hazard.

The controlled detonation will generate a variety of secondary waste streams, which will be managed in accordance with the project's WMP. The primary secondary waste stream will be Demolition Debris (DD), a non-homogeneous mixture of soil, lime-fill, sand from the blast barriers, and concrete from the destroyed ECMs. This DD will be contaminated with lead and residual energetics.

Waste Characterization and Disposal: Immediately following the event, the DD will be systematically sampled and analyzed for total lead and for leachability via the Toxicity Characteristic Leaching Procedure (TCLP).

- If TCLP results are below the regulatory limit for lead (5.0 mg/L), the waste will be managed as non-hazardous solid waste and transported to a licensed solid waste landfill.
- If TCLP results exceed the regulatory limit, the DD will be managed as D008 hazardous waste. The Army may then treat the DD on-site using a chemical

stabilization agent to render it non-hazardous before transporting it to a licensed landfill for final disposal.

Other Waste Streams: Other minor waste streams, such as used Personal Protective Equipment (PPE), will be managed as solid waste and disposed of accordingly. The planned, controlled generation and subsequent characterization, treatment, and disposal of all secondary waste prevent any long-term hazardous waste impact on the environment.

- Severity Determination: **Minor Adverse (Short-Term) to Highly Beneficial (Long-Term).** The short-term impact involves the planned generation and management of secondary waste streams. The long-term impact is highly beneficial as it permanently eliminates a severe, ongoing hazardous waste risk.

3.5.5 Mitigation Measures and Best Management Practices (BMPs)

To ensure the planned generation of secondary hazardous waste is properly managed and does not result in adverse impacts, the Army will implement the following mitigation measures and BMPs:

- **Implementation of Waste Management Plan (Mitigation):** All post-detonation activities will be conducted in strict accordance with the project's formal WMP. This plan governs the characterization, on-site handling, potential treatment (stabilization), and final disposal of all demolition debris and other waste streams to ensure full compliance with RCRA regulations.
- **Execution of Closure Plan (Mitigation):** The physical excavation and site reclamation will follow the approved Treatment Area Closure Plan. This ensures that all contaminated soil and debris are systematically removed to meet the established cleanup goals, and that the site is restored to a condition that is protective of human health and the environment.
- **Personnel Training and Safety Protocols (BMP):** All personnel involved in handling post-detonation debris will have extensive training and will follow the procedures in the Site Health and Safety Plan (HASP). This includes mandatory HAZWOPER certifications and specific training on lead exposure controls, PPE requirements, and decontamination procedures to mitigate risks to workers.

3.6 Water Resources

3.6.1 Definition of the Resource

Water resources encompass surface water, groundwater, floodplains, and wetlands. These resources are critical for ecological sustainment, agricultural irrigation, and human consumption. The management and protection of water resources are governed by the federal Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), and state-level IDNR regulations. For this EA, the analysis focuses on the potential for

hazardous constituents to migrate into surface water bodies via stormwater runoff or leach into underlying groundwater aquifers.

3.6.2 Existing Conditions

The information in this section is summarized from the *Supplemental EA for the Future Artillery Complex (IAAAP, 2023)* and the *2024-2029 INRMP*.

- **Watershed and Surface Water:** IAAAP is located within the Mississippi River watershed. The project area is situated near the headwaters of Long Creek, which drains the western half of the installation south towards the Skunk River. According to the project's SAP, there are several small surface water bodies (ponds and intermittent streams) near the treatment area that will be monitored as part of this action.
- **Groundwater:** The aquifers of primary concern at the installation are the shallow, unconfined surficial (overburden) aquifer and the deeper, uppermost bedrock (Mississippian) aquifer. The permit application notes that groundwater flow in the shallow overburden aquifer typically mimics surface topography, flowing generally south and east. While there are legacy groundwater contamination issues actively managed under other programs elsewhere on the installation, the project area is not located within these known plumes. As a precaution, a limited number of existing monitoring wells upgradient and downgradient of the project site will be sampled to establish baseline groundwater conditions.
- **Floodplains and Wetlands**: The project treatment area is not located within any delineated 100-year floodplains. Based on the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI), there are also no jurisdictional wetlands within the immediate footprint of the two magazines.

3.6.3 Impacts of the No Action Alternative

Under the No Action Alternative, the unserviceable lead azide would remain secured inside the earth-covered ECMs. While this prevents immediate, planned ground disturbance, it allows the explosive hazard to persist.

If an accidental, unmitigated detonation were to occur, the explosive force would destroy the magazine structures and scatter vaporized lead, unreacted azide crystals, and donor explosive residue over a wide, uncontrolled area. Without the benefit of pre-positioned water mitigations or rapid post-blast soil excavation, rainfall events following the accidental explosion would cause heavy metals and highly mobile energetic compounds (like RDX) to rapidly leach into the shallow groundwater and runoff into nearby surface streams (Long Creek/Brush Creek).

- Severity Determination: **Moderate to Significant Adverse.** The No Action Alternative presents a high risk of uncontrolled, unmitigated hazardous material

release, which would likely result in long-term contamination of the installation's surface and groundwater resources

3.6.4 Impacts of Alternative 1 (Proposed Action)

Under Alternative 1, the primary potential pathway for impacts to water resources is the migration of contaminants from soil to surface water via stormwater runoff, or to groundwater via leaching. The treatment is a planned event and involves no direct discharge to any water body.

An Exposure Pathway Analysis was conducted for the Proposed Action as part of the RCRA emergency permit planning process. The analysis concluded that the project design includes several features that inherently limit impacts to water resources. It noted that the existing concrete floors of the magazines will physically hinder the vertical migration of contaminants into the underlying soil. The analysis also considered the engineered blast containment barriers, which are constructed on a massive foundation of lime-fill; the chemical properties of lime are known to increase soil pH, which in turn reduces the mobility and leachability of lead in soil.

Potential impacts from stormwater runoff will be managed through a project-specific Stormwater Pollution Prevention Plan (SWPPP), which mandates the use of erosion and sediment controls. Furthermore, the detonation will be scheduled to avoid periods of heavy precipitation. The potential for long-term impacts is eliminated by the rapid excavation of contaminated soil, which is governed by the project's Treatment Area Closure Plan. Finally, the SAP confirms that post-detonation surface water and groundwater samples will be collected and compared to the established baseline data to verify that no adverse impacts have occurred.

- Severity Determination**: Minor Adverse (Short-Term)**. The potential for impacts is limited by the project design. The rapid excavation of contaminated soil, combined with monitoring and stormwater controls, prevents any long-term degradation of surface water or groundwater quality.

3.6.5 Mitigation Measures and Best Management Practices (BMPs)

To ensure water resources are protected throughout the detonation and cleanup phases, the Army will implement the following measures:

- **Implementation of Stormwater Pollution Prevention Plan (Mitigation):** A project-specific SWPPP will be implemented. This plan requires the installation, inspection, and maintenance of temporary stormwater controls (e.g., silt fencing, earthen berms) down-gradient of the treatment area. This ensures that if precipitation occurs, any potentially contaminated runoff is captured on-site and prevented from reaching surface water bodies.

- **Execution of the Closure Plan (Mitigation):** The most critical mitigation for preventing long-term impacts to water resources is the rapid implementation of the Treatment Area Closure Plan. This plan mandates the timely excavation and removal of contaminated soil, which physically removes the source of potential leachates before they can significantly impact groundwater.

- **Dry Weather Execution (BMP):** The Go/No-Go criteria for the detonation require that there is no forecasted significant precipitation. This BMP minimizes the risk of immediate stormwater runoff mobilizing any surface contaminants before engineering controls and cleanup actions can be completed.

3.7 Utilities and Infrastructure

3.7.1 Definition of the Resource

Utilities and infrastructure refer to the network of systems and physical structures that support installation operations. This includes transportation networks (roads, railways), electrical distribution systems, communication lines (fiber optic, copper), water supply lines, and sanitary/stormwater sewer systems. Impacts are assessed based on the potential for an action to damage existing infrastructure or exceed its operational capacity.

3.7.2 Existing Conditions

IAAAP is supported by a vast network of infrastructure developed over 80 years. This includes approximately 120 miles of roads, 102 miles of railway, and extensive electrical, water, and communication grids that connect the various production lines and storage areas.

The immediate project area (ECMs 1 and 2) is located in a section of the installation with relatively sparse infrastructure. The primary utilities in the vicinity include:

- Gravel and graded-earth access roads leading to the magazine entrances.
- Overhead electrical distribution lines providing power for security lighting and monitoring systems.
- A nearby segment of the installation's extensive internal railway system, used for transporting munitions and materials.
- There are no major water, natural gas, or sanitary sewer trunk lines located in the immediate blast radius of the magazines.

3.7.3 Impacts of the No Action Alternative

Under the No Action Alternative, the unserviceable lead azide would remain stored in the ECMs. This scenario poses a significant threat to the installation's infrastructure.

An accidental, unmitigated detonation would create a powerful blast wave and ground shock. This could sever overhead electrical and communication lines, damage or destroy the adjacent railway spur, and render the magazine access roads impassable. Such an event would trigger widespread operational disruptions and necessitate costly, unplanned emergency repairs to critical infrastructure.

- Severity Determination: **Moderate to Significant Adverse.** The persistent risk of an accidental detonation presents an unacceptable threat of severe, unmitigated damage to the installation's transportation and utility networks.

3.7.4 Impacts of Alternative 1 (Proposed Action)

Under Alternative 1, the controlled detonation will be engineered to minimize damage to surrounding infrastructure. The blast containment barriers are specifically designed to absorb blast pressure and limit the migration of fragments. Furthermore, the barriers include a designated venting area configured to direct the primary blast forces south and southwest, away from more developed installation infrastructure to the north and east.

The most direct and unavoidable impact will be the complete destruction of the two ECMs themselves and the gravel access roads leading directly to them. There remains a minor risk of damage to nearby overhead electrical lines from blast overpressure. However, because the action is planned, these utilities will be de-energized, and repair crews can be pre-staged. The precisely engineered nature of the event, including the barrier design, minimizes risk to the nearby railway line. All damaged access roads will be fully reconstructed as part of the site remediation and closure plan.

- Severity Determination: **Minor Adverse (Short-Term).** The action will cause localized, predictable, and temporary damage to non-critical infrastructure. All damage will be repaired, resulting in no long-term degradation of the installation's infrastructure network.

3.7.5 Mitigation Measures and Best Management Practices (BMPs)

To protect critical infrastructure and ensure rapid restoration of the site, the Army will implement the following measures:

- **Pre-Detonation Utility Isolation (Mitigation):** Prior to execution, all non-essential utilities in the immediate vicinity of the ECMs, particularly overhead electrical lines, will be de-energized. This prevents cascading electrical failures and ensures the safety of all personnel.
- **Engineered Blast Deflection (Mitigation)**: The primary mitigation to protect infrastructure is the use of the engineered blast containment barriers, which include a designated venting area. These barriers are specifically designed to absorb and

redirect the majority of the blast energy in a controlled direction (south and southwest), away from the nearby railway line and other critical infrastructure corridors.

- **Post-Blast Road and Utility Reconstruction (BMP)**: As part of the site restoration plan for Phase 4, all damaged access roads will be completely rebuilt to meet installation needs and standards. Any incidental damage to electrical or communication lines will be repaired by pre-staged utility crews, ensuring a rapid return to full operational status.

3.8 Cultural Resources

3.8.1 Definition of the Resource

Cultural resources include prehistoric and historic archaeological sites, buildings, structures, districts, and objects that are significant in American history, architecture, archaeology, engineering, or culture. The management of these resources is primarily governed by Section 106 of the National Historic Preservation Act (NHPA) of 1966, which requires federal agencies to consider the effects of their undertakings on historic properties. For certain categories of Army infrastructure, NHPA compliance can be achieved programmatically through approved Program Comments.

3.8.2 Existing Conditions

IAAAP has a long history of military munitions production dating back to World War II. As a result, the installation contains numerous historic buildings and structures.

The specific project footprint involves two ECMs, which were constructed in 1940. These structures are considered historic properties. However, under the Program Comment for Army Warfighting Readiness and Associated Infrastructure (91 FR 24249), infrastructure built between 1941 and 1989 is categorized by tiers. The two ECMs are classified as Tier 4 properties (non-National Historic Landmark [NHL] properties), which streamlines NHPA Section 106 compliance for undertakings that affect them.

The Area of Potential Effect (APE) for archaeological resources is limited to the ground that will be disturbed by the detonation and subsequent cleanup. This land has been previously and extensively disturbed by the original ECM construction and decades of associated industrial operations, making the presence of intact, undisturbed archaeological resources highly unlikely.

3.8.3 Impacts of the No Action Alternative

Under the No Action Alternative, the drums of crystallized lead azide would remain stored in ECMs 1 and 2. While this alternative does not involve planned demolition, the escalating instability of the explosive material presents a severe threat. An accidental, unmitigated detonation would result in the sudden, uncontrolled destruction of the ECMs.

Because an accident is an unplanned event, it falls outside standard preservation management protocols.

- Severity Determination: **Minor Adverse.** The No Action Alternative presents a continuous risk of uncontrolled destruction to Tier 4 historic properties.

3.8.4 Impacts of Alternative 1 (Proposed Action)

Under Alternative 1 (Mitigated Controlled Detonation), the deliberate explosive destruction of the lead azide will result in the physical demolition and total loss of ECMs 1 and 2.

While the physical destruction of a historic property is typically considered an adverse effect under the NHPA, regulatory compliance for this specific action has already been completed. NHPA requirements for the demolition of these ECMs are fully addressed under Section 4.2.6 of the Program Comment for Army Warfighting Readiness and Associated Infrastructure.

The Program Comment stipulates that the adverse effects of demolishing Tier 4 properties have been previously mitigated by the Army through extensive existing documentation and the physical preservation of period NHL properties in other locations. Consequently, the demolition of ECMs 1 and 2 is legally compliant, and no further NHPA Section 106 consultation, evaluation, or mitigation is required for the structures. Furthermore, because the subsequent soil excavation (Phase 3/4) will occur in previously disturbed soils within the blast crater, impacts to intact archaeological resources are not anticipated.

- Severity Determination: **None/Negligible.** Because the loss of the Tier 4 structures has already been programmatically mitigated at the national level, the Proposed Action will have no significant unmitigated impact on cultural resources.

3.8.5 Best Management Practices (BMPs)

To ensure continued compliance with Army cultural resource regulations during the cleanup phase, the following measure will be implemented:

- **Inadvertent Discovery Protocol (BMP):** In the highly unlikely event that archaeological materials, cultural artifacts, or human remains are discovered during the post-blast RCRA soil excavation and site restoration (Phases 3 and 4), all earth-moving activities in the immediate vicinity will cease. The Environmental Services contractor will immediately notify the IAAAP Natural/Cultural Resources Manager, who will initiate standard inadvertent discovery procedures in accordance with installation policy and applicable federal laws (e.g., Native American Graves Protection and Repatriation Act [NAGPRA]).

3.9 Biological Resources

3.9.1 Definition of the Resource

Biological resources encompass the native and introduced plants (flora) and animals (fauna) that inhabit the installation, along with their associated habitats. This resource area is heavily regulated under federal statutes, primarily:

- The Endangered Species Act (ESA) of 1973 (16 U.S.C. § 1531 et seq.), which protects threatened and endangered (T&E) species and their critical habitats.
- The Migratory Bird Treaty Act (MBTA), which prohibits the taking of migratory birds, nests, or eggs.
- The Bald and Golden Eagle Protection Act (BGEPA), which protects eagle populations and their nesting sites.

The signed IAAAP 2024-2029 INRMP serves as the primary regulatory and planning document coordinating the installation's military mission with the conservation of these protected biological resources.

3.9.2 Existing Conditions

- **Vegetation and Habitat Classifications**: According to the INRMP, IAAAP contains a diverse ecological landscape of forests, prairies, and agricultural lands. The specific project footprint is located entirely within "Improved Grounds," an area characterized by maintained turfgrass and gravel access roads. This area is directly bordered by "Unimproved Grounds," which consist of mature oak-hickory woodlands that provide habitat for a variety of wildlife.
- **Wildlife**: The installation’s vast undeveloped acreage supports healthy populations of typical Midwestern fauna, including white-tailed deer, wild turkey, and various raptors, small mammals, and reptiles. The Red-headed Woodpecker, a species protected under the MBTA, is a common species on the installation. While not a threatened or endangered species, the Bald Eagle is also frequently observed on post and is protected under the BGEPA.
- **Threatened and Endangered (T&E) Species**: The INRMP and project-specific environmental reviews confirm that several federally listed species are known to occur or have suitable habitat within the installation boundaries. The primary species of concern for this project are forest-dwelling bats. The dense woodlands adjacent to the project area provide suitable roosting and foraging habitat for the following species:
    - Indiana Bat (*Myotis sodalis*): Federally Endangered.
    - Northern Long-eared Bat (*Myotis septentrionalis*): Federally Endangered.

- Tricolored Bat (*Perimyotis subflavus*): Proposed for Federal listing as Endangered.

In addition, the installation's open grasslands support milkweed, the host plant for the Monarch Butterfly (*Danaus plexippus*), a candidate for Federal listing.

3.9.3 Impacts of the No Action Alternative

Under the No Action Alternative, the explosive hazard would remain in storage, presenting an ongoing risk of an accidental, unmitigated detonation.

- **Direct Habitat Destruction:** An accidental detonation would occur without prior fire-suppression staging. Such an explosion could easily ignite a catastrophic forest fire in the adjacent Unimproved oak-hickory woodlands. During the bat active season (April 1 to October 31), a wildfire would result in the direct "take" (mortality) of federally endangered Indiana and Northern Long-eared bats, including non-volant (unable to fly) pups in summer maternity roosts, and destroy critical nesting habitat for migratory birds.
- **Chemical Contamination:** An unmitigated blast would scatter lead and explosive residues over a wide, unmanaged area. Subsequent rainfall would wash these heavy metals into the Brush Creek and Long Creek watersheds, leading to bioaccumulation of lead in the aquatic food web, poisoning fish, amphibians, and insectivorous birds/bats.
- Severity Determination**: Significant Adverse.** The No Action Alternative presents an unacceptable risk of catastrophic forest fire, direct mortality of federally endangered species, and long-term heavy metal bioaccumulation in the local ecosystem.

3.9.4 Impacts of Alternative 1 (Proposed Action)

Under Alternative 1, impacts to biological resources are minimized through the project's design and operational controls.

- **Habitat Alteration**: As part of a coordinated safety and maintenance action within the ammunition storage yard, some brush and trees have been removed to ensure compliance with explosive safety standards. Per the NEPA Record of Environmental Consideration (REC) for this action, all vegetation removal was coordinated with the USFWS to ensure compliance with the ESA, including adherence to time-of-year restrictions that prohibit tree removal when endangered bats may be roosting. Therefore, direct impacts to bat habitat have been avoided.

- **Acoustic Disturbance**: The primary impact to wildlife will be the instantaneous impulse noise from the detonation, which will temporarily startle and displace birds and mammals in the immediate vicinity. This is a transient, short-term effect, and wildlife is expected to return to the area shortly after the event.

- **Chemical Exposure Pathways**: The Exposure Pathway Analysis conducted for this action considered the potential for wildlife to be exposed to contaminants post-detonation. The primary pathway of concern is the incidental ingestion of contaminated soil or bioaccumulation through the food chain. However, this pathway is severed by the planned rapid excavation and removal of contaminated soil, as required by the Treatment Area Closure Plan.
- **Section 7 Consultation Status:** Because all necessary vegetation management was conducted in accordance with time-of-year restrictions and coordinated with the USFWS, the Proposed Action is not likely to adversely affect listed bat species or other T&E species.
- Severity Determination: **Minor Adverse (Short-Term).**

3.9.5 Mitigation Measures and Best Management Practices (BMPs)

To ensure absolute protection of T&E species and adjacent forest habitats during execution, the Army will implement the following measures:

- **Strict Prohibition Adherence to USFWS Conservation Measures (Mitigation):** All vegetation management activities required for the project were conducted in full coordination with the U.S. Fish and Wildlife Service. To avoid impacts to the Indiana Bat and Northern Long-eared Bat, a strict time-of-year restriction was enforced, prohibiting any tree removal during the bat active season (April 1 to October 31).
- **Pre-Staged Fire Suppression (Mitigation):** Due to the proximity of the adjacent woodlands, IAAAP emergency services and fire crews will be pre-staged immediately outside the ESQD safety arc with active water suppression equipment to immediately extinguish any localized grass fires before they can spread to the forest canopy.
- **Rapid Soil Remediation (Mitigation):** The immediate excavation and off-site disposal of the contaminated crater soil is a critical biological mitigation. This prevents lead from leaching into the soil-subsurface where it could be bioaccumulated by soil invertebrates and subsequently enter the diet of local insectivorous birds and endangered bats.

3.10 Socioeconomics

3.10.1 Definition of the Resource

Socioeconomics addresses the basic social and economic characteristics of a community, including population demographics, employment, personal income, housing, and regional economic activity. In the context of military installations, socioeconomic impacts are evaluated by analyzing how changes in installation operations affect the local

workforce, regional defense-industrial spending, and surrounding agricultural economies and public safety.

3.10.2 Existing Conditions

- **Demographics and Population**: IAAAP is located in Des Moines County in Southeast Iowa. According to the U.S. Census Bureau, the population of Des Moines County is approximately 38,910. The installation is bordered by the small, incorporated city of Middletown to the north (population ~318) and the city of Danville to the west (population ~900). The largest economic and residential center in the county is the city of Burlington, located approximately 10 miles to the east (population ~25,000).
- **Regional Economic Activity:** IAAAP is one of the largest employers and primary economic drivers in Des Moines County and the broader Tri-State region. The installation supports hundreds of high-skill contractor and government jobs through its conventional munitions manufacturing and LAP operations.
- **Agricultural Integration**: The regional economy surrounding the installation is heavily anchored in agriculture. Des Moines County contains over 140,000 acres of active cropland, primarily dedicated to corn and soybean production. Within the installation boundary, approximately 6,400 acres of non-industrial buffer zones are managed under active agricultural outleases leased to local civilian farmers.

3.10.3 Impacts of the No Action Alternative

Under the No Action Alternative, the drums of crystallized lead azide would remain stored indefinitely. While the facility is currently operating with the immediate ECM area quarantined, leaving this highly sensitive hazard in place poses a severe, ongoing threat to the installation's economic stability.

- **Workforce and Economic Impacts:** As the material continues to degrade and become more unstable, safety perimeters may eventually need to be expanded, potentially forcing broader, unplanned safety stand-downs that disrupt manufacturing schedules. More critically, an accidental, unmitigated detonation would severely damage adjacent production infrastructure. Such a catastrophic event would abruptly halt defense contracts (such as 155mm artillery shell production), leading to sudden, long-term layoffs for hundreds of local contractor employees and causing severe negative ripple effects throughout the regional retail, housing, and service sectors.
- **Property and Community Impacts:** The persistent, unresolved threat of a major explosive accident could depress local property values in the adjacent communities of Middletown and Danville, reducing the local property tax base that funds municipal services.

- Severity Determination**: Moderate to Significant Adverse**. The No Action Alternative places the regional economy, local employment, and defense-industrial contracts at constant risk of sudden disruption or catastrophic failure.

3.10.4 Impacts of Alternative 1 (Proposed Action)

Under Alternative 1 (Mitigated Controlled Detonation), the Army will implement a planned, temporary facility-wide **access restriction** for all non-essential personnel to ensure maximum safety during the active detonation window.

- **Short-Term Impacts:** The temporary operational pause will cause minor, short-term disruptions to contractor work shifts. There may also be a brief, positive economic impact from the use of specialized off-site contractors for the treatment and remediation activities.
- **Agricultural Protections:** The execution will be managed with strict controls to ensure that any potential blast or plume effects are contained within the installation boundary. Post-detonation soil sampling will be conducted in the agricultural fields closest to the treatment area to verify that no contamination has occurred, ensuring no adverse impacts to local crop yields, farm income, or the viability of the installation's agricultural outleases. Public safety for the surrounding communities will be ensured through a pre-planned notification strategy and the enforcement of a 6,269-foot safety exclusion zone for all non-essential personnel.
- **Long-Term Benefits**: The long-term socioeconomic impact is highly beneficial. By permanently removing a catastrophic hazard in a controlled manner, the Proposed Action secures the long-term viability of IAAAP, protecting the physical plant infrastructure, preserving hundreds of defense manufacturing jobs, and stabilizing the local economy.
- Severity Determination**: Minor Adverse (Short-Term) to Beneficial (Long-Term).** The temporary operational disruption is minor and transient, while the permanent elimination of the hazard secures the economic future of the installation and the surrounding community.

3.10.5 Best Management Practices (BMPs)

To minimize regional economic disruption and coordinate with the local community, the Army will implement the following measures:

- **Comprehensive Public and Stakeholder Communication (BMP):** The Army will execute a proactive, three-phased communication strategy to inform and engage the community, as detailed in the project's Community Engagement Plan.

  - Phase 1 (Pre-Detonation): Will include closed-door briefings for local elected officials and a public open-house to answer questions from residents and the media.
  - Phase 2 (During Detonation): Will involve timely public notifications and media alerts immediately before the event to ensure public awareness and safety.
  - Phase 3 (Post-Detonation): Will include a final news release confirming the successful completion of the action and a follow-up briefing for officials.
- **Agricultural Coordination (BMP):** Installation leadership will coordinate the finalized execution dates with farming tenants to ensure the detonation window does not conflict with peak harvest schedules, preventing any disruption to local farming revenues
- **Rapid All-Clear and Re-Entry (BMP):** A streamlined safety clearance protocol will be established immediately following the detonation sequence to minimize the duration of the operational pause, allowing plant workers to return to their shifts as quickly as possible.

Chapter 4: Findings and Conclusions

4.1 Summary of Environmental Impacts

This Environmental Assessment (EA) has evaluated the potential environmental, socioeconomic, and safety impacts associated with the Proposed Action: the controlled, mitigated detonation of drums of unserviceable, crystallized lead azide at the IAAAP. The analysis compared the impacts of the Proposed Action (Alternative 1) against the No Action Alternative across all relevant resource areas.

The findings of this EA demonstrate that the No Action Alternative presents an unacceptable, persistent, and escalating risk to human health, safety, and the environment. Leaving the chemically unstable lead azide in storage guarantees regulatory non-compliance with the RCRA and creates a constant threat of an accidental, unmitigated detonation. Such an event would result in significant, uncontrolled adverse impacts to air quality, water resources, historic properties, biological resources, and the regional socioeconomic stability of Des Moines County.

Conversely, the analysis confirms that Alternative 1 (Proposed Action) resolves the serious explosive hazard and restores the installation to regulatory compliance. While the controlled detonation will produce severe, instantaneous physical effects (blast overpressure, noise) and generate a localized, short-term release of hazardous constituents (lead particulates and combustion gases), these impacts are heavily mitigated.

By implementing strict operational controls, including atmospheric plume modeling, meteorological Go/No-Go criteria, phased RCRA soil excavation, and execution within established ESQD arcs, the severity of all adverse environmental impacts is reduced to Minor (Short-Term) or None/Negligible. Furthermore, the action yields a Beneficial (Long-Term) impact on Land Use, Human Health and Safety, and Socioeconomics by permanently eliminating a catastrophic threat and restoring the military industrial capacity of IAAAP.

4.2 Conclusion and Recommendation

Based on the comprehensive analysis contained within this EA, and in accordance with the Council on Environmental Quality (CEQ) regulations (40 CFR 1501-1508) and DoW NEPA Implementing Procedures (September 2026), the Army concludes that the Proposed Action will not result in significant impacts to the human or natural environment, provided that all identified mitigation measures are strictly implemented and monitored.

The implementation of the Proposed Action does not constitute a major federal action significantly affecting the quality of the human environment. Therefore, the preparation of an Environmental Impact Statement (EIS) is not required.

It is the recommendation of this assessment that the Commander, Iowa Army Ammunition Plant, approves the Proposed Action and signs a Mitigated Finding of No Significant Impact. The Mitigated FONSI will formally bind the Army and its contractors to execute the specific environmental, acoustic, and atmospheric mitigation measures defined in this EA, ensuring full compliance with the National Environmental Policy Act and all applicable federal and state regulations.

Chapter 5: References

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