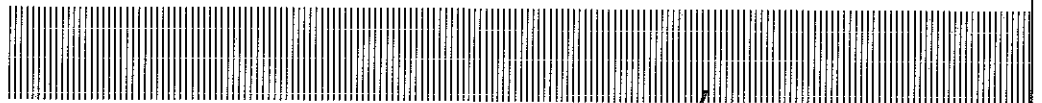

Iowa Army Ammunition Plant (IAAAP) Environmental Assessment for the Implementation of actions to Relocate Production Operations from MLAAP to IAAAP as Proposed by Contract Number W52P1J-09-E-0001 awarded to American Ordnance LLC

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Acronyms Used in the Report

ACHP	Advisory Council on Historic Preservation
AO	American Ordnance LLC
ARMS	Armament Retooling and Manufacturing Support
BA	Biological Assessment
BERA	Baseline Ecological Risk Assessment
BMPs	Best Management Practices
BMWW	Burlington Municipal Waterworks
BNSF	Burlington Northern Santa Fe Railway Company
BRAC	Base Realignment and Closure
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH	Cyclonite Hexogen
CHPPM	U. S. Army Center for Health Promotion and Preventative Medicine
CP	Conservation Plan
CSD	Community School District
EA	Environmental Assessment
ENMP	Environmental Noise Management Program
EO	Executive Orders
EPA	Environmental Protection Agency
ERDC-CERL	Engineer Research and Development Center- Construction Engineering Research Laboratory (U.S. Army Corps of Engineers)
FEMA	Federal Emergency Management Agency
FIRMs	Flood Insurance Rate Maps
FNSI	Finding of No Significant Impact
GOCO	Government Owned, Contractor Operated
IAAAP	Iowa Army Ammunition Plant
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
LAP	Load, Assemble, and Pack
MICLIC	Mine Linear Clearing Line Charge
MLAAP	Milan Army Ammunition Plant
mm	Millimeter
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
RDX	Royal Demolition Explosive
ROI	Region of Influence
SHPO	Iowa State Historic Preservation Office
TNT	Trinitrotoluene
USACE	U.S. Army U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service

Executive Summary

ES-1 Introduction

The Department of the Army conducts periodic reviews of the competitive status of Army Government-Owned, Contractor-Operated (GOCO) ammunition plants to determine if it is in the best interest of the Government to compete production operations in accordance with the requirements of the Competition in Contracting Act. At Iowa Army Ammunition Plant (IAAAP) and Milan Army Ammunition Plant (MLAAP), market research determined that the private sector expressed sufficient interest in these plants. The Army decided to generate a competitive request for proposal and conduct a formal source selection for operation of IAAAP and MLAAP.

The U.S. Army Joint Munitions Command, (JMC) issued a competitive best-value request for proposal, number W52P1J-06-R-0201, in February 2008 for award of a contract to the contractor whose proposal to operate and maintain both the Iowa and Milan Army Ammunition Plants (AAPs) represented the best value to the Government based upon the criteria set forth in the request for proposal. As part of that Best Value approach, all offerors submitted Optimization Plans for the operation, maintenance, and utilization of the AAPs. In an effort to achieve cost reduction, increase flexibility utilization and competitiveness to satisfy the objectives of the JMC, contractors prepared Optimization Plans that outlined proposals for achieving the objectives for the MLAAP in Milan, Tennessee and the IAAAP in Middletown, Iowa. American Ordnance LLC (AO), submitted an Optimization Plan in accordance with the requirements of the request for proposal. As part of that Optimization Plan, AO proposed to relocate production of munitions and subassemblies to IAAAP currently produced at MLAAP including the 40-millimeter (40mm) family of munitions, M112 Demo Block, Mine Clearing Line Charge (MICLIC), Spider, 60mm and 81mm Mortars (Mortars), and mortar components. The Joint Munitions Command selected this approach as the Best Value.

The Proposed Action involves transfer of the following current production operations from MLAAP to IAAAP: (1) 40mm family of munitions, (2) M112 Demo Block, (3) MICLIC, (4) Spider, (5) Mortars and (5) mortar components. Some production equipment presently located at MLAAP will be moved to IAAAP. Production Lines 1 and 3 at IAAAP will be remodeled to accommodate the new production operations. Construction of a test range for 40mm ammunition is required as part of the Proposed Action. This Proposed Action supports the Army's decision to provide sustainment level logistics by synchronizing acquisition, logistics, and technology support. The purpose and need for the Proposed Action is to enhance the ability of IAAAP to fulfill its military support mission by providing the capabilities to support modern national defense

requirements and to satisfy the objectives of the U.S. Army by cost reduction, increased flexibility, increased installation utilization and more competitive operations.

ES-2 Description of Proposed Action and Alternatives

Proposed Action (AO Baseline Optimization Plan)

The Proposed Action is intended to achieve cost reduction, revenue generation and consolidation of production operations required to sustain an operations and maintenance contract. The plan for sustaining an operations and maintenance contract is outlined in the AO Baseline Optimization Plan and proposes the following:

Relocate 40mm family of munitions, M112 Demo Block, MICLIC, Spider, Mortars, and mortar components functions to IAAAP.

To accomplish the recommendations of the Baseline Optimization Plan, AO will offer MLAAP employees employment opportunity at IAAAP as requirements materialize. The contractor will continue demilitarization of conventional munitions at MLAAP. The Baseline Optimization Plan will convert MLAAP into a munitions and commercial distribution facility that retains a load-assemble-pack (LAP) capability for recapitalization, renovation and surge requirements. In addition, the contractor will continue to accept bids for lease space within the current MLAAP munitions lines to promote use of under-utilized installation facilities and provide additional employment in accordance with the provisions of the ARMS Initiative, 10 United States Code (USC) sec. 4551, et seq.

Any impacts that the Proposed Action may have on the natural environment at IAAAP would be negligible to minor. During the proposed remodeling of Lines 1 and 3 at IAAAP, and construction of the new test fire range, *de minimus* increases in air emissions from fugitive dust and construction vehicle exhaust emissions are expected. The air emissions that would be generated by the production and test firing of the incoming munitions production would cause *de minimus* impacts to air quality and are not expected to collectively exceed federal air quality thresholds. Construction-related noise would be temporary, and the levels are expected to be negligible or not audible off post. Based on the number of additional test fires that would be conducted, noise levels at the current firing site would not increase significantly from the current IAAAP test fire operations. The addition of the 40mm Test Range will create additional noise at low decibels (below 57 decibels based on studies completed in February 2010). Remodeling of Lines 1 and 3 would have minor impacts on soil during construction. The soil around the buildings is already disturbed and the proposed construction will have no impact on historic or cultural resources. The areas to be remodeled have been investigated by Army Restoration Programs and have been or are being addressed. Sediment and erosion controls would be implemented during construction to prevent any indirect impacts to surrounding soil or surface waters. Construction activity that occurs on the facility

exteriors may have a minor, temporary impact on vegetation, which consists mostly of mowed grass and landscaping vegetation. After construction is completed, any affected areas would be restored and re-vegetated as needed. The demolition and removal of structures on the installation would have negligible effects on cultural resources.

Construction of a perimeter fence for the 40mm Test Range would require monitoring and other mitigation measures based on the consultations with the U.S. Fish and Wildlife Service (USFWS), Iowa State Historic Preservation Office (SHPO), U.S. Army Corps of Engineers (USACE), Environmental Protection Agency (EPA) and Iowa Department of Natural Resources (IDNR) to reduce and avoid any impact to threatened and endangered species, archaeological resources, wetlands and on-going environmental remediation actions. The establishment and operation of staging areas for the remodeling, as well as general construction noise may temporarily disturb wildlife. The immediate areas around the test range provide poor to moderate quality wildlife habitat. Any disturbance experienced by wildlife would be limited to the construction period and is expected to be minimal.

Consultations with the USFWS, SHPO, USACE, IDNR, and EPA began in 2010 and are complete. Consultation discussions were documented and include recommended mitigation plans pursuant to the National Historic Preservation Act (NHPA), the Clean Water Act (CWA), and the Endangered Species Act (ESA). The results of these consultations provide a clear set of recommendations which led to agency approval of construction permits. A Wetland Delineation and Threatened/Endangered Species Study was completed in 2010 for the proposed test range area (EarthView Environmental, LLC, 2010). A Wetland Mitigation Plan was prepared for USACE (EarthView Environmental, LLC, 2010). The Wetland Mitigation plan was approved by USACE on October 25, 2010. The archaeological study was completed for the areas where soil would be disturbed (Bear Creek Archeology, Inc, 2010). A Biological Assessment was prepared for USFWS to ensure that the mitigation actions pursued avoid and reduce any potential impacts to the Indiana Bat and other wildlife (Stantec Consulting Services, Inc, 2010). The USFWS approved the Biological Assessment on November 9, 2010. SHPO provided concurrence with a determination of “No Historical Properties Adversely Affected” on July 7, 2010.

Agency consultation determined that any impact that the Proposed Action may have on the natural environment at IAAAP would be negligible to minor. All land at the IAAAP is classified for industrial use. The new production and test range activities are very similar to activities currently in progress at IAAAP and would not require any change in land use designation. The remodeling of Lines 1 and 3 would not have a significant impact on the structural integrities of the facilities. Remodeling of the facilities would temporarily increase traffic at IAAAP during the construction period; however, the projected increase in traffic is not expected to burden the road system in or around the installation significantly. All hazardous waste generated by the production process would

be managed, stored, and disposed of in accordance with Resource Conservation and Recovery Act (RCRA) regulations and with hazardous materials management plans implemented at IAAAP. As part of the Proposed Action, IAAAP would not need to upgrade the existing waste treatment system to treat the waste streams generated by the incoming munitions functions. AO would obtain necessary permits for the management of hazardous wastes generated by the incoming munitions. A summary of the consequences of the Proposed Action and No Action Alternatives is presented in Table 5-1.

Construction of the 40mm Test Range would have minor effects on wetlands and wildlife. This impact is the result of the permanent disturbance of less than a half-acre of wetlands and removal of a limited number of trees to construct the perimeter fence. Mitigation for this proposed disturbance includes .035 acres of wetlands restoration and planting 5.7 acres of replacement trees.

The demolition and removal of structures and construction of the 40mm Test Range on the installation would have negligible effects on cultural resources. An archeological study has been performed and consultation with SHPO and affected Federally Recognized Tribes has been completed resulting in concurrence to proceed. Construction of a perimeter fence for the 40mm Test Range would require monitoring for evidence of artifacts and other measures to reduce and avoid any impacts to archaeological resources.

Construction of a perimeter fence for the 40mm Test Range would require monitoring and coordination with USFWS to reduce and avoid impacts to the Indiana Bat. The establishment and operation of staging areas for the remodeling, as well as general construction noise may temporarily disturb wildlife. The immediate areas around the new test range provide poor to moderate quality wildlife habitat. Any disturbance experienced by wildlife would be limited to the construction period and is expected to be minimal. The operation of the new range is projected to have a minor impact on wildlife during testing. The U.S. Army Center for Health Promotion and Preventative Medicine (CHPPM) noise contours indicate this will have less impact than the current testing at the existing Firing Site area.

The construction, remodeling and operation of the facilities would have little potential to interact with any past, present, or reasonably foreseeable future actions at or outside IAAAP. Coordination meetings and discussions with the Installation Restoration Program (IRP) and Formally Utilized Sites Remedial Action Program (FUSRAP), Environmental Compliance (EC) and Military Munitions Remediation Program (MMRP) have been accomplished to ensure that any environmental program concerns are addressed. Remedial Investigations and environmental cleanup activities in the vicinity of the project continue; therefore coordination with these programs will continue throughout the construction and implementation phases of the Optimization Plan.

Alternatives Not Selected

The Army considered other competitors' optimization plans. These plans were not selected. Due to the competitive nature of this activity and the proprietary and business sensitive information involved, which is information prohibited from release by 18 USC 1905 and the Freedom of Information Act (FOIA), details of these alternatives cannot be released. These alternative proposals were determined not to be in the best interest of the Joint Munitions Command, based on a best value evaluation of these plans. For this reason, these alternatives were eliminated from further study in the EA.

Three other potential locations for the 40mm Test Range were initially considered but subsequently eliminated from further evaluation because of the anticipated noise levels generated from activities on these sites and the close proximity of these sites to the installation boundary.

No Action Alternative

The National Environmental Policy Act (NEPA) requires consideration of a No Action Alternative to the Proposed Action. Under the No Action Alternative, there would be no changes made to the IAAAP facilities or mission.

ES -3 Environmental Consequences

Proposed Action

Under the Proposed Action, there would be no significant adverse direct, indirect, or cumulative impacts to any environmental, cultural, physical, or socioeconomic resource. Some mitigation measures are necessary due to the permanent disturbance of less than a half-acre of wetlands and the removal of some trees. These activities, however, are not deemed to be more than minor effects and will be mitigated by proposed wetlands restoration and reforestation projects approved by USACE and USFWS.

No Action Alternative

The No Action Alternative has no significant adverse direct, indirect, or cumulative impacts on the resources evaluated in this EA. An Army determination not to implement the Optimization Plan in Contract W52P1J-09-E-0001, however, could create cost increases for munitions and production delays. This would potentially result in an increased loss of jobs at both Milan and IAAAPs, and delay in munitions production.

ES-4 Conclusions

This Proposed Action will have minimal and temporary effects upon the environment and long-term positive effects on socioeconomics of the region surrounding IAAAP.

1. Purpose, Need and Scope

1.1. Introduction

The U.S. Army Joint Munitions Command (JMC) issued a competitive best-value request for proposal, W52P1J-06-R-0201, in February 2008 for award of a contract to the contractor whose proposal to operate and maintain both Iowa Army Ammunition Plant (IAAAP) and Milan Army Ammunition Plant (MLAAP) represented the best value to the Government based upon the criteria set forth in the request for proposal. Best Value as defined in FAR 2.101 means the expected outcome of an acquisition that, in the Government's estimation, provides the greatest overall benefit in response to the requirement. As part of that Best Value approach, all offerors were required to submit Optimization Plans for the operation, maintenance and utilization of the IAAAP and MLAAP. In an effort to achieve cost reduction, increase flexibility and increase utilization and competitiveness to satisfy the Army objectives American Ordnance, LLC (AO) prepared a Baseline Optimization Plan that outlined a plan for achieving the objectives for the MLAAP in Milan, Tennessee, and the IAAAP in Middletown, Iowa. As part of that Optimization Plan, AO will relocate production of munitions and subassemblies currently produced at MLAAP, including the 40mm family of munitions, M112 Demo Block, Mine Clearing Line Charge (MICLIC), Spider, 60mm and 81mm Mortars (Mortars), and mortar components, to IAAAP. The Army selected this proposal as the Best Value.

The Best Value proposal selection process is described in Federal Acquisition Regulations (FAR) Part 15¹. FAR Part 15 prescribes policies and procedures governing competitive negotiated acquisitions. The procedures set forth in FAR Part 15 are intended to minimize the complexity of the request for proposal, the evaluation, and the source selection decision, and maintain a selection process designed to foster an impartial and comprehensive evaluation of offerors' proposals that results in the selection of the proposal that represents the best value to the Government.

The Army evaluated proposals submitted in accordance with Section L of request for proposal W52P1J06-R-0201² and made an award determination after appropriate consideration of each of the evaluation factors. The Criteria evaluated were: (1) Business and Management Approach, (2) Technical Approach, (3) Past Performance, (4) Small Business Utilization, and (5) Price. The Business and Management Approach, Technical Approach, Past Performance, Small Business Utilization, and Price factors were

¹ Appendix C contains all language of FAR Part 15 to describe this process.

² Appendix D contains all language of L and M of Request for proposal W52P1J06-R-0201.

evaluated utilizing a trade-off process. These criteria were rated in an adjectival and narrative manner. The Army reserved the right to make an award to a bidder that was not the lowest cost offeror. Business and Management Approach was significantly more important than Technical Approach, Technical Approach was more important than Price, Price was more important than Past Performance, and Past Performance was more important than Small Business Utilization. When combined, all evaluation factors other than Cost or Price were significantly more important than Cost or Price. Although Price was not the most important element, it could become a controlling factor, as offers under the non-cost factors may tend to equalize. After consideration of any appropriate tradeoff between all the evaluation criteria, the Army selected the offeror whose proposal provided the best value.

The Army made an award to the same offeror for a facilities contract, requirements contract for product, and a Basic Ordering Agreement for other services that were separately priced.

1.2. Purpose and Need for Proposed Action

The Proposed Action supports the Army's need to provide sustainment level logistics by synchronizing acquisition, logistics, and technology support. This Proposed Action will optimize operation, maintenance, and utilization of the AAPs. This will achieve cost reduction, increase flexibility, increase utilization and competitiveness to satisfy the objectives of the U.S. Army Joint Munitions Command. Details of the Proposed Action are provided in Sections 2.1 and 3.1.

1.3. Scope of Analysis

This Environmental Assessment (EA) was developed in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended, NEPA implementing regulations found in *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*, 40 CFR Parts 1500 through 1508 (President's Council on Environmental Quality [CEQ], 2002), and *Environmental Analysis of Army Actions*, 32 CFR 651 (Office of the Deputy Assistant Secretary of the Army, 2002). The action under review is the proposal to transfer selected production operations and equipment from MLAAP to IAAAP and construct or modify facilities at IAAAP to support the transferred production mission. The Proposed Action does not include the contract award to AO for continuing operation and maintenance of MLAAP and IAAAP. The intent of the EA was to identify the environmental and socioeconomic impacts of relocating munitions and subassembly functions to IAAAP to sustain an operations and maintenance contract. Its purpose is to inform decision makers and the public of the likely environmental consequences of the Proposed Action and alternatives. The IAAAP is a Government-Owned/Contractor, Operated (GOCO) ammunition Load, Assemble, and Pack (LAP) facility located in Des Moines County, near Middletown, Iowa.

This EA identifies, documents, and evaluates the effects of relocating the production of 40mm family of munitions, M112 Demo Block, MICLIC, Spider, Mortars, and mortar components from MLAAP to IAAAP. Potential impacts to the natural and human environment associated with minor construction to remodel existing production lines, replace or repair deteriorating facilities, LAP operations proposed to accommodate incoming functions, and construction of 40mm Test Range are considered in this EA.

This EA does not include the effects of the Proposed Action at MLAAP. These effects were studied separately in an EA prepared for MLAAP. This was appropriate because the two places are so far from each other that there is no common region of influence for impacts. Even though the Proposed Actions are connected within the meaning of 30 CFR §1508.25, the Army determined that it would serve no purpose to combine the actions proposed at MLAAP and IAAAP in one document and could even cause confusion to local communities.

1.4. Agency and Public Participation

The Army invites public participation in the evaluation of the proposed federal action through the NEPA process. The purpose of public participation is to present an opportunity for all interested parties to provide comments and additional information, promote open communication and effectuate better decision making. All agencies, organizations, and members of the public with interest in the Proposed Action, including minority, low-income, disadvantaged, and Native American groups, are urged to participate in the decision making process. The following agencies were consulted during the preparation of this EA: U. S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), Environmental Protection Agency (EPA), Iowa Department of Natural Resources (IDNR) and Iowa State Historic Preservation Officer (SHPO) (Appendix A).

Public participation with respect to this EA and decision making on the Proposed Action are guided by 32 Code of Federal Regulations (CFR) Part 651. The EA will be available for a 30-day public review. The public review period will be announced in public notices published in the *Burlington Hawk Eye*, Burlington; *Mount Pleasant News*, Mount Pleasant, Iowa; *Daily Democrat*, Fort Madison, Iowa newspapers (Appendix B). Copies of the EA will be available for public review during the review period at Burlington Public Library, 210 Court Street, Burlington, Iowa; Fort Madison Public Library, 1920 Avenue E, Fort Madison, Iowa; Mount Pleasant Public Library, 307 East Monroe, Suite 101, Mount Pleasant, Iowa and on the following website www.jmc.army.mil/iowa-ea.pdf. All questions or comments should be directed to Iowa Army Ammunition Plant, Middletown, Iowa 52638 ATTN: Environmental Assessment or email Rock-amsjm-pa@us.army.mil.

1.5. Relevant Statutes and Executive Orders

The decision to proceed with the Proposed Action is based on numerous factors which include: mission requirements, schedule, availability of funding, and environmental considerations. Environmental considerations include relevant statutes (and their implementing regulations) and Executive Orders (EOs) that establish standards and provide guidance on environmental and natural resources management and planning. These statutes include the Clean Air Act (CAA); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); Clean Water Act (CWA); Noise Control Act; Endangered Species Act (ESA); Migratory Bird Treaty Act (MBTA); National Historic Preservation Act (NHPA); Archaeological Resources Protection Act (ARPA); Resource Conservation and Recovery Act (RCRA); and Toxic Substances Control Act (TSCA).

Executive Orders relevant to the Proposed Action include EO 11988 (*Floodplain Management*), EO 11990 (*Protection of Wetlands*), EO 12088 (*Federal Compliance with Pollution Control Standards*), EO 12580 (*Superfund Implementation*), EO 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), EO 13045 (*Protection of Children from Environmental Health Risks and Safety Risks*), EO 13175 (*Consultation and Coordination with Indian Tribal Governments*), EO 13186 (*Responsibilities of Federal Agencies to Protect Migratory Birds*) and EO 13423 (*Strengthening Federal Environmental, Energy, and Transportation Management*).

These authorities are addressed in various sections throughout this EA when relevant to particular environmental resources and conditions. The full text of the laws, regulations, and EOs is available on the Defense Environmental Network & Information Exchange Web site at <http://www.denix.osd.mil>.

1.6. Impact Analysis Performed

This EA identifies, documents, and evaluates the effect of relocating production of munitions and subassemblies currently produced at MLAAP to IAAAP, remodel Line 1 and Line 3 and construct the 40mm Test Range at IAAAP.

An interdisciplinary team of environmental scientists, biologists, agronomists, planners, economists, and military technicians analyzed the Proposed Action and alternatives in consideration of existing conditions and identified relevant beneficial and adverse effects associated with the action. The information for this EA was based upon documents

recently prepared for IAAAP that include: (1) 2007-2011 Integrated Natural Resources Management Plan (INRMP), (2) 2007 Final Environmental Assessment, *Implementation of Base Realignment and Closure (BRAC) Actions at IAAAP*, (3) Site Construction and

Management Plan for the 40mm Test Range at the Iowa Army Ammunition Plant, (4) IRP documents and maps of the facility, (5) 2010 Wetlands Study, (6) Endangered Threatened Species Report, (7) 2010 Archeological Survey Report, and (8) 2010 Biological Assessment for IAAAP.

The Proposed Action is addressed in Section 2.0. Alternatives, including the No Action Alternative, are addressed in Section 3.0. Existing conditions, considered to be the baseline conditions, are described in Section 4.0, Environmental Conditions and Consequences. Section 4.0 also addresses the expected effects of the Proposed Action, to include any cumulative effects, and addresses where appropriate the mitigation measures that would be taken to implement the proposed Action. Section 5.0 presents the conclusions of the analyses.

2. Description of the Proposed Action

2.1. Introduction

Strategic Industrial Transformation is essential to the maintenance of the munitions industrial base and is critical to the Army's ability to execute the National Defense Plan. Strategic Industrial Transformation is a vital component of industrial preparedness necessary to meet emerging requirements of the Joint Warfighter. The four Army objectives for Government Owned Contractor Operated (GOCO) facilities are:

1. Minimize the cost of operations to the Army throughout the life of the contract
2. Enable the site(s) to support maximum operator contract or flexibility in adapting to requirements (volumes, technology, obsolescence, etc.)
3. Maximize the utilization of on-site Army assets (facilities, equipment, etc.)
4. Enable the operating contractor to successfully compete for business in the open market (ammunition or non-ammunition), without any Army workload.

The intent of the Proposed Action is to achieve cost reduction, revenue generation and consolidation of production operations necessary to sustain an operations and maintenance contract. The plan for sustaining an operations and maintenance contract is outlined in the Baseline Optimization Plan of Contract W52P1J-09-E-0001 which states: "Milan Army Ammunition Plant (MLAAP), TN: Relocate 40mm family of munitions, M112 Demo Block, MICLIC, Spider, Mortars, and mortar components functions to IAAAP, Middletown, IA."

This Baseline Optimization Plan was conceived and developed by AO in response to Army objectives. These objectives include achievement of an optimal balance between cost effectiveness, flexibility, utilization, and retention of critical capabilities. The focus of the Baseline Optimization Plan is on cost reduction, consolidation of production operations, and revenue generation. This action is consistent with the 2005 Base Realignment and Closure Act (BRAC) recommendations.

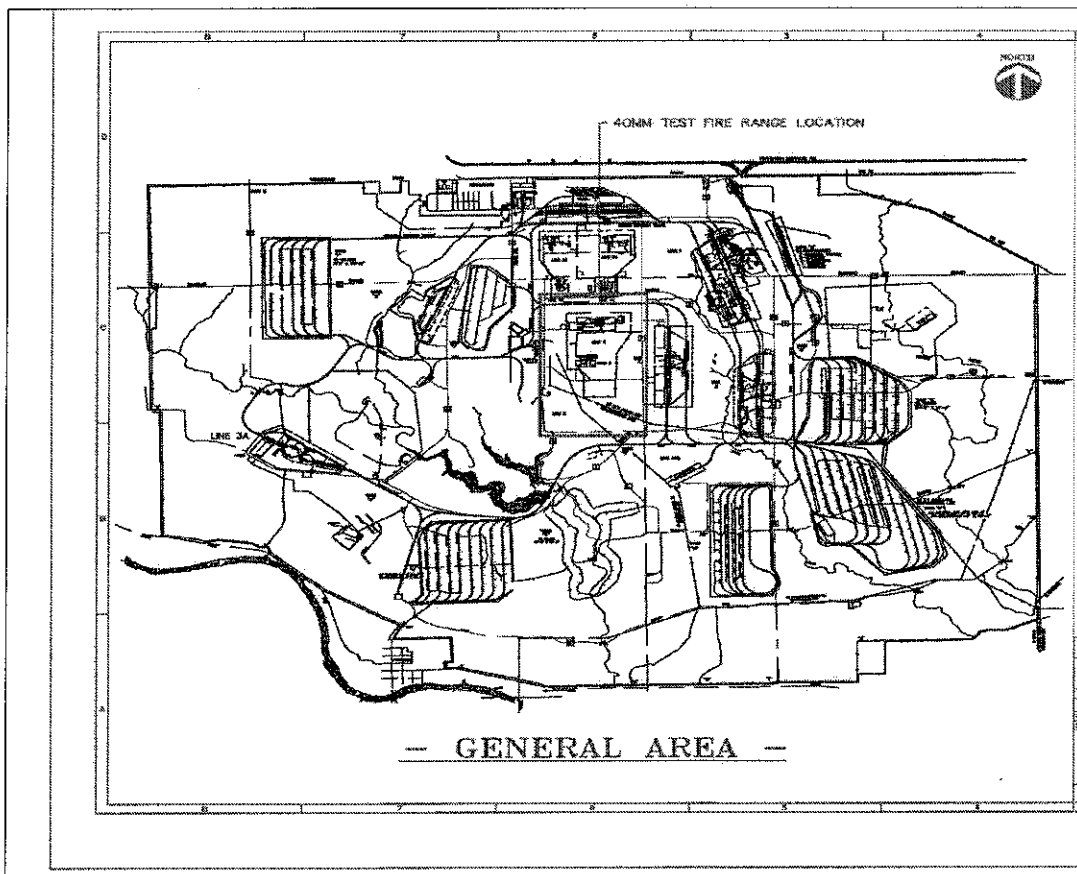
2.2. Proposal Implementation

Components of the Proposed Action include transfer of current production operations and testing where required for 40-millimeter (40mm) family of munitions, M112 Demo Block, MICLIC, Spider, Mortars, and mortar components, to IAAAP. Testing required for items other than 40mm grenades will be conducted at the existing IAAAP Test Fire Site. In addition, the Proposed Action will include construction of a 40mm Test Range at construction of a 40mm Test Range at IAAAP. The 40mm Test Range is depicted in

Figure 2.1. Some production equipment currently located at MLAAP will be moved to IAAAP.

The movement of these production operations will be in a phased approach. Interdisciplinary teams consisting of technicians, specialists, and managers from the Army and the contractor will work to ensure that the projects meet necessary objectives and receive Agency and Army approvals. These transition teams will oversee and coordinate equipment transfer and production optimization, and establish a fully operational 40mm Test Range. Surge capability for medium caliber, artillery, and mortar munitions LAP will remain at MLAAP.

**Figure 2-1:
New 40mm Test Fire Range at IAAAP**



3. Alternatives

This section presents the Army alternatives to the Proposed Action. This section also defines the No Action Alternative. The NEPA requires the proponent to consider alternatives to the Proposed Action. To provide an objective evaluation, alternatives must be reasonable. Alternatives must be reasonably foreseeable and adequately defined for decision making (any necessary preceding events having taken place), affordable, capable of implementation, and capable of meeting the purpose of and need for the action. The following discussion identifies alternatives considered by the Army and determines whether they are reasonable and subject to detailed evaluation in this EA.

3.1. Remodel and New Construction Alternative (Preferred Alternative)

In an effort to achieve cost reduction, revenue generation and consolidation of production operations needed to sustain an operations and maintenance contract as required by the JMC, AO prepared and submitted a Baseline Optimization Plan. The Army reviewed the AO proposal in accordance with FAR Part 15 and awarded the contract to AO to execute the Baseline Optimization Plan. Under the Baseline Optimization Plan, the contractor will relocate production of munitions and subassemblies currently produced at MLAAP, including the 40mm family of munitions, M112 Demo Block, MICLIC, Spider, Mortars, and mortar components, to IAAAP. The production items will be installed in the remodeled Lines 1 and 3. The 40mm Test Range, located as depicted in Figure 2, would require approximately 430 acres of existing agricultural land. The Optimization Plan will consolidate munitions productions at IAAAP and reduce costs associated with security, energy needs and production. The Optimization Plan will optimize management and production and reduce the overall cost of Army munitions.

3.2. Alternatives Considered but Eliminated from Further Study

On April 29, 2008, the Army commenced evaluation of all proposals submitted in response to the request for proposal issued on February 25, 2008. The Army evaluated proposals in accordance with the criteria set forth in the request for proposal. The Army made a final selection after evaluation of these plans in accordance with the requirements of FAR part 15 and request for proposal W52P1J-06-R-0201. The Army determined that that the Proposed Action was the Best Value offer based upon the selection criteria set forth in request for proposal W52P1J-06-R-0201. Release of information or documentation regarding the alternative proposals submitted by other offerors in response to request for proposal W52P1J-06-R-0201 is prohibited by the Federal Trade Secrets³ Act and Procurement Integrity Act⁴.

The Army initially considered three other locations at IAAAP for the construction of the 40mm Test range, but eliminated them from further consideration as reasonable alternative sites after determining that the noise produced on these sites would cause an unnecessary disturbance to potential receptors off the installation.

3.3. No Action Alternative

The National Environmental Policy Act (NEPA)⁵ requires consideration of a No Action Alternative to the Proposed Action.

Under the No Action Alternative, IAAAP would not manufacture the munitions items currently produced at MLAAP which include 40mm munitions, M112 Demo Block, MICLIC, Spider, Mortars and mortar components. Iowa Army Ammunition Plant would not remodel any of its facilities to accommodate the relocation of munitions functions and would not construct a 40mm Test Range described in the Baseline Optimization Plan. The No Action Alternative would constitute continuation of the current IAAAP operations.

The No Action Alternative was evaluated in terms of Business and Management factors, Technical factors, Past Performance, and Cost factors. The No Action Alternative failed to achieve the necessary goals of the Army in these areas. The U.S. Army's four stated objectives for GOCO facilities are: (1) minimize the cost of operations to the U.S. Army throughout the life of the contract; (2) enable the site(s) to support operator contract or flexibility in adapting to requirements; (3) maximize the utilization of on-site U.S. Government assets; and (4) enable the operating contractor to successfully compete for business in the open market (ammunition or non-ammunition), without any Army workload. Consequently, the Army determined that the No Action Alternative did not meet the goals for operation of MLAAP and IAAAP.

³ 18 U.S.C. § 1905 et seq.

⁴ 41 U.S.C. § 423 et seq.

⁵ 42 U.S.C. § 4321 et seq.

4. Environmental Conditions and Consequences

4.1. Introduction

This section describes the existing environmental and socioeconomic conditions potentially affected by the Proposed Action, as well as the potential environmental and socioeconomic impacts of implementing the Proposed Action or No Action Alternative. This section provides information to serve as a baseline from which to identify and evaluate environmental and socioeconomic changes likely to result from implementation of the Proposed Action. Baseline conditions represent current conditions. In compliance with (NEPA, President's Council on Environmental Quality (CEQ) guidelines, and 32 CFR Part 651, et seq., the description of the affected environment focuses on those resources and conditions potentially subject to impacts of the Proposed Action.

This section presents the analysis of the direct, indirect, and cumulative environmental and socioeconomic effects that may occur with the Proposed Action or No Action Alternative and identifies any adverse environmental effects. In addition, this section addresses mitigation for the Proposed Action.

4.1.1. Direct versus Indirect Effects

The terms "effect" and "impact" are synonymous in this EA. Effects may be either beneficial or adverse and may apply to the full range of natural, aesthetic, historic, cultural, and economic resources within the project area and the surrounding area. Direct and indirect impacts are defined as follows:

Direct Impact - Impact of implementing an alternative and which occurs at the same time and in the same place.

Indirect Impact - Impact caused by implementing an alternative that would occur later in time or farther removed in distance but is a reasonably foreseeable outcome of the action. Indirect impacts may include induced changes in the pattern of land use, population density, or growth rate, and indirect effects to air, water, and other natural resources and social systems.

4.1.2. Short-Term versus Long-Term Effects

Effects are also expressed in terms of duration. The duration of short-term impacts is considered to be one year or less. For example, the construction of a building would expose soil in the immediate area of construction. This effect would be considered short-term, however, because it would be expected that vegetation would re-establish on the disturbed area within a year of the disturbance. Long-term impacts are described as lasting beyond one year. If long-term impacts continue in perpetuity, they are considered to be permanent.

4.1.3. Intensity of Effects

The magnitude of effects of an action must be considered regardless of whether the effects are adverse or beneficial. The following terms are used to describe the magnitude of impacts:

- No Impact: The action does not cause a detectable change.
- Negligible: The impact is at the lowest level of detection.
- Minor: The impact is slight but detectable.
- Moderate: The impact is readily apparent.
- Major: The impact is severely adverse or exceptionally beneficial.

4.1.4. Significance

In accordance with CEQ regulations and implementing guidance, impacts are also evaluated in terms of significance. Both short-term and long-term effects are relevant to the consideration of significance. Significant is defined in the CEQ regulations for implementing NEPA at 40 CFR 1508.27. “Significant” requires consideration of context and intensity. Context requires that significance be considered with regard to society, the affected region, affected interests, and locality. The scale of consideration for context varies with the setting and magnitude of the action. A small, site-specific action is best evaluated relative to the location than the entire world.

4.1.5. Cumulative Effects

The most severe environmental impact may not result from the direct effects of any particular action, but from the combination of effects of multiple, independent actions over time.

Some authorities contend that most environmental effects can be seen as cumulative because almost all systems have already been modified. Principles of cumulative effects analysis are described in the CEQ guide “Considering Cumulative Effects under the National Environmental Policy Act”.

4.1.6. Mitigation

In addition to the measures already identified as necessary to mitigate the impact of the Proposed Action, the Proposed Action may have other environmental and socioeconomic impacts that would require mitigation. In the event potentially significant adverse impacts are identified, measures that could be used to mitigate will be considered.

Potential mitigation actions include:

- Mitigating an impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating an impact over time by preservation and maintenance during the life of the action.

4.2. Land Use

4.2.1. Affected Environment

4.2.1.1. Existing Land Uses Regional Overview

IAAAP is located in Des Moines County, Iowa, between the communities of Middletown and Augusta. The installation is in the southeast corner of Iowa near the Mississippi River. The primary land use is agricultural. Corn and soybeans are the dominant crops.

4.2.1.2. IAAAP Land and Air Space Use

IAAAP consists of 19,011 acres and has five active production lines (1, 2, 3, 3A, and 4B), a test fire area, crafts and maintenance areas, magazine storage areas (242 igloos total), and an administrative area. IAAAP has research and development capabilities, performs demilitarization of obsolete and overstocked ammunition items by disassembly (no open detonation) to recycle component parts, and performs some depot mission work. The entire facility land use description is industrial.

There are approximately 1,453 acres of semi-improved grounds on IAAAP. The semi-improved acreage consist of production facilities, such as buildings, load lines, and small arms ranges; demolition and test areas and clear zones; security clear areas, including acreage adjacent to roads, railroads, and utility right-of-ways; and roadside utilities. There are approximately 97 acres of improved grounds that include administrative lawns, and cemeteries. Unimproved grounds account for the remaining 17,452 acres which includes roads and railroads (800 acres), buildings and structures (89 acres), agricultural out leases (7,107 acres), idle areas (1,584 acres), forest areas (7,766 acres), and ponds, lakes, and streams (106 acres). There are no aviation facilities at the installation.

4.2.1.3. Surrounding Land Use

Predominant land use adjacent to IAAAP is agricultural. Low density residential development and light commercial development are located around the installation perimeter.

4.2.2. Consequences

4.2.2.1. Proposed Action

The relocation of munitions and subassemblies currently produced at MLAAP such as the 40 mm family of munitions, M112 Demo Block, MICLIC, Spider, Mortars, and mortar components, will be accomplished at IAAAP by remodeling of Lines 1 and 3 and construction of a 40mm Test Range. Remodeling the existing lines would result in minor changes to the existing footprint. These footprint changes are estimated to be less than 0.05 acres. The remodeling of Lines 1 and 3 would have no effect on land use at IAAAP.

The proposed 40mm Test Range requires approximately 430 acres of land. The proposed site of the range is agricultural and is leased for grain crops and cattle grazing. Approximately 6,667 acres of IAAAP remain available for agricultural out-lease. Construction of the proposed 40mm Test Range will have a minor effect on installation land use due to the fact that the range is compatible with the industrial designation of IAAAP and does not significantly reduce the acreage available for agricultural out-lease.

Remodeling of Lines 1 and 3 and construction of the 40mm Test Range as part of the Proposed Action would have a minor effect on IAAAP land use. Figure 2-1 depicts the new test fire range and items of note in the area.

4.2.2.2. No Action Alternative

Under the No Action Alternative, Lines 1 and 3 would not be remodeled and the proposed 40mm Test Range would not be constructed. The No Action Alternative would have no impact on land use.

4.3. Air Quality

4.3.1. Affected Environment

The CAA authorizes the development of comprehensive federal and state regulations to limit emissions from both stationary (industrial) sources and mobile sources. The EPA and IDNR implement the various requirements included in the CAA including the National Ambient Air Quality Standards (NAAQS). EPA has established standards for six principle pollutants, also called criteria pollutants (Table 4-1). If a geographic area exceeds the limitations of one or more of the pollutants listed in Table 4-1 (EPA, 2009), it is considered to be a non-attainment area and is subject to the formal rule-making process.

**Table 4-1:
National Ambient Air Quality Standards**

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Carbon Monoxide	9 ppm* (10 mg/m ³)	8-hour ⁽¹⁾	None	
	35 ppm (40 mg/m ³)	1-hour ⁽¹⁾		
Lead	0.15 µg/m ³ ⁽²⁾	Rolling 3-Month Average	Same as Primary	
	1.5 µg/m ³	Quarterly Average	Same as Primary	
Nitrogen Dioxide	0.053 ppm (100 µg/m ³)	Annual (Arithmetic Mean)	Same as Primary	
Particulate Matter (PM ₁₀)	150 µg/m ³	24-hour ⁽³⁾	Same as Primary	
Particulate Matter (PM _{2.5})	15.0 µg/m ³	Annual ⁽⁴⁾ (Arithmetic Mean)	Same as Primary	
	35 µg/m ³	24-hour ⁽⁵⁾	Same as Primary	
	0.075 ppm (2008 std)	8-hour ⁽⁶⁾	Same as Primary	
	0.08 ppm (1997 std)	8-hour ⁽⁷⁾	Same as Primary	
Ozone	0.12 ppm	1-hour ⁽⁸⁾	Same as Primary	
	0.03 ppm	Annual (Arithmetic Mean)	0.5 ppm (1300 µg/m ³)	3-hour ⁽¹⁾
		24-hour ⁽¹⁾		
Sulfur Dioxide	0.14 ppm	24-hour ⁽¹⁾		

- (1) Not to be exceeded more than once per year.
 - (2) Final rule signed October 15, 2008.
 - (3) Not to be exceeded more than once per year on average over 3 years.
 - (4) To attain this standard, the 3-year average of the weighted annual mean PM 2.5 concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.
 - (5) To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³ (effective December 17, 2006).
 - (6) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective May 27, 2008).
 - (7) (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
(b) The 1997 standard – and the implementation rules for that standard – will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.
 - (8) (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1.
(b) As of June 15, 2005 EPA has revoked the 1-hour ozone standard in all areas except the fourteen 8-hour ozone nonattainment Early Action Compact (EAC) Areas. For one of the 14 EAC areas (Denver, CO), the 1-hour standard was revoked on November 20, 2008. For the other 13 RAC areas, the 1-hour standard was revoked on April 15, 2009.
- *ppm=parts per million

Source: <http://www.epa.gov/air/criteria.html>

The IAAAP is located in an attainment area for all criteria pollutants. The IAAAP operates under an IDNR Title V Air Quality Operating Permit. The Title V permit will be modified to identify future emission points. The installation conducts an annual air emission inventory as part of the Title V Clean Air Act Permit regulations. The results for CY 2009 are depicted in Table 4-2.

4.3.2. Consequences

4.3.2.1. Proposed Action

The proposed remodeling of Line 1 and Line 3 and construction of the 40mm Test Range would result in short-term, minor impacts to air quality. Fugitive dust (particulate matter) and construction vehicle exhaust emissions would be generated during remodel / construction and would vary daily, depending on the level and type of work conducted. Fugitive dust would be controlled at the sites using best management practices (BMPs). These BMPs will be required of any contractor working on these activities. Vehicle exhaust emissions would be temporary, and at their expected generation levels, would not significantly affect air quality. Fugitive dust and exhaust emissions from the proposed construction activities would not collectively represent a new major source of air emission, and therefore, would not require a modification to the IAAAP Title V permit.

Air emissions will be generated by the production of 40mm family of munitions being relocated from MLAAP. The 40 mm production will generate air emissions from transferring of powder, paint booth, marking/stenciling and cleaning operations. A modification to the IAAAP Title V permit will be obtained.

The Proposed Action would require 40mm test firing five to seven days per week. The 40mm test fire activities are exempted from CAA regulation. At the 40mm Test Range each round fired will burn approximately 4.2 grams of M-2 propellant and 37.8 grams A-5 per charge. Consultations with IDNR on permitting requirements for 40mm Test Fire Range are complete. The IDNR confirmed the determination that the proposed 40mm testing at the proposed 40mm Test Range is exempt from air regulation.

Powder extrusion and packaging operations would be performed as part of the production of M112 Demo Block. A Title V permitted emission point for the powder extrusion and packaging operations will be acquired. Under the Proposed Action, the incoming M112 Demo Block would require limited test firing. This testing would be conducted at the existing IAAAP test fire site. Testing required is infrequent. The anticipated total amount of explosive material to be tested annually is approximately 100 pounds. This material would be covered under the existing test fire site exemption from air regulation.

Additional air emissions will be generated by the production of MICLIC. The MICLIC production will generate air emissions from stenciling and cleaning operations. These emissions are not significant levels but require a Title V permit modification. The incoming MICLIC production would not require test firing.

Additional air emission points will be generated by mortar components production. A Title V permitted emission point for propelling charges will be acquired from IDNR. The propelling charge production would not require test firing. The incoming ignition cartridge production would not generate new emission points or require Title V modification. Ignition cartridge production would require test firing. This testing would be conducted at the existing IAAAP test fire site on an infrequent basis. The anticipated total amount of propellant to be tested annually is approximately 150 lbs. The material would be covered under the existing test fire site exemption from CAA regulation.

Additional air emissions would be generated by Spider production. Spider production will generate air emissions from melt pour, painting, marking, and stenciling. A Title V permitted emission point for Spider production will be acquired from IDNR. The Spider production would not require test firing.

The installation conducts an annual air emission inventory as part of the Title V CAA Permit requirements. The IAAAP Title V permit will be modified to include the following new emission points:

- (1) 40mm Lines at Building 1-85 EP 10 and Building 1-61 EP 21.
- (2) Prop Charge Line at Building 1-13 EP 22.
- (3) Spider at Building 3-05-2
- (4) M112 Demo Blocks new emissions points at Building 1-12, for particulate only.
- (5) The MICLIC Lines at Buildings 3-01 and/or Building 3-04.

Note: No additional permitted emission points would be required for the production of Mortars being relocated from MLAAP. The Mortars production would not require test firing.

The movement of the new processes to IAAAP may add to current air emissions. However, actual IAAAP and MLAAP emissions for CY 2009 in Table 4-2 indicate that the combined level for 2009 is significantly less than IAAAP current permitted levels. In addition, forecasts for CY 2012 indicate a 22.8% reduction in the number of units planned for production compared to CY 2010. An even greater reduction in air emissions is expected to occur in the event that production levels decline after CY 2012.

**Table 4-2:
2009 Air Emissions for IAAAP & MLAAP**

Air Emissions	IAAAP 2009 Total	MLAAP 2009 Total	IAAAP & MLAAP 2009 Combined	IAAAP Permitted Criteria & Hazardous Pollutants
	Tons	Tons	Tons	Tons
PM 2.5	23.74	-	23.74	765.76
PM 10	25	-	25	774.14
PM (Total Particulate Matter) (2)	36	1.44	37.44	1715.79
Sulfur Dioxide	1397.97	30.91	1428.88	6323.96
Nitrogen Oxides	140.15	8.74	148.89	919.38
Volatile Organic Compounds	16.72	2.21	18.93	372.30
Carbon Monoxide	64.35	2.02	66.37	380.81
Lead	0.05	-	0.05	0.60
Ozone	0	-	0	0
Ammonia	0.1	-	0.1	4.26
HAPs	16.97	3.88	20.85	Source Specific

Analysis of the Proposed Action indicates that the transfer of designated production operations from MLAAP would result in minor impacts to air quality on IAAAP.

4.3.2.2. No Action Alternative

Under the No Action Alternative, IAAAP would not remodel any of its facilities to accommodate the incoming munitions functions or construct the 40mm Test Range. The No Action Alternative will have no effect on the air quality at IAAAP.

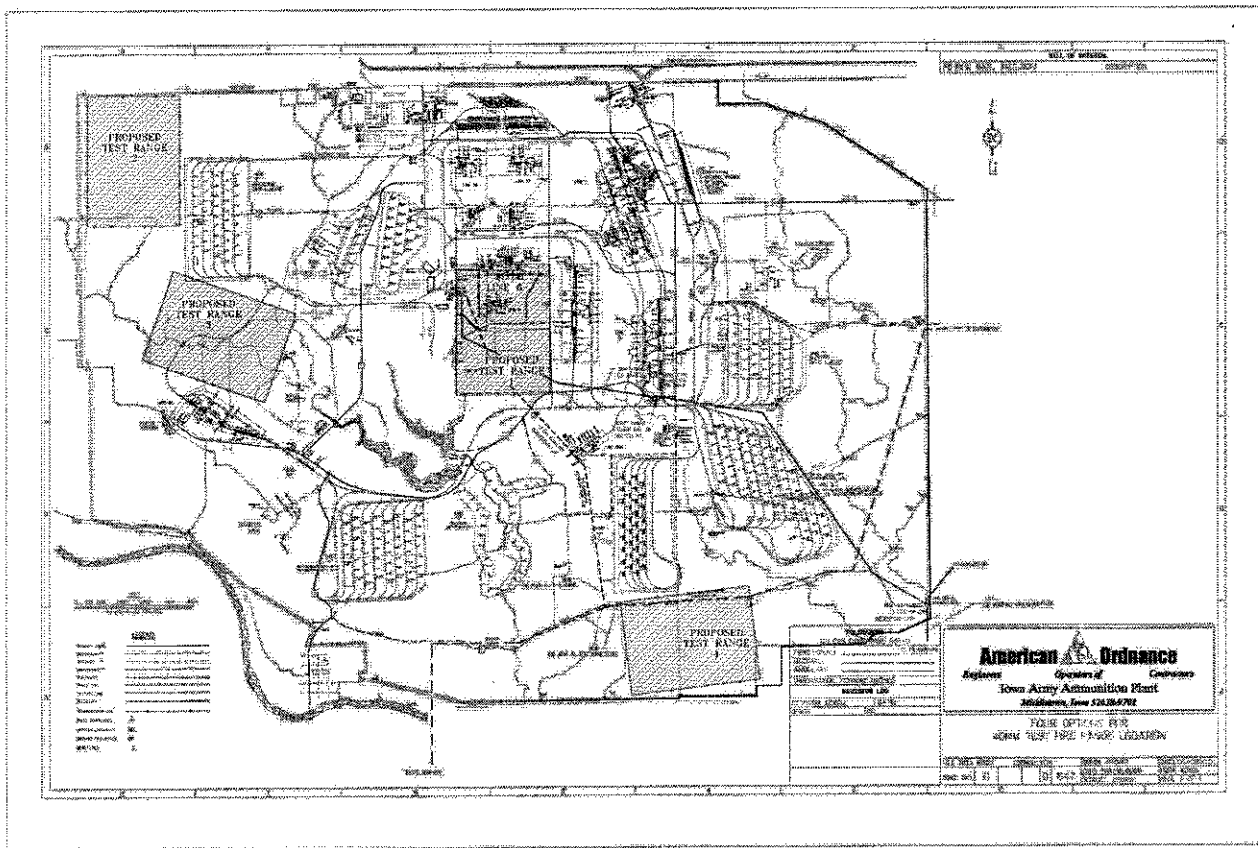
4.4. Noise

4.4.1. Affected Environment

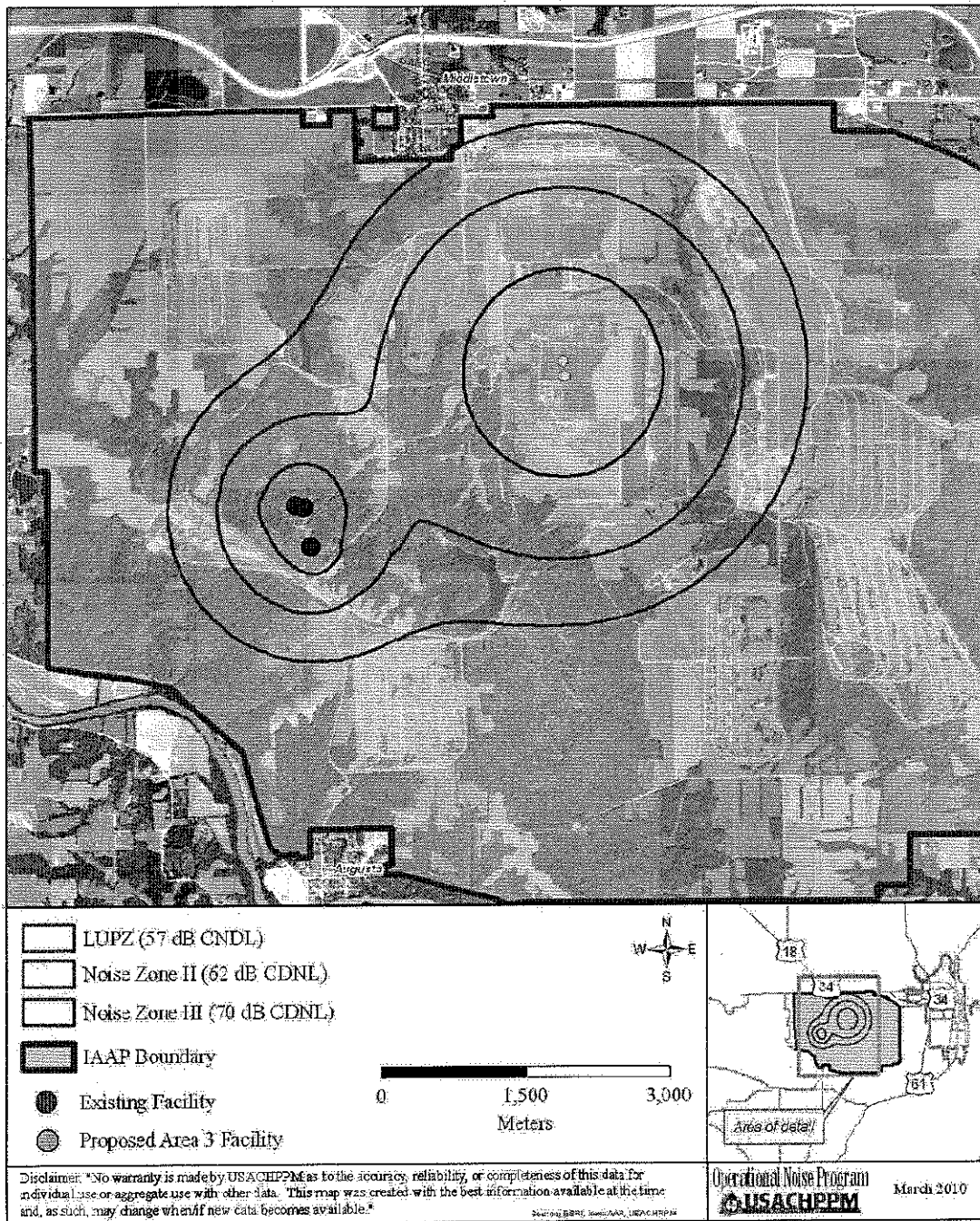
The IAAAP implements an Environmental Noise Management Program (ENMP) Plan to identify and minimize noise impact from mission activities on areas outside the installation. The 2009 IAAAP ENMP Plan addresses noise generated by test fire activities, pistol range training, and equipment training. Test firing activities are capable

of generating noise levels that are audible off post and have caused noise complaints in the past. The U.S. Army Center for Health Promotion and Preventative Medicine (CHPPM) has evaluated noise from test firing and other activities at IAAAP since the 1980s. Noise contours for IAAAP activities were developed by CHPPM in 1999. In 2010, amended noise contours were developed at several possible locations for evaluation of the placement of the new test fire range. The locations considered are shown in Figure 4-1. Due to the proximity of these alternate sites to the installation boundary, the anticipated noise levels that would be generated by using these sites as a 40mm Test Fire Range and the past noise complaints, these alternative sites were eliminated from further consideration as reasonable alternative sites for the construction of the 40 mm Test Range. The selection of the proposed site depicted in Figure 4-2 for further evaluation as the 40mm Test Range was based on its limited noise impact to offsite locations.

**Figure 4-1:
Test Sites Considered at IAAAP**



**Figure 4-2:
IAAAP Central Area: Test Facility Operating Environment Operational Noise Contours**



4.4.2. Consequences

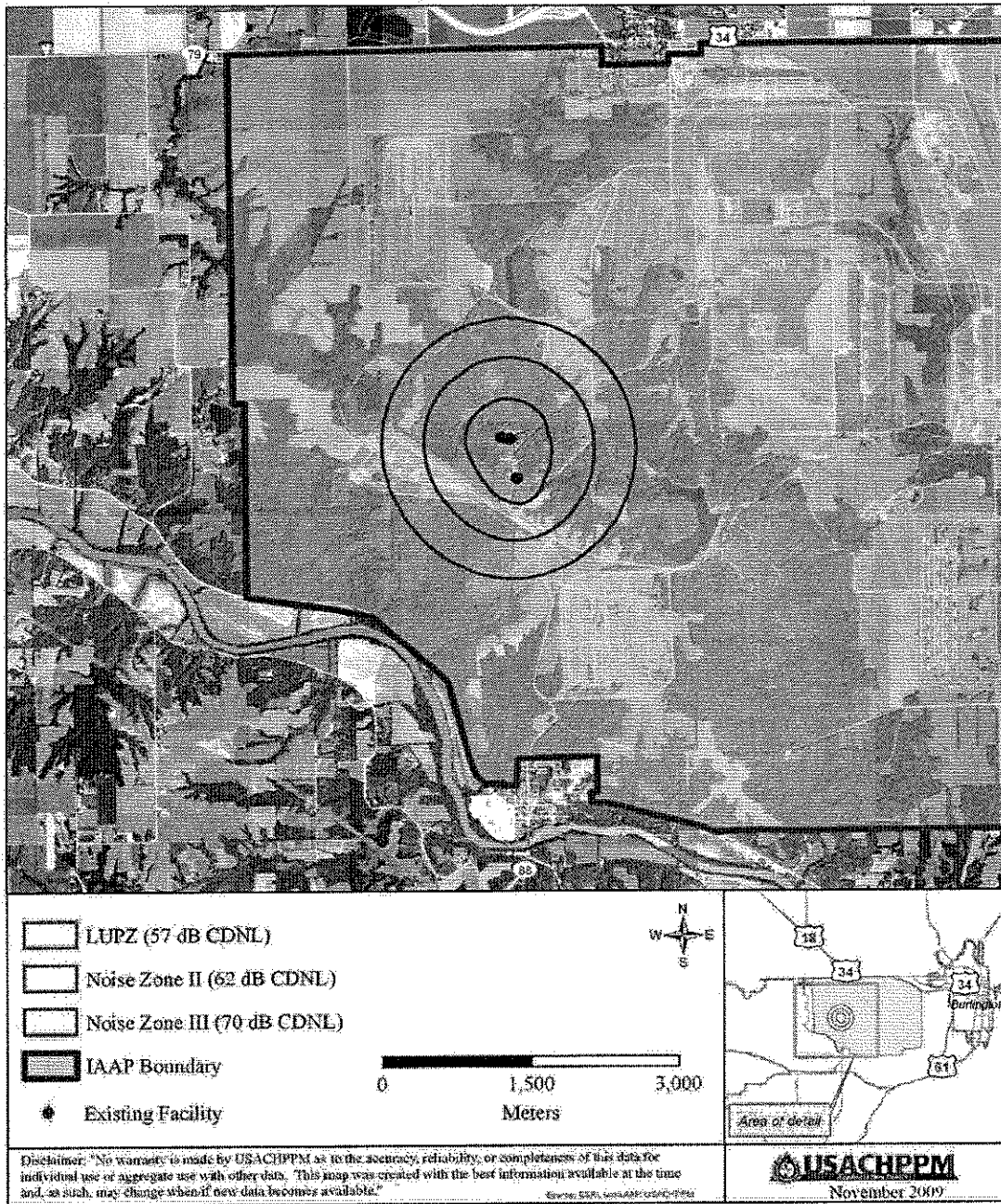
4.4.2.1. Proposed Action

Primary construction activities for remodeling Lines 1 and 3 would take place inside the facilities. Most construction related noise generated from remodeling would not be audible to outside receptors. All outdoor construction activities, including construction of the 40mm Test Range, would be conducted during normal business hours. Noise levels off the installation due to construction activities are expected to be negligible.

Incoming munitions production activities are not expected to generate noise audible outside the line facilities, based on current production of munitions at IAAAP. Workers use hearing protection and follow Occupational Safety and Health Administration standards and procedures as required by the IAAAP noise protection policy. There is not expected to be any impact for the production noise to people outside the IAAAP facility and there would only be minor impact to workers.

Test fire activities for M112 Demo Block and mortar components can be performed at the current test-firing site shown in Figure 4-3. Test fire of these items will not require modification of the noise contours developed by CHPPM in 1999. The production of the M112 Demo Block would require test firing five samples or shots for each lot. The frequency of required testing is estimated to be approximately two to three times per month based on current production projections. Mortar components will require periodic static testing at the current test firing site. The frequency of this testing would be approximately two to three times per month during full production. None of these test activities will exceed noise generated by the test firing of the 40 Pound Cratering Charge, currently tested on the IAAAP test firing site. Figure 4-4 shows the noise contours of the 40 Pound Cratering Charge.

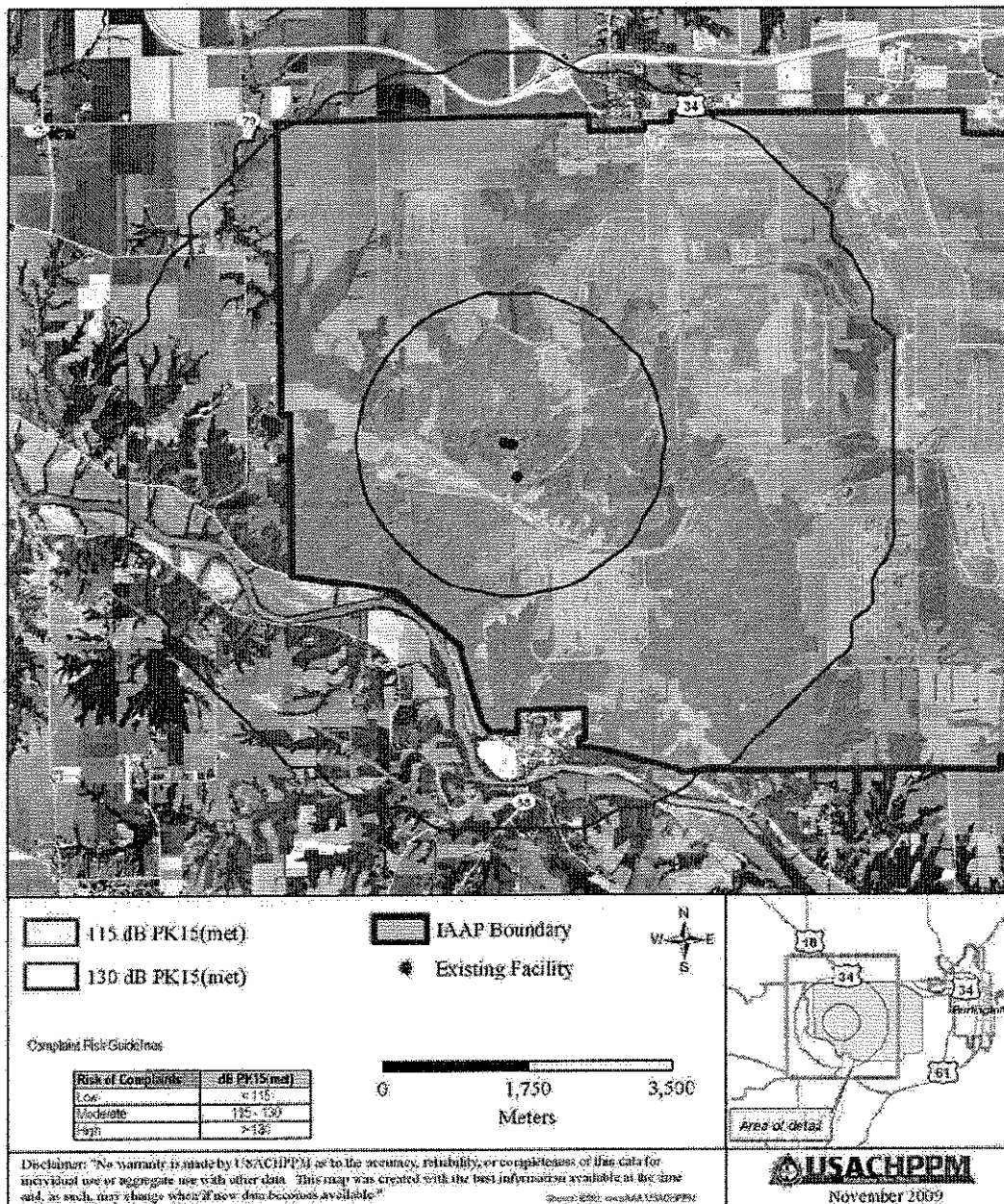
Figure 4-3:
IAAAP Existing Operating Environment Operational Noise Contours



The 40mm Test Range proposed to support transfer of 40mm production from MLAAP would test fire approximately 145,000 rounds annually. New noise contours that included the proposed test range were developed by CHPPM in 2010. Under existing conditions at IAAAP, the C-weighted Day-Night sound Level (CDNL) noise contours extend slightly beyond the north boundary of the installation as shown in Figure 4-2.

The existing complaint risk contours do extend beyond the boundary of the installation. See Figure 4-4.

Figure 4-4:
Iowa Army Ammunition Plant Existing Operating Environment Complaint Risk Contours



The revised noise contours indicate that the proposed 40mm Test Range site had the lowest risk of noise impacts beyond the boundary of the installation. See Figure 4-2.

Army Regulation (AR) 200-1 addresses noise caused by military training and testing. Selection of the site for the proposed 40mm Test Range was based on the requirements of AR 200-1. The CHPPM also used AR 200-1 in the assessment of the IAAAP noise activities. The IAAAP will continue to utilize installation Standard Operating Procedure (SOP) for Noise Management. The SOP includes complaint management and monitoring of both the noise environment and any proposed land use changes surrounding the installation. In addition, the facility use contractor will maintain a noise management plan to minimize the effects of production activities at IAAAP. This noise management plan includes consideration of the activities proposed in this assessment.

Noise impact from the proposed remodeling and new construction would be temporary and minor. The noise for the additional test fire activities would be minimal. The CHPPM Noise Contour Study indicated that noise impact from test firing associated with the M112 Demo Block, and Mortar components would not be different from the current activities. The noise impact for the proposed 40mm Test Range site would be minimal to minor. Based on the results of the 2010 CHPPM study of potential sites for the proposed 40mm Test Range minimal noise from range operations would be audible off site.

Noise levels that would be generated by the 40mm Test Range have been evaluated for potential impact on the Indiana Bat. Prior studies documented the hearing characteristics of the bat. Noise levels and frequencies created by 40mm grenade testing are low and outside the frequency range the bats utilize. Due to the fact that the bats do not roost in the proposed 40mm Test Range area, noise generated during testing would not impact bat roosting.

Noise associated with the Proposed Action would have a minimal to minor impact on the areas surrounding IAAAP. Consideration of the impact of noise to the surrounding area was a key factor in selecting the proposed 40mm Test Fire Range site.

4.4.2.2. No Action Alternative

Under the No Action Alternative IAAAP would not remodel any of its facilities to accommodate the additional munitions functions and would not construct the 40mm Test Range. The No Action Alternative would have no noise impact on IAAAP.

4.5. Geology and Soils

4.5.1. Affected Environment

4.5.1.1. Geology

The first Pleistocene glaciers began to form in Iowa approximately one million years ago. The Illinoian, the third glacial epoch, pushed west and entered Iowa in the southeastern part of the state. Ice pushed the Mississippi River westward. When the ice melted the river returned to its former position. Glacial drift averaged 30 feet deep in the area of the Illinoian ice sheet.

Loess was deposited on the glacial drift during interglacial periods. Loess is windblown material composed primarily of silt with small amounts of sand and clay and is the basis for the development of very good soil. This soil is found throughout the state including the area of IAAAP.

Southern Iowa is described as a maturely dissected plain and has been subject to water erosion longer than northern Iowa. River channels have deepened, frequently more than 200 feet deeper than the floodplains, and are well drained.

4.5.1.2. Soils

Based on the Soil Conservation Service, Soil Survey of Des Moines County, Iowa, U.S. Department of Agriculture (USDA), 1983, the IAAAP 2007-2011 INRMP presents detailed information regarding soils of IAAAP. According to this source, 27 soils are mapped on the installation. Other than the soils associated with rivers and drainages, soils on IAAAP belong to either the Mollisols or Alfisols soil orders. Mollisols are relatively fertile soils and are characterized by a soft surface character, a high base saturation, and a dark color high content of humus. Alfisols are also relatively fertile soils with moderate to high base saturation.

4.5.1.3. Prime Farmland

Fifty-six percent of Des Moines County is designated as prime farmland. Several of these designated areas are on IAAAP. As defined by USDA, prime farmland is land that is best suited to producing food, feed, forage, fiber, and oilseed crops. Almost 75 percent of the soil series that occur on IAAAP meet criteria for prime farmland. Despite the fact that there are agricultural leases on IAAAP, the installation was essentially taken out of consideration for the inventory of prime farmland when it was acquired by the federal government for location of an ammunition production facility. Federal control of the site occurred before the passage of the Farmland Protection Policy Act. Therefore, Department of Agriculture analysis of the loss of agricultural out-lease property associated with the Proposed Action is not required.

4.5.2. Consequences

4.5.2.1. Proposed Action

The proposed remodeling of Lines 1 and 3 would not require land contouring or intrusive construction activity and would not affect subsurface geological formations or site topography. Construction and staging of materials may have minor affect on soils. Necessary sediment and erosion controls would be in place to reduce and prevent impacts to surrounding soils or surface waters. Controls may include silt fencing, berms, or re-vegetation. No areas proposed to be disturbed are designated prime farmland. All areas proposed to be disturbed for remodeling are areas that have been previously disturbed during past construction activities. The limited further disturbance of soils due to remodeling of Lines 1 and 3 would amount to minor and temporary impacts.

Construction of the proposed 40mm Test Range will reduce the installation property available for agricultural out-lease by approximately 430 acres. A small part of the area would require grading to facilitate the range activities. The area to be disturbed currently has no active structures, is relatively flat, and consists primarily of pasture grasses. Necessary sediment and erosion controls are required to reduce impact to surrounding soils and surface waters. These controls may include silt fencing, berms, or re-vegetation. Construction of these controls would have minimal impact on subsurface geology and site topography. The facility use contractor will comply with Army policy for low impact development techniques in relation to storm water runoff.

The proposed 40mm Test Range action would have minimal effects on geology, topography and soils and would have a minimal effect on prime farmland. The area that is considered prime farmland would be fenced to maintain a safety distance from the proposed range activities. Other agricultural operations are not expected to be negatively impacted by the 40mm Test Range activities. When the test range activities cease the site can be returned to agricultural row crops. At termination of range operations the site will be remediated in accordance with applicable environmental laws and regulations.

4.5.2.2. No Action Alternative

Under the No Action Alternative IAAAP would not remodel any of its facilities to accommodate the additional munitions functions and would not construct the 40mm Test Fire Range. The No Action Alternative would have no effect on geology, topography, soils, or prime farmland.

4.6. Water Resources

4.6.1. Affected Environment

4.6.1.1. Surface Water

There are three major drainages and numerous minor drainages, with a total of approximately 20 miles of stream located within the installation. The three major drainages include Long, Brush, and Spring Creek watersheds. Long Creek is in the western part of the installation and flows into Mathes Lake before leaving the installation on its southern boundary. Brush Creek is more centrally located and leaves the installation in the extreme southeastern corner. Spring Creek drains the eastern part of the installation. The Skunk River watershed is located adjacent to the southern border of the installation and is a major tributary of the Mississippi River, which is about eight miles east of IAAAP. Spring Creek drains directly into the Mississippi River (Figure 4-5). Little Flint Creek watershed drains 75-100 acres of the installation on the northern edge. Lines 1 and 3 drain into the Brush Creek watershed. The 40mm Test Range primarily will drain into Brush Creek, and only the south west portion will have minimal drainage into Long Creek Watershed through Mathes Lake.

These drainages primarily flow from northwest to southeast on the installation. The three creeks are relatively small, averaging twenty feet wide and six inches deep. The watershed for Long Creek is primarily located outside IAAAP. The entire Brush Creek watershed (6,300 acres) is within the installation. Sixty-two percent of the Spring Creek watershed (8,600 acres) is within the installation; Spring Creek is also impacted by the West Burlington Sanitary wastewater and storm water discharges. The watershed of Long Creek (9,100 acres) is impounded in two places by Stump Lake and Mathes Lake.

Tile drains had been installed within the agricultural out-lease portions of IAAAP. The tile drainage systems are maintained by lessees as part of the lessee services in accordance with the terms and conditions of the lease. There are approximately 500 miles of drainage ditches within the installation.

4.6.1.2. Surface Water Quality

The IAAAP operates under the National Pollutant Discharge Elimination System Permit (NPDES) issued by the IDNR. The permit regulates point source discharges and establishes monitoring requirements and effluent pollutant limitations on the discharges. The IAAAP permit allows industrial discharges at fourteen locations, sanitary discharges from two domestic treatment plants, and monitoring of non-point source storm water runoff at two locations. Discharges from the units are to Brush Creek, Long Creek, and an unnamed tributary of the Skunk River. A modification to the NPDES permit would be required for the additional sanitary or industrial discharges necessary to accommodate the new production under the Proposed Action.

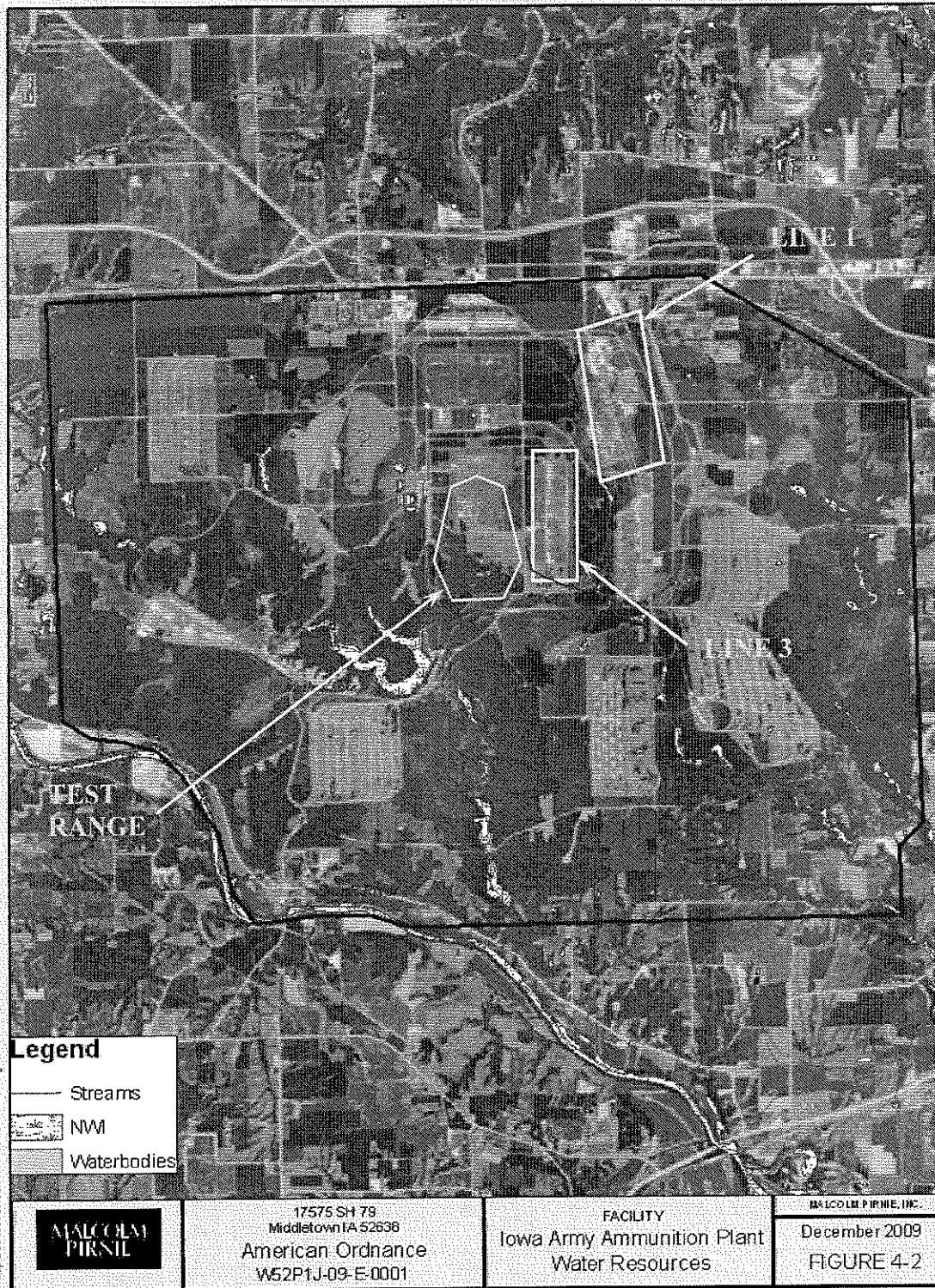
There are no water or wash down processes associated with the proposed production activities. Therefore there will be no additional discharge point required. The additional employees required to support production will add a minor additional load to the current main sanitary sewage treatment plant (NPDES Outfall 013). The volume of the emissions generated from the facility is not expected to change significantly, because production of these items is variable.

The facility use contractor will conduct storm water monitoring and prepare a plan for storm water monitoring on the proposed 40mm Test Range. The proposed construction of the 40mm Test Range will require a storm water construction permit during construction activities. The current NPDES permit requires monitoring of the storm water runoff from this area of the facility because of past use as a production area. If this proposed plan is approved then the State of Iowa will be formally notified that there will be a “change in use” of this area that may impact storm water runoff. In the event the IDNR requires additional monitoring the requirements will be added to the current storm water monitoring schedule. The plan for storm water monitoring of the 40mm Test Range will be evaluated by the IDNR to determine if any additional monitoring in the Brush Creek watershed will be required.

4.6.1.3. Floodplains

Floodplains are flat areas adjoining surface waters which include, at a minimum, that area subject to a one percent or greater chance of flooding in any given year. According to EO 11988 for Floodplain Management, federal agencies should avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy and modification of floodplains. Floodplains on IAAAP consist primarily of riparian areas associated with the streams. The Federal Emergency Management Agency (FEMA) defines flood zones and depicts them on Flood Insurance Rate Maps (FIRMs).

**Figure 4-5:
IAAAP Water Resources**



The FIRMs indicate that IAAAP has several flood zones within the installation. None of the modifications or new construction associated with the Proposed Action are within the mapped flood zones.

4.6.1.4. Groundwater

The IAAAP receives drinking water from the Burlington Municipal Waterworks (BMWV). There are two sources of water that BMWV uses to supply the needs of their customers. Approximately 80% comes from the Mississippi River. The remaining 20% comes from the Pleistocene aquifer. BMWV wells are not located on the IAAAP or in installation drainage areas.

Groundwater within the boundaries of the proposed 40mm Test Range is impacted by past Army industrial activity and is being addressed under CERCLA. The Army consulted U.S EPA Region 7 to ensure that the proposed 40mm Test Fire Range provided safe access to the CERCLA monitoring wells and protection of the wells during testing. The facility use contractor prepared a document entitled: "Iowa Army Ammunition Plant Site Construction and Management Plan for the 40mm Test Range" (AO, 2010) (Plan). The EPA reviewed the Plan in accordance with the provisions of the 1989 CERCLA Federal Facilities Agreement (FFA) for IAAAP. The Plan was modified to incorporate EPA comments. On December 17, 2010, the EPA notified the Army that it reviewed the Plan and Army responses to EPA comments and had no additional comments. Standard Operating Procedures (SOPs) will be prepared by the facility use contractor for the proposed 40mm Test Range. These SOPs will control range operations and maintenance including: (1) safe disposal of unexploded ordnance, (2) clearing of well access paths to assure safe passage during monitoring activities and (3) protection of monitoring well stations during test firing. Groundwater sampling will be on-going as part of the CERCLA well monitoring activity. Samples will be analyzed for constituent materials present in 40mm grenades.

4.6.1.5. Wetlands

In 1999, the USFWS conducted a National Wetlands Inventory on the installation. The IAAAP contains 113.2 acres of wetland. Forested wetlands are the dominant type, representing about 50 percent of the installation's wetlands. The next most common type is unconsolidated bottoms ("ponds"), which comprise about 24 percent of the wetlands. IAAAP contains 57.3 miles of linear wetlands including rivers and streams (3.1 miles of wetlands and 54.2 miles of rivers and streams, respectively). Maps showing wetlands and deepwater habitats on the installation are available in the IAAAP Natural Resources office. A wetland survey was performed for the 430 acres impacted by the proposed 40mm Test Range construction to determine any potential effect to wetlands. The study determined that less than .5 acres of wetlands would be permanently impacted. Consultation with the USACE occurred during 2010 and recommendations have been accepted regarding impact to wetlands in the range area. Mitigation actions to create an

additional .38 acres of wetlands have been established and will be implemented to address the less than .5 acre loss of wetlands. A formal mitigation plan was submitted to the USACE and approved on October 25, 2010, with the issuance of a USACE nationwide construction permit (USACE, 2010).

4.6.2. Consequences

4.6.2.1. Proposed Action

Line 1 and Line 3 are not located within or adjacent to any surface waters or wetlands, nor are they located within a 100-year floodplain. Only minor soil disturbance and loss of vegetative cover would result from construction activities. Impervious cover would be increased slightly and storm water runoff would have negligible change. Best management practices to control sediment and erosion will be utilized to reduce and prevent impacts to surrounding soils or surface waters. Controls may include silt fencing, berms, or re-vegetation.

The proposed 40mm Test Range is not located within a 100-year floodplain. However, there is one man-made pond located on the southern edge of the proposed range. The pond provides drinking water for cattle grazing. The pond is less than 1/10 of an acre. There are approximately 27.4 acres of additional ponds on IAAAP that provide adequate water sources for livestock and other wildlife. Impervious cover associated with the 40mm Test Range would not be significantly increased and storm water runoff to the Brush Creek or Long Creek watersheds would not be impacted by construction of the proposed range. Best management plans for sediment and erosion control would be utilized to reduce and prevent impacts to surrounding soils or surface waters. Controls may include silt fencing, berms, or re-vegetation. Construction activities would not require groundwater dewatering, nor would withdrawals from, or discharges to, surface waters, groundwater, or wetlands.

Construction associated with the Proposed Action would result in permanent impact to less than .5 acres of wetlands.

The Proposed Action would have only temporary or negligible impacts on surface waters, groundwater, wetlands or floodplains. The proposed remodeling of Line 1 and Line 3 and the proposed 40mm Test Range construction would not require groundwater dewatering. The Proposed Action would not require withdrawals from, or discharge to, surface waters, ground water, or wetlands. Wetland loss was considered and addressed in the "Wetland Mitigation Plan" prepared for the proposed IAAAP 40mm Test Range. To mitigate for these impacts, the Mitigation Plan would create a sedge meadow wetland located approximately 2000 feet northwest of the impacted sites. The proposed sedge meadow site is north and adjacent to an existing wetland mitigation site (2007-1851). The existing north boundary of the mitigated wetland area will be extended north to

create a minimum of 0.35 acre of additional wetland. The Mitigation Plan includes creation of a 25 foot prairie buffer.

The USACE determined that the nationwide construction permit process was appropriate since more than .5 acres of wetlands would be permanently impacted by the Proposed Action. Wetlands mitigation would be required. The Army coordinated the proposed Wetlands Mitigation Plan with USACE. The USACE approved the plan and issued a nationwide construction permit on October 25, 2010 (EarthView Environmental, LLC, 2010). The Wetlands Mitigation Plan would create approximately .38 acres of wetlands adjacent to an existing wetlands area on the proposed 40mm Test Range site.

The Proposed Action would have negligible impact to surface waters, and groundwater, and a minor impact on installation wetlands. After implementation of the Wetland Mitigation Plan, the impact of the Proposed Action on wetlands would be negligible.

4.6.2.2. No Action Alternative

Under the No Action Alternative IAAAP would not remodel any of the facilities to accommodate the additional munitions functions and would not construct a 40mm Test Range. The No Action Alternative would have no effect on water resources.

4.7. Biological Resources

4.7.1. Affected Environment

4.7.1.1. Vegetation

Vegetative community types on IAAAP are floodplain forest, upland oak-hickory forest, hill prairie, native prairie, wetland, and leased areas (hay and grazing areas and agricultural areas) (INRMP, 2007). Plant communities present on IAAAP are typical of the ecoregion. More than 500 plant species have been documented on the installation. The areas proposed to accommodate the new test fire range consist of some or all of these vegetative types.

4.7.1.2. Threatened or Endangered Plant Species

No federally-listed plant species have been recorded on IAAAP. Six state-listed threatened vascular plant species have been identified on the installation (Table 4-2). Blue ash (*Fraxinus quadrangulata*), Virginia-snakeroot (*Aristolochia serpentaria*), pagoda plant (*Blephilia ciliate*), false hellebore (*Veratrum woodii*), slender ladies-tresses (*Spiranthes lacera*), and winged monkeyflower (*Mimulus alatus*) are state threatened species occurring on the installation. Although the butternut (*Juglans cinerea*), a former candidate species, is not included on the current list of candidate species, it is important to monitor these trees on IAAAP since most of the installation's population is dying from butternut canker fungus.

4.7.1.3. Wildlife

The IAAAP's wildlife species include animals indigenous to the Southern Iowa Drift Plain. The installation is known to have 27 species of mammals, 103 species of breeding birds, 13 species of reptiles, 9 species of amphibians, 36 species of fish, 17 species of dragonflies and 12 species of damselflies. An insect survey has not been conducted. Nine species of mussels and several unidentified clam shells have also been documented on IAAAP.

4.7.1.4. Threatened or Endangered Animal Species

No federally-listed bird species have been recorded on IAAAP.

The USFWS performed a comprehensive drainage basin survey on IAAAP in 1987, which documented the orangethroat darter (*Etheostoma spectabile*) (state-listed threatened) in Brush and Spring Creeks. The 1997 and 2007 surveys confirmed these findings.

The western worm snake (*Carphophis amoenus vermis*) (state-listed threatened) was recorded on IAAAP in 1979 by the USFWS. The western worm snake has not been recorded on the IAAAP since 1979.

One federally-listed species is known to occur on IAAAP, the Indiana Bat (*Myotis sodalist*) (federally-endangered).

**Table 4-3:
Threatened and Endangered Species**

Scientific Name	Common Name	Federal Status	State Status
Plant			
<i>Fraxinus quadrangulata</i>	Blue Ash	None	T
<i>Aristolochia serpentaria</i>	Virginia-Snakeroot	None	T
<i>Veratrum woodii</i>	False Hellebore	None	T
<i>Spiranthes lacera</i>	Slender Ladies-tresses	None	T
<i>Blephilia ciliata</i>	Pagoda Plant	None	T
<i>Mimulus alatus</i>	Winged Monkeyflower	None	T
<i>Juglans cinerea</i>	Butternut	None	D
Mammal			
<i>Myotis sodalists</i>	Indiana Bat	T	T
Bird			
None			
Amphibian			
None			
Reptile			
<i>Carphophis amoenus vermis</i>	Western Worm Snake		T
Fish			
<i>Etheostoma spectabile</i>	Orangethroat Darter		T
Invertebrates			
None			

T – Threatened

D- Deemed in Need of Management

(PS) = Partial Status; taxon which is listed in part of its range, but for which Tennessee subspecies are not included in the Federal designation.

4.7.1.5. Indiana Bat

Since 2001, the installation has implemented an Endangered Species Management Plan to protect Indiana Bats.

Tetra Tech EM Inc. and Bat Conservation Management conducted bat surveys on IAAAP for the Army in 1998 and 2003, respectively. These surveys provided evidence that Indiana Bats may use the entire installation for foraging activities. Both studies cited research that Indian Bats hibernate in Missouri and migrate to Iowa annually. There are no Indiana Bat hibernation areas on IAAAP.

During the 1998⁷ study, Tetra Tech captured two Indiana Bats on IAAAP. This capture was the first definite indication that the Indiana Bat was present on IAAAP. In 2003⁸, Bat Conservation and Management caught six Indiana Bats. The two studies tracked

each Indiana Bats using radio telemetry. The studies determined that the bats roost on IAAAP. However, the primary Indiana Bat roost is located in a barn west of IAAAP.

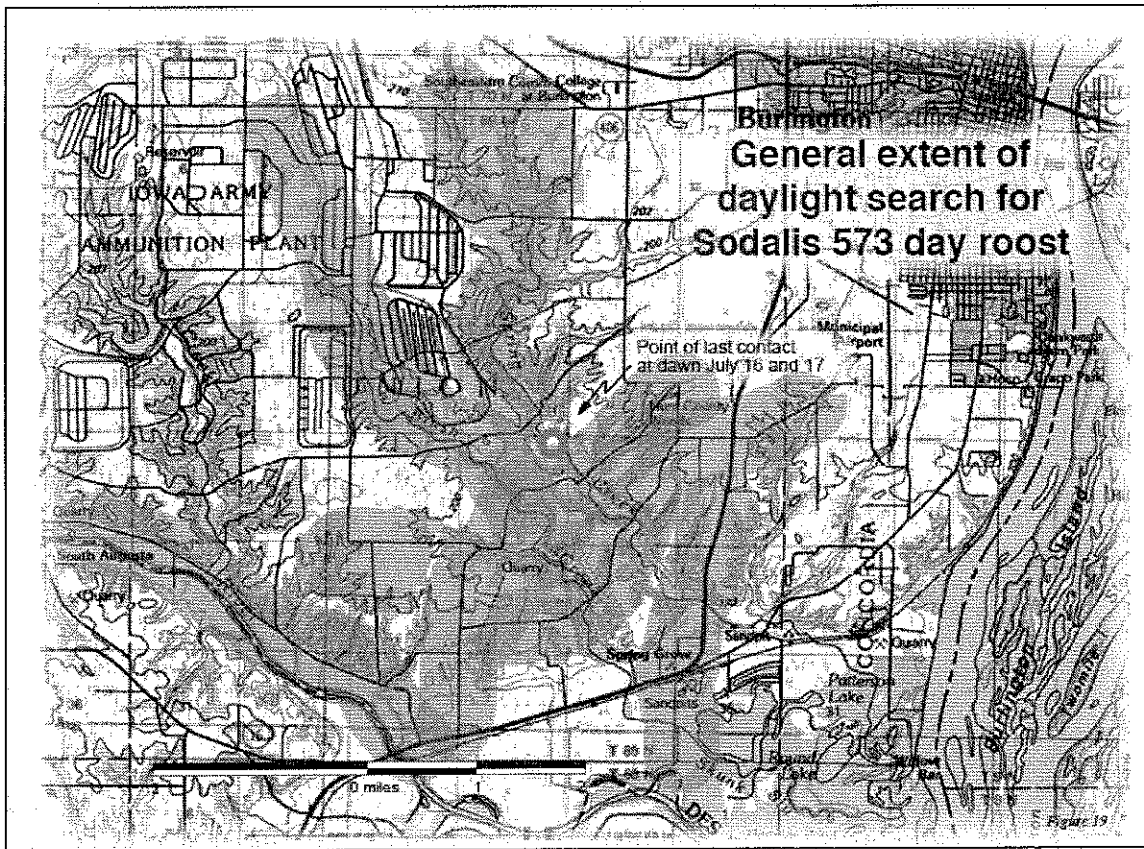
The Indiana Bats use the Brush Creek flyway, which borders to the east side of the proposed 40mm Test Range site, and the Long Creek flyway, which is south of the proposed range site, primarily for foraging and some limited roosting. There is no evidence that the bats roost in the proposed range area. None of the foraging or roost areas are located near sites of other production activities proposed for transfer IAAAP. (Refer to Figure 4-6)

Bat navigation and foraging are the most significant activities that could occur within the proposed 40 mm Test Range site. At IAAAP, the proposed 40mm Test Range activities will take place during daylight hours. The Indiana Bat's foraging generally occurs from 30 minutes prior to sunset to 30 minutes after sunrise. Pre- test and post -test administrative activities at the proposed 40mm Test Range make it unlikely that bat navigation and foraging will be effected by the proposed test fire operations.

⁷ Tetra Tech, Inc., Bat Investigation, 1998

⁸ Bat Conservation and Management, Inc., Iowa Army Ammunition Plant 2003 Indiana Bat Investigations, 2003.

**Figure 4-6:
Indiana Bat Roost Search**



The Engineer Research and Development Center – Construction Engineering Research Laboratory – U.S. Army Corps of Engineers (ERDC-CERL)⁹ conducted threatened and endangered species research for the Army in 2002 at Fort Knox, Ky; Ft. Leonard Wood, Mo.; and Camp Atterbury, Ind. This testing investigated the effects of military training noise (test firing) on bat behavior, particularly on Indiana Bats. This testing covered various caliber weapons generally used in weapons fire training exercises, including high caliber. The results of this testing indicated that elevated noise levels did not have a significant effect on bat navigation or foraging.

⁹ Engineer Research and Development Center – Construction Engineering Research Laboratory, Screening Level Ecological Risk Assessments of Some Military Munitions and Obscurant-related Compounds for Selected Threatened and Endangered Species, 2006

¹⁰ Tetra Tech Inc., Endangered Species Management Plan for Iowa Army Ammunition Plant, 2001.

4.7.2. Migratory Birds

"Migratory Birds" is a general term for a large number of species that are protected under the Migratory Bird Treaty Act (MBTA). Migratory bird protection is addressed in the IAAAP Integrated Natural Resource Management Plan (INRMP) and Environmental Assessment implemented in 2006.

Past actions at IAAAP related to protection of migratory birds include:

- delay mowing, brush clearing, tree removal and roadside spraying activities until later in the season,
- implement Bluebird nest box program,
- planted/established 10 miles of buffers along some agricultural field edges,
- 35+ acres of agricultural fields have been planted with trees and/or been kept in a fallow/weedy state,
- 25+ acres of thick cedar stands have been thinned to promote more open grassland areas,
- over 20 acres of new prairie has been established, and
- Prescribed burns are conducted on an additional 50+ acres to enhance existing native prairie stands.

4.7.3. Consequences

4.7.3.1. Proposed Action

Remodeling existing Line 1 and Line 3 would primarily involve construction activity on the interior of the facilities and result in minor changes to the existing footprint of two lines. The changes in the footprint will amount to less than 0.05 acres. The extension of the footprint would involve the loss of a small amount of mowed grasses.

Construction of the proposed 40mm Test Range would require grading portions of the 430 acre area and installation of a safety perimeter fence. Temporary impacts to cool season range grasses would occur in range area; however, the range would be allowed to re-vegetate on its own or be seeded if necessary. Test firing would take place five to seven days per week, and the noise generated from firing would probably deter wildlife from entering the range. Some clearing of trees would be required to permit installation of the perimeter fence. Only the trees determined to be absolutely necessary for construction of the perimeter fence would be removed.

Because the Indiana Bat occupies portions of the installation for summer habitat and foraging and is the only potential endangered species that may be impacted by the Proposed Action, the Army initiated informal consultation with the USFWS and prepared a Biological Assessment (BA)(see Appendix A-A-1) and Conservation Plan (CP) addressing the Indiana Bat (Stantec, 2010). The BA evaluated the potential impact to the Indiana Bat due to the noise generated by the firing activities proposed for the 40mm Test Range, the destruction of woodland and potential roost trees associated with the construction of the 40mm Test Range, and the potential risk to the Indiana Bat posed by the chemicals of concern generated by firing activities at or near the proposed 40mm Test Range.

Data from several studies indicate that 40 mm grenades are not likely to generate sound within the auditory range of the Indiana Bat. The likelihood of exposure to high intensity sound sufficient to cause auditory damage is low. Results of the noise studies indicate intensity and duration of sound generated during firing of the 40 mm grenades will not cause Indiana Bats to abandon suitable habitat permanently.

Prior studies at the IAAAP indicated that while Indiana Bats are not known to roost in the area where the six potential roosting trees will be removed, a bat flyway was documented to cross the southwestern edge of the proposed 40mm Test Range.

The BA found that the direct effect of the proposed project on the Indiana Bat would be temporary loss of 3.8 acres of potentially suitable habitat. Iowa GAP data indicates approximately 57,950 acres of predicted Indiana Bat habitat within Des Moines County and approximately 15 acres of predicted Indiana Bat habitat within the action area. The 3.8 acres affected by the proposed IAAAP 40 mm Test Range project would represent less than 0.01% of the total GAP predicted habitat in the county.

A Baseline Ecological Risk Assessment (BERA) prepared in 2004 evaluated potential risks to ecological receptors from operations at the IAAAP. Although the BERA was not prepared specifically to assess the effects of the proposed 40 mm Test Range, it did specifically evaluate the risk to Indiana Bats as a result of operation of the installation, because of the special status of the Indiana Bat and the fact that the Indiana Bats had been identified on IAAAP. The BERA evaluated a number of areas of concern (AOC) in four watersheds located on the installation: Long Creek, Skunk River, Brush Creek and Spring Creek. The site of the proposed 40 mm Test Range is located in the Brush Creek watershed.

The BERA identified two primary exposure pathways for Indiana Bats: (1) exposure to surface water chemicals of potential environmental concern (COPEC) via ingestion or direct contact and (2) exposure to COPEC's via ingestion of aquatic insects and water.

For the purposes of the BERA, it was assumed that Indiana Bats feed exclusively within the limits of the IAAAP. However, based on published foraging area sizes (69 – 734 acres; USFWS 2007a), and the off plant roosting location, Indiana Bats utilizing the IAAAP would be expected to catch insects from outside of the IAAAP and only a fraction from within; thereby, further limiting the risk of exposure of the bats to insects containing contaminants produced at the IAAAP.

The model results indicated that there was some potential risk to the Indiana Bat. The BERA addressed the limitations of the risk estimates generated and pointed out that when considering the limitations, the bat might not be at risk.

The 2010 BA concluded that although the BERA does not specifically address the 40 mm Test Range, it is likely that the potential contaminants produced at the range would be similar to those produced by past and current activities at the installation. Based on the results of the BERA, chemical contaminants resulting from the proposed project are unlikely to pose a health risk to bats and are not likely to affect Indiana Bats at the IAAAP.

The 2010 BA proposed the following mitigation measures to reduce or eliminate any potential adverse impact on the Indiana Bat: (1) project site selection planning to avoid and reduce effects to habitat, (2) tree clearing in the time of year the bat is not expected to be present, specifically after September 15 and before April 15 and (3) re-foresting the 5.7 acres to replace the 3.8 acres of habitat removed. A monitoring and sampling plan to monitor this activity will be provided to the IDNR. A ratio of 1.5:1 connecting with existing tree acreage would be used for the re-foresting. Survival of the tree planting will be monitored for three years with an annual report to be provided to USFWS and IDNR.

The 2010 BA concluded that with the implementation of the proposed mitigation that no effects to designated critical habitat would occur as a result of the proposed construction of the 40mm Test Range, and that the overall quantity or quality of habitat should not be diminished on a scale that results in jeopardy to the species. Potential effects resulting from indirect and cumulative effects, if present at all, are anticipated to be minimal.

On November 9, 2010, the USFWS concurred with the findings of the 2010 BA that the proposed construction of the 40mm Test range, as mitigated, would not be likely to adversely affect the Indiana Bat. A copy of the USFWS letter is at Appendix A-A-3.

During the remodeling of Line 1 and Line 3 wildlife may be temporarily disturbed by equipment staging and temporary noise related to construction. None of the remodeling work is expected to affect any special status species, migratory birds, or their habitats.

As mitigated, the proposed 40mm Test Range construction is not expected to have any significant long term affect on the Indiana Bat or any other special status species, migratory birds, or their habitats.

The Proposed Action will have negligible impact on installation biological resources. The USFWS provided concurrence with the findings of the BA on November 9, 2010. Consultations with the IDNR resulted in a Water Quality Certification for the project on October 18, 2010. (Appendix A-A-14) The USACE approved the project with the issuance of a nationwide construction permit on October 25, 2010.

4.7.3.2. No Action Alternative

Under the No Action Alternative IAAAP would not remodel any of its facilities to accommodate the additional munitions functions, and would not construct the 40mm Test Range. The No Action Alternative would have no effect on biological resources.

4.8. Cultural Resources

4.8.1. Affected Environment

Cultural Resources include, but are not limited to, buildings, structures, prehistoric and historic archeological sites, native sacred sites, and cemeteries.

Archeological surveys performed on IAAAP indicate that 13,836 acres of the installation contain potential archeological resources. Surveys found that other areas had been disturbed and do not require additional study (INRMP, 2007). To date, over 325 sites have been recorded on IAAAP, yielding 82 prehistoric, 164 historic and 45 combination sites. For many of these sites, eligibility for listing in the National Register of Historic Places (NRHP) has not been determined, and their evaluations remain to be completed. IAAAP has 1,190 architectural resources. A preliminary reconnaissance-level survey indicated that 402 buildings from the World War II and Cold War periods may be eligible for listing in the NRHP. A historic context is required before a formal determination of eligibility can be made. There are no cultural resources formally listed in the NRHP or nominated to it, and no potential traditional cultural properties have been identified on IAAAP. IAAAP has a current Integrated Cultural Resources Management Plan (ICRMP) (Earth Tech, Inc., 2002).

In August 2006, the Advisory Council on Historic Preservation (ACHP) issued *Program Comment for World War II and Cold War Era (1939 – 1974) Army Ammunition Production Facilities and Plants* to provide the Army with an alternative way to comply with its responsibilities under Section 106 of the NHPA with regard to effect of the following management actions on World War II and Cold War Era Army Ammunition Production Facilities and Plants that may be eligible for listing on the NRHP: ongoing operations, maintenance and repair, rehabilitation, renovation, mothballing, cessation of

maintenance, new construction, demolition, deconstruction and salvage, remediation activities, and transfer, sale, lease, and closure of such facilities.

4.8.2. Consequences

4.8.2.1. Proposed Action

The remodeling efforts on Lines 1 and 3 will not involve significant structural modifications, and primarily consist of modifications to the interior layouts of the buildings; therefore, not affecting their overall structural integrity. The remodeling proposal includes demolition of one structure previously used as a guard house.

Construction of the 40mm Test Range would involve minimal ground disturbing activities. These activities will not adversely affect archeological resources. In an effort to reduce impacts, the Army completed a survey and consultation with SHPO and affected federally recognized Native American Tribes. The existing buildings at Line 9, which would be impacted by the test fire range, have previously been scheduled for demolition and the work has been approved through the Iowa SHPO. On July 7, 2010, SHPO concurred with a determination of “No Historical Properties Adversely Affected” and approved a plan of placing a protective boundary of T-posts around areas near the construction area that have not been fully archeologically evaluated prior to any construction activities commencing (see Appendix A-A-10).

Through coordination of the Iowa SHPO, the proposed remodeling and construction of the new Test Range would have negligible impact on cultural resources. After inquiries were made to the five federally recognized Tribes only one Tribe responded (see Appendix A-A-11). No objections to the Proposed Action were submitted by federally recognized Native American Tribes.

4.8.2.2. No Action Alternative

Under the No Action Alternative IAAAP would not remodel any of its facilities to accommodate the additional munitions functions and would not construct the 40mm Test Fire Range. The No Action Alternative would have no effect on cultural resources.

4.9. Socioeconomics

4.9.1. Affected Environment

Socioeconomics comprises a number of resource areas including the following: population, economic activity (employment, unemployment, and income), housing, public schools, and public safety services. In addition, discussion of the Affected Environment includes environmental justice and protection of children.

The Region of Influence (ROI) is the geographic area within which the majority of impacts to socioeconomic resources are concentrated. The ROI for IAAAP is composed

of three counties in Iowa: Des Moines, Henry, and Lee. Major communities near IAAAP are Burlington less than 10 miles to the east, Mount Pleasant approximately 20 miles to the northwest, and Fort Madison approximately 20 miles to the south. The community of Middletown is adjacent to IAAAP.

4.9.1.1. Economic Development

4.9.1.1.1. IAAAP Employment

The IAAAP is operated by American Ordnance, LLC, a joint venture company owned by Day & Zimmermann. American Ordnance, LLC had 531 employees at IAAAP on 20 January 2011.

4.9.1.1.2. Regional Employment

Total full-time and part-time employment in the three-county ROI increased by just over 6,400 jobs between 1980 and 2007 (Table 4-4). The large majority of that growth took place during the 1990s when the annual rate of change in employment averaged 1.2 percent annually. This is compared to a growth rate during the same time period of 1.9 percent for Iowa. The ROI growth rate over this period (1990-2000) was dramatically greater than that over the period 1980-1990 (0.4 percent) and 2000-2004 (when there was a substantial decline in employment). As of 2007, about 44 percent of regional employment is contributed by Des Moines County with Lee County contributing 34 percent and Henry County adding 22 percent. These shares have remained virtually constant over the period 1980 - 2007.

**Table 4-4:
Total Full- and Part- Time, Non-Farm Employment (1980-2007)**

	Des Moines County	Henry County	Lee County	ROI	State of Iowa
1980	25,098	8,121	22,806	56,025	1,379,345
1985	22,849	9,306	20,236	52,391	1,354,890
1990	25,772	11,722	20,684	58,178	1,515,137
1995	27,573	13,034	22,105	62,712	1,675,298
2000	29,731	13,610	22,368	65,709	1,824,453
2004	27,028	13,314	20,695	61,037	1,831,537
2007	27,851	13,569	21,014	62,434	1,932,754
Numeric Change					
1980-1990	674	3,601	-2,122	2,153	135,792
1990-2000	3,959	1,888	1,684	7,531	309,316
2000-2004	-2,703	-296	-1,673	-4,672	7,084
2004-2007	823	255	319	1,397	101,217
Percent Change					
1980-1990	2.69%	44.34%	-9.30%	3.84%	9.84%
1990-2000	15.36%	16.11%	8.14%	12.94%	20.42%
2000-2004	-9.09%	-2.17%	-7.48%	-7.11%	0.39%
2004-2007	0.99%	1.88%	1.52%	2.24%	5.24%
Average Annual Percent Change					
1980-1990	0.27%	3.74%	-0.97%	0.38%	0.94%
1990-2000	1.44%	1.50%	0.79%	1.22%	1.88%
2000-2004	-2.35%	-0.55%	-1.92%	-1.83%	0.10%
2004-2007	0.99%	0.02%	0.32%	0.44%	1.75%

Source: BEA, 2009; 2002 North American Industry Classification System (NAICS) These are the most current figures, since the survey is performed annually.

The greatest share of non-farm employment in the ROI in 2007 was concentrated in four sectors of the economy: services; manufacturing; retail trade; and federal, state, and local government. Federal military and civilian employment accounted for just over 1 percent of total regional non-farm jobs.

The IAAAP is one of the largest employers in the ROI. Other major employers in the ROI include Great River Medical Center (1,517 employees), Vista Bakery (775 employees), Federal Mogul (497 employees), General Electric (535 employees), and Winegard Company (506 employees).

Over the period 1990 through 2010, unemployment rates for each of the counties comprising the ROI mirrored those of the State of Iowa and the nation. Rates peaked in 1992 with values of over 7 percent in Lee County. Rates declined consistently through 1999 with rates reaching below 3 percent in Henry County. Unemployment rates rose

sharply through 2003 and declined after. Since 2000, unemployment rates for all three counties of the ROI have exceeded the rate for the state.

Per capita income for residents of Des Moines County was \$33,877 in 2007, which was about 5 percent below that for the State of Iowa and about 12 percent below that for the nation (Table 4-4). Over the period 1980 through 2007, per capita income of residents in each of the three counties of the ROI consistently declined compared to that of the nation.

**Table 4-5:
Income Trends**

	1970	1975	1980	1985	1990	1995	2000	2004	2007
State of Iowa	\$3,865	\$6,219	\$9,585	\$13,490	\$17,389	\$20,929	\$26,554	\$31,058	\$35,699
% of US	95	101	95	91	89	91	89	94	93
Des Moines County	\$4,315	\$6,480	\$10,117	\$13,745	\$17,552	\$20,554	\$26,021	\$29,219	\$33,877
% of US	106	105	100	93	90	89	87	88	88
Henry County	\$3,705	\$6,364	\$8,959	\$12,813	\$16,460	\$18,621	\$23,589	\$27,172	\$29,918
% of US	91	103	89	87	85	81	79	82	77
Lee County	\$3,674	\$5,932	\$9,348	\$13,097	\$16,079	\$19,254	\$23,406	\$27,257	\$29,883
% of US	90	96	92	89	83	83	78	82	77

Source: BEA, 2009

4.9.1.2. Demographics

During the 1990s, each of the counties of the ROI experienced population losses that, with the exception of Henry County, continued through 2005 (Table 4-5). Between 1990 and 2005, Des Moines County lost about 1,800 residents, Lee County lost almost 2,000 residents, and Henry County gained just over 1,000 residents. The ROI lost about 3 percent of its population over this period.

**Table 4-6:
Population**

State/County					1990 to 2000		1990 to 2005	
	July 1, 2005	July 1, 2000	April 1, 2000	April 1, 1990	Numerical Change	Percent Change	Numerical Change	Percent Change
State of Iowa	2,966,334	2,928,460	2,926,324	2,776,831	149,493	5.38%	189,503	6.82%
Des Moines County	40,810	42,291	42,351	42,614	-263	-0.62%	-1,804	-4.23%
Henry County	20,246	20,303	20,336	19,226	1,110	5.77%	1,020	5.31%
Lee County	36,705	37,939	38,052	38,687	-635	-1.64%	-1,982	-5.12%
ROI TOTAL	97,761	100,533	100,739	100,527	212	0.21%	-2,766	-2.75%

Source: U.S. Census Bureau, Population Division, Prepared By: State Library of Iowa, State Data Center Program

The community of Burlington, the county seat of Des Moines County, contains over 60 percent of the county population and when considered with neighboring West Burlington, this share increases to just over 70 percent. Middletown, the closest community to IAAAP, had an estimated population of 540 in 2008. Mount Pleasant, the county seat of neighboring Henry County, had a population of just over 8,750 in 2005 (43 percent of the total county population). Fort Madison, the county seat of Lee County, had a 2005 population of almost 11,050 (29 percent of the total county population).

The on-post population of IAAAP consists only of the senior military officer assigned to the installation.

4.9.1.3. Housing and Community Services

Housing on IAAAP is limited to one residence occupied by the senior military officer (Lieutenant Colonel) assigned to the installation.

The total number of housing units in the three-county ROI was reported to be 43,500 by the 2000 Census. Of this total, almost 8 percent were vacant. Of the occupied units, approximately 75 percent were owner-occupied and the remaining houses were renter-occupied. Of the vacant housing units, approximately 31 percent were for rent and 15 percent were for sale.

Of the occupied housing units in the counties of the ROI, about 75 percent are single-family structures (detached or attached). Between 7 and 9 percent are mobile homes and the proportions in large structures (50 units or more) are less than 3 percent. The housing stock in Henry County is substantially younger (median year both owner and renter-occupied structures built is 1964) than that in both Des Moines and Lee Counties. The oldest housing stock is in Des Moines County (median year owner-occupied structures built is 1951; median year renter-occupied structures built is 1949). Sub-standard housing units (i.e., lacking complete plumbing and kitchen facilities) comprise only 2 percent or less of the housing stock of each of the counties. As of 2000, the median contract rent varied between \$288 (Lee County) and \$349 (Des Moines County) and the median sale price asked varied between \$39,600 (Henry County) and \$63,300 (Lee County).

Housing construction activity is highly cyclical in nature. A complete building cycle occurred between 1980 and 1998 with declining activity from 1980 to 1986 and increases in activity between 1987 and 1998. This period was followed by years (1999 – 2005) exhibiting relatively stable construction activity levels. Over the 25-year period between 1980 and 2005, the number of housing units authorized for construction in the ROI experienced peaks of activity: 291 units in 1994, 266 units in 1998, and 233 units in 2005. Years experiencing low activity included 1986 with 58 units, and 1987 and 1989 when only 71 units were authorized for construction.

4.9.1.4. Medical Facilities

A medical clinic is located in Building 4A-137-4 at IAAAP. Employee physicals, first aid, and rehabilitation for work-related injuries are performed at this clinic. Health care services are also provided by community-based facilities and professionals within the ROI. Des Moines County contains over 70 medical doctors and is the home of Great River Medical Center (a 315-bed facility) located in West Burlington. Hospitals in Lee County include the Keokuk Area Hospital (125 beds) in Keokuk, Keokuk County Health Center (25 beds) in Keokuk, and Fort Madison Community Hospital (50 beds) in Fort Madison. The Henry County Health Center (25 beds) is located in Mount Pleasant.

4.9.1.5. Educational Facilities

The ROI contains 11 school districts, the largest of which in terms of enrollment include the following: Burlington Community School District (CSD) with an enrollment of 4,294 students; Fort Madison CSD (2,281 students); Keokuk CSD (2,253 students); and Mount Pleasant CSD (2,157 students).

There is variation in the racial/ethnic composition of the student body of the school districts. Burlington CSD and Keokuk CSD have substantially higher proportions of African American students than other school districts (12.2 percent and 8.9 percent, respectively). The proportion of the student body of Hispanic background is highest in the West Burlington Independent School District and Fort Madison CSD (7.7 percent and 6.0 percent, respectively). Students of Asian and Pacific Islander background comprise the largest minority group in Mount Pleasant CSD with 4.6 percent of the student body. There is only a single school district (Keokuk CSD) in which a majority of students receive free lunch and/or reduced cost lunch.

Institutions of higher education near IAAAP include Southeast Community College with campuses in West Burlington and Keokuk and centers in Mount Pleasant and Fort Madison. Iowa Wesleyan College is located in Mount Pleasant. Monmouth College is located about 30 miles to the east in Illinois and Western Illinois University is located in Macomb about 50 miles to the southeast. These facilities meet the needs of the community as well as the needs of IAAAP employees and their families.

4.9.1.6. Installation Security and Fire Protection Services

The security department of IAAAP provides security throughout the installation through the use of roaming patrols and control at the access gates. There are three active access gates to accommodate a variety of commercial, agricultural and employee traffic.

The IAAAP maintains mutual aid agreements with the Des Moines County Sheriff and the Iowa State Highway Patrol. The facility maintains a central fire station with about 12 full-time equivalent firefighter positions with between 4 and 5 staff present during each shift, 24 hours a day. A number of the fire personnel are cross-trained as emergency

medical technicians and hazmat crewmembers. Among the equipment of the fire department is an ambulance and hazmat trailer. The department maintains mutual aid agreements with fire departments in surrounding communities.

4.9.1.7. Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (1994), requires federal agencies to achieve environmental justice “to the greatest extent practicable” by identifying and addressing “disproportionately high adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations.”

Based on information from the 2000 Census, the ROI has a minority population comprising almost 7 percent of the total population and almost 10 percent of the residents living below the poverty level. There is little variation within the ROI regarding these two characteristics at the county level and their values are similar to those for the State of Iowa (Table 4-6).

For the communities within Des Moines County, the proportion of the population comprising minority groups is higher in Burlington (9.4 percent), Middletown (7.7 percent), and West Burlington (7.4 percent) than in Des Moines County (7.2 percent). The percent of the population below the poverty level is also higher in Burlington (12.6 percent) and Middletown (19.5 percent) than in the county as a whole (10.7 percent) (Table 4-7).

**Table 4-7:
Minority and Low Income Population, by State, County and ROI (2000 and 2008)**

	Des Moines County (2000)	Des Moines County (2008 Est.)	Henry County (2000)	Henry County (2008 Est.)	Lee County (2000)	Lee County (2008 Est.)	ROI (2008 Est.)
Total: Not Hispanic or Latino	42,351	40,629	20,336	20,213	38,052	35,408	96,250
White Alone	40,020	37,819	19,392	19,106	36,297	33,420	90,345
Black or African American Alone	1,532	1,784	310	370	1,093	1,145	3,299
American Indian and Alaska Native Alone	108	134	49	55	100	110	299
Asian Alone	254	305	395	438	156	212	955
Native Hawaiian and Other Pacific Islander Alone	20	22	10	9	22	21	52
Two or More Races	417	565	180	235	384	500	1,300
Total: Hispanic Origin	729	997	254	425	902	969	2,391
White Alone	667	908	228	394	857	910	2,212
Black or African American Alone	30	45	9	9	28	36	90
American Indian and Alaska Native Alone	11	11	2	3	4	4	18
Asian Alone	6	4	5	6	0	1	11
Native Hawaiian and Other Pacific Islander Alone	9	11	5	5	2	2	18
Two or More Races	17	29	7	8	11	16	53
Environmental Justice Statistics (2008 Est.)							
Minority Population:	2,987	3,706	1,170	1,501	2,612	2,898	8,105
Hispanic/Latino	729	997	254	425	902	969	2,391
Non-Hispanic/Latino Except White	2,258	2,709	916	1,076	1,710	1,929	5,714
Percent Minority Population	7.05%	9.12%	5.75%	7.43%	6.86%	8.18%	8.42%
Percent Population Below Poverty Level:	10.67%		8.76%		9.70%		9.94%

Source: U. S. Census Bureau 2000

**Table 4-8:
Minority and Low Income Population by Community (2000)**

Demographic Data	State of Iowa	Des Moines County	Burlington	Danville	Mediapolis	Middletown	West Burlington
Total:	2,926,324	42,351	26,839	914	1,644	535	3,161
Not Hispanic or Latino:	2,843,851	41,611	26,285	910	1,633	522	3,064
White Alone	2,710,344	39,308	24,328	902	1,622	494	2,928
Black or African American Alone	60,744	1,488	1,332	1	2	14	78
American Indian and Alaska Native Alone	7,955	93	81	1	0	0	1
Asian Alone	36,345	245	171	2	3	7	33
Native Hawaiian and Other Pacific Islander Alone	888	11	6	0	0	0	0
Some other race alone	2,103	39	36	1	0	0	0
Two or More Races	25,472	427	331	3	6	7	24
Hispanic or Latino:	82,473	740	554	4	11	13	97
White Alone	38,296	371	253	3	7	5	66
Black or African American Alone	1,109	23	22	0	0	0	1
American Indian and Alaska Native Alone	1,034	11	8	0	0	0	1
Asian Alone	290	6	6	0	0	0	0
Native Hawaiian and Other Pacific Islander Alone	121	5	5	0	0	0	0
Some other race alone	35,317	250	206	1	1	8	18
Two or More Races	6,306	74	54	0	3	0	11
Environmental Justice Statistics							
Minority Population:	215,980	3,043	2,511	12	22	41	233
Hispanic/Latino	82,473	740	554	4	11	13	97
Non-Hispanic/Latino Except White	133,507	2,303	1,957	8	11	28	136
Percent Minority Population	7.38%	7.19%	9.36%	1.31%	1.34%	7.66%	7.37%
Percent Population Below Poverty Level	9.13%	10.67%	12.58%	3.14%	8.31%	19.45%	8.17%

Source: U. S. Census Bureau 2000

4.9.1.8. Protection of Children

The IAAAP adheres to EO 13045, *Protection of Children from Environmental Health Risks and Safety Risk*. This EO requires that federal agencies shall make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children and ensure that policies, programs, and standards address disproportionate risks to children that result from environmental health or safety risks. The only possible site that children may be present and potentially engaged in recreational activities is a single on-site residence occupied by the military installation commander.

4.9.2. Consequences

4.9.2.1. Proposed Action

Under the Proposed Action, approximately 200 additional personnel would be required at IAAAP accommodate the incoming munitions activities. Construction workers would be required to perform remodeling and new construction of the 40mm Test Range.

4.9.2.1.1. Construction Phase

Construction is expected to last approximately three months and, in the short term, expenditures in the local economy for goods and services and direct employment with construction would increase sales volume, employment, and income in the surrounding area. It is estimated that total construction costs to implement the Proposed Action would be approximately \$3 million. It is assumed that approximately 40 percent of the total project costs would go towards wage and salary payments to construction workers. In addition to payroll expenditures for the required labor, construction activities would require the procurement of materials and services. These procurements, many of which would occur within the region, and the personal consumption expenditures of the construction workers at local and regional retail and service establishments would create an economic multiplier effect. This effect would result in indirect and induced employment.

4.9.2.1.2. Operations Phase

An increase of approximately 200 full-time personnel would be associated with the increased production of munitions on IAAAP. It is estimated that approximately \$7,375,000 per year would go towards wage and salary payments. In addition to payroll expenditures for the required labor, munitions production would require the procurement of materials and services. These procurements, many of which would occur within the region, and the personal consumption expenditures of the additional personnel at local and regional retail and service establishments would create an economic multiplier effect. This effect would result in indirect and induced employment; therefore, the Proposed Action would have positive long-term effects.

4.9.2.1.3. Demographics and Public Services

It is anticipated that the workforce required during the construction phase of the Proposed Action would be available within the region and no in-migration would occur. Therefore, the proposed construction would have no effect on demographics and public services.

Operations of the incoming munitions functions would require an increase of approximately 200 full-time personnel. Some of these positions may be filled by employees relocating from MLAAP although the number of employees is not known at this time. In the event that all positions would be filled by relocated employees, there would be an increase of 200 people (not including spouses and children) to the existing population of the ROI which in July 2005 was 97,761. The addition of 200 people would be a 0.2 percent increase. This increase will not cause any issues with public services. The Proposed Action would have negligible effects on demographics and public services.

4.9.2.1.4. Environmental Justice and Protection of Children

The Proposed Action would be confined to IAAAP and construction activity involves the remodeling of existing facilities that are not located near onsite housing or offsite residential areas. The Proposed Action would not affect minority or low-income populations or children.

The Proposed Action would have positive socioeconomic effects from the increased need for personnel to accommodate incoming munitions functions, and short-lived effects during the construction period.

4.9.2.2. No Action Alternative

Under the No Action Alternative IAAAP would not remodel any facilities to accommodate the additional munitions functions, and the 40mm Test Range would not be constructed. Therefore, the No Action Alternative would have no effect on socioeconomics.

4.9.3. Transportation

4.9.3.1. Affected Environment

4.9.3.1.1. Local and Regional Transportation

Major roads close to IAAAP include U.S. Highway 34, which is a major east-west highway that runs along a portion of the northern boundary. U.S. Highway 61 is a major north-south highway that runs between Fort Madison and Burlington. U.S. Highways 34 and 61 intersect in Burlington. State Highway 16 is an east-west highway that intersects U.S. Highway 61 just south of the installation. State Highway 406 runs north to south along the northeastern boundary.

Rail service in the region is provided by Burlington Northern Santa Fe Railway Company (BNSF) and Norfolk and Southern Railway Company. There is one BNSF freight stop that is utilized by IAAAP in the northeast corner of the installation.

Amtrak passenger rail service is provided daily from Chicago, Illinois to Oakland, California with a stop in nearby Burlington. Intercity bus service is available with stops at Burlington and Mount Pleasant. The IAAAP is not accessible by any form of public transportation. A public bus system provides service in nearby Burlington; however, the service does not extend to Middletown or the installation.

The nearest commercial airport to IAAAP is the Southeast Iowa Regional Airport Authority located in Burlington. Regions Air provides service from this airport to St. Louis, Missouri. The largest international airport to the installation is Quad Cities International Airport in Moline, Illinois.

4.9.3.1.2. Installation Transportation

There are approximately 149 miles of roads on the installation. These roads provide access to most of the buildings on the installation as well as all the agricultural leases. There is a railway system on IAAAP consisting of over 100 miles of railroad lines; this system interconnects to the BNSF freight stop on the northeast corner of the installation. There are no aviation services within the installation.

4.9.4. Consequences

4.9.4.1. Proposed Action

The remodeling for Line 1 and Line 3 and construction of the proposed 40mm Test Range would temporarily increase traffic at the installation, but is not expected to significantly increase traffic in and around IAAAP. The existing road system would not be modified during remodeling or construction of new facilities.

The Proposed Action would increase the number of personnel at IAAAP by approximately 200 employees. This employee increase is not expected to produce a significant increase in traffic on the installation. Due to the fact that IAAAP is serviced by several major thoroughfares the increased traffic from additional employees will be accommodated adequately by the existing road system. There may be a slight increase in demand for rail services with increased production, however, it is expected the existing infrastructure can sufficiently accommodate the increase.

The Proposed Action would not significantly increase the volume of shipments from IAAAP. Data from 2006-2010 shows an average of 29,678 tons of materials shipped annually from the IAAAP to various destinations. The current projection for shipping volume in 2012 is 27,600 tons, which represents an 8% drop in volume from what has been experienced during the past five years. Production at IAAAP is expected to decline

significantly in 2012 and out years. Due to the decline in production, the Army anticipates that the Proposed Action will not result in a significant increase in the total amount of hazardous waste generated by IAAAP.

Most hazardous waste generated by production operations at IAAAP is shipped to off-site commercial RCRA permitted hazardous waste treatment facilities. In 2010, IAAAP generated 110,338 pounds of RCRA regulated hazardous waste. The installation treated 4.5 pounds of hazardous waste on site by emergency Open Burning/Open Detonation (OB/OD) and sent 802 pounds of hazardous waste to the MLAAP RCRA permitted OB/OD facility for treatment. The majority of the installation RCRA regulated hazardous waste (109,531 pounds) was treated by commercial off-site RCRA treatment facilities. As a result of production efficiencies associated the Proposed Action and lower production requirements in 2012 and out-years; the total volume of hazardous waste generated by IAAAP and shipped to off-site treatment facilities for treatment will not increase significantly under the Proposed Action.

Historically, approximately 3% of the hazardous waste generated at IAAAP was shipped to MLAAP for treatment. In 2010, IAAAP sent 802 pounds of hazardous waste to MLAAP. Current estimates for IAAAP hazardous waste generation under the Proposed Action indicate that IAAAP will ship less than 1000 pounds of hazardous waste to MLAAP for treatment. The total amount of hazardous waste s that MLAAP can accept for treatment from off-site sources will continue to decrease due to treatment limitations imposed by the State of Tennessee. Under the Proposed Action most hazardous waste generated by IAAAP will continue to be transported to RCRA permitted hazardous waste treatment facilities rather than to the facility at MLAAP. Therefore, the Proposed Action not significantly increase the amount of waste shipped from IAAAP to MLAAP. The Proposed Action will have minor to negligible impact on the volume of hazardous waste transported to the MLAAP OB/OD facility or other RCRA permitted hazardous waste treatment facilities.

Hazardous waste generated by IAAAP is managed in accordance with the applicable RCRA and Department of Transportation (DOT) regulations for transportation of hazardous waste. Any energetic material that is determined to be unsafe to handle or transport off-site is treated by OB/OD on IAAAP in accordance with applicable RCRA regulations.

The Proposed Action requires shipment of certain equipment from MLAAP to be used in production at IAAAP. This equipment could contain residual explosive contamination. The appropriate Interim Hazard Classification (IHC) permits have been obtained from Department of Transportation (DOT) to allow shipment of the contaminated equipment by highway from MLAAP to IAAAP. The equipment shipments will comply with the requirements of DOT-SP 14694 for transportation of explosive contaminated material. Transportation of contaminated equipment between the MLAAP and IAAAP is a common occurrence and procedures are in place to assure compliance with all applicable requirements.

The Proposed Action will not result in a significant increase in the amount of hazardous waste or explosive material transported or shipped to or from IAAAP. The Proposed Action will have a minor, but not significant impact on transportation.

4.9.4.2. No Action Alternative

Under the No Action Alternative IAAAP would not remodel any of its facilities to accommodate the additional munitions functions and would not construct the 40mm Test Fire Range. The IAAAP would continue to ship hazardous waste generated by production operations to MLAAP and commercial RCRA permitted hazardous waste treatment facilities for treatment and disposal. Some equipment with explosive contamination would occasionally be shipped between IAAAP and MLAAP to meet mission requirements. The IAAAP would continue to ship explosive items manufactured on the installations to off-site locations by rail and highway. The No Action Alternative would have no effect on transportation.

4.9.5. Utilities

4.9.5.1. Affected Environment

Burlington Municipal Waterworks (BMWW) provides potable water drawn from the Mississippi River and wells that draw from Pleistocene Aquifer. The BMWW has a total water capacity of over 15 million gallons. Water is provided to Burlington, West Burlington, the IAAAP, and Rathbun Regional Water Association public customers at a rate of 5.2 million gallons per day. One diesel pump and two electrical pumps assist the distribution of water throughout the installation.

The IAAAP has two sewage treatment plants. The main wastewater treatment plant consists of a two-stage high rate trickling filter plant, which includes primary and final settling with separate digestion and rotary distributors. It has capacity of treating 800,000 gallons per day. Current usage is less than half the total capacity of the two plants.

A storm water drainage system is in operation on the installation that consists of a network of drainage ditches and underground pipes. There are approximately 500 miles of drainage ditches on IAAAP that direct runoff to the various streams on the installation. Non-point source storm water runoff is monitored at two locations as regulated under the IAAAP NPDES permit.

Electricity and natural gas is provided to IAAAP by Alliant Energy. Electricity is transmitted to a transformer distribution station at the installation from a plant in Burlington. There are four transmission lines on the installation owned and operated by the U.S. Government. Natural gas is supplied to IAAAP from a feeder line that draws gas from a 4-inch main pipeline.

4.9.5.2. Consequences

4.9.5.2.1. Proposed Action

The proposed remodeling of Lines 1 and 3 would require new utility connections or upgrades for the facilities to include electrical, water, sewage, gas, compressed air, steam, and cooling water distribution. The increase of munitions production would increase the overall energy consumption of the installation; however, the existing infrastructure would not be overburdened as a result. Changes to storm water runoff would be minimal with the minor increase in impervious cover due to remodeling and new construction of the test fire range. The existing storm water control infrastructure would not need to be modified to accommodate the change. The increase of 200 employees on the installation would increase water consumption, wastewater, and solid waste production; however, it is not expected to exceed the capacity of the existing infrastructure.

The Proposed Action would have minor impact on utilities and is not significant.

4.9.5.2.2. No Action Alternative

If no action was taken, the IAAAP would not remodel any of its facilities to accommodate the additional munitions functions and would not construct the 40mm Test Range. The No Action Alternative would have no effect on utilities at IAAAP.

4.9.6. Hazardous and Toxic Substances

4.9.6.1. Affected Environment

Production, storage, handling disposal of hazardous and toxic material at IAAAP is performed in compliance with relevant state, federal, and Department of Defense requirements. The hazardous waste management activities do not have an adverse effect on natural resources, and compliance requirements are related to resources protection and/or remediation (e.g., water quality, air quality, and training).

The treatment of explosive contaminated water in the installation generates approximately 10,000 pounds of explosive contaminated carbon annually. The spent carbon is returned to the vendor and regenerated. This recycling of the carbon from carbon filter columns eliminates treatment of about 10,000 pounds of hazardous waste annually.

Dumpster buckets are located throughout the installation. These buckets collect unrecoverable, non-hazardous, non-explosive solid waste from offices, cafeterias, and households. All solvent, adhesive- contaminated and paint-contaminated wipes are collected and appropriately managed for disposal as hazardous waste.

The installation RCRA Part B permit allows IAAAP to store hazardous waste generated on the facility for up to one year. With the exception of small amounts of explosive

material that are considered too dangerous to handle and that are destroyed by OB/OD on site; nearly all of the hazardous waste generated by IAAAP is treated off-site by RCRA permitted hazardous waste treatment facilities. In 2010, IAAAP generated approximately 110,000 pounds of hazardous waste. Approximately four pounds of waste were destroyed by emergency OB/OD on-site and 802 pounds were shipped to MLAAP for OB/OD. The remainder of the hazardous waste was shipped to commercial RCRA permitted facilities for treatment.

4.9.6.2. Consequences

4.9.6.2.1. Proposed Action

The Proposed Action will generate hazardous materials and generate hazardous waste streams. The amount of hazardous waste generated by the Proposed Action will be based on the amount of production. The production levels at IAAAP for the Proposed Action would be determined by production contract requirements. Production requirements are anticipated to be significantly lower in 2012 and out-years than current production levels as shown in table 4-9. The total amount of hazardous waste generated at IAAAP in 2012 and out years under the Proposed Action is anticipated being slightly higher than the 110,338 pounds of hazardous waste generated by IAAAP in 2010.

**Table 4-9:
MLAAP CY 2010 Production Quantities vs. CY 2012 Forecast**

Item	2010	2012	+/-
MLAAP			
40mm	9,500,000	7,700,000	-1,800,000
M112	678,000	120,000	-558,000
MICLIC	77	50	-27
Propelling Charges	1,771,000	1,400,000	-371,000
Ignition Cartridge	235,000	194,000	-41,000
Spider	418	19,000	18,582
Mortar (60mm)	185,000	194,000	9,000
Total MLAAP	12,369,495	9,627,050	-2,742,445
			-22.2%

All installation environmental permits will be modified as required to support the Proposed Action. The NPDES industrial and sanitary discharges permit will be modified. Except for the closure of the primer/tracer function, the Proposed Action is not expected to require modification of the IAAAP RCRA permit.

All hazardous waste generated by the incoming munitions functions would be managed, stored, treated and disposed in accordance with RCRA regulations and the appropriate IAAAP hazardous materials management plans. All pertinent IAAAP hazardous materials management plans would be updated to include the new wastes associated with the incoming munitions functions under the Proposed Action. The installation will obtain any additional permits required for the management of hazardous wastes generated by the Proposed Action.

Table 4-10 shows the type and quantity of production related hazardous waste generated at MLAAP in 2010. The MLAAP waste streams are similar to those at IAAAP. Hazardous waste amounts generated by production at each plant vary annually and are typically higher at IAAAP (see Table 4-11). Production material currently treated by OB/OD at MLAAP will be disposed of at IAAAP by shipment to off-site hazardous waste treatment facilities.

**Table 4-10:
Production Related Hazardous Waste Generated At MLAAP In CY 2010**

Waste Type	MLAAP Waste Generated CY 2010
Explosive Sludge	3,691.50
Spent Carbon	17,445
Non-listed Reactive	12,600
Explosive/Solvent Contaminated Rags	6,038.50
Mixed Thinner Waste	2,162
Paint Sludge and Thinner	1,369
Waste Fluorescent Bulbs	532
Waste Corrosives and Metals	522
Waste Paint & Adhesive	156
Polysulfide, cured	156
Primer Water	3,742
Total (lbs)	48,414

Explosives that are not safe to ship to off-site hazardous waste treatment facilities are disposed on IAAAP by emergency OB/OD.

The proposed 40mm Test Range would be an exempt facility that would not be regulated under RCRA or the CAA. The 40mm test fire operations would be expected to generate approximately 400 UXO items each year. The UXO that would be too hazardous to handle safely would be destroyed on the range by OB/OD. The IDNR determined that the

management of UXO by OB/OD operations at IAAAP test sites is not covered by RCRA or the CAA, and no permits are required for operation of the 40mm Test Range or for UXO OB/OD operations conducted on any of the test ranges. (See Appendix A-A-13) Test ranges, to include the 40mm Test Range, would, however, require remediation in accordance with RCRA upon their deactivation and closure. The EPA reviewed the “Iowa Army Ammunition Plant Site Construction and Management Plan for the 40MM Test Range” to ensure that range operations would not adversely impact the ongoing CERCLA clean-up operations at IAAAP. The EPA concluded that the operation of the 40mm Test Range would not adversely impact the on-going CERCLA response actions at IAAAP and included their comments in the aforementioned plan. (See Appendix A-A-9)

Table 4-11, Hazardous Waste Projection, provides a comparison of CY 2010 hazardous waste generation at IAAAP and MLAAP and projected hazardous waste generation under the Proposed Action at IAAAP in CY 2012.

**Table 4-11:
Hazardous Waste Projected to be Produced at IAAAP in CY 2012 After Consolidation**

	CY 2010 Hazardous Waste (lbs)	Anticipated CY 2012 Reduction	CY 2012 Projected (lbs)
Iowa	110,338	31.5%	75,582
Milan	48,414	22.2%	37,666
	158,752		113,248

The Proposed Action will not generate waste streams that are different from the hazardous waste currently generated by IAAAP. The total amount of waste generated by IAAAP under the Proposed Action is not anticipated to be significantly greater than the amount hazardous waste presently generated by IAAAP because production quantities ordered have been reduced and are anticipated to continue to be reduced in the future. Hazardous waste generated by the Proposed Action will be treated in the same manner as waste currently generated by IAAAP. The Proposed Action will have a minor, but not significant, impact of the generation, treatment, storage and disposal of hazardous waste.

4.9.6.2.2. No Action Alternative

Under the No Action Alternative, the IAAAP would not remodel any of its facilities to accommodate the additional munitions functions and would not construct the 40mm Test Range. There would be no change in the management of hazardous materials or the treatment, storage or disposal of hazardous waste. The No Action Alternative would have no effect on the generation of hazardous and toxic substances, or treatment, storage or disposal of hazardous waste.

4.9.7. Cumulative Effects

The Council on Environmental Quality regulations for implementing NEPA defines cumulative effects (40 CFR 1508.7) as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions”.

4.9.7.1. Proposed Action

The proposed remodeling of Line 1 and Line 3, and construction of the 40mm Test Range would have little potential to interact with any past, present, or reasonably foreseeable future actions in or outside the IAAAP. Efforts made to facilitate the incoming munitions production and functions would also have little potential interaction with other operations. The EPA reviewed construction and management plans for the 40mm Test Range to ensure the range would have no effect on the CERCLA remediation projects at IAAAP, and concluded that such operations would not adversely impact the on-going CERCLA response action. (See Appendix A-A-9)

The Proposed Action would generate additional hazardous waste from production items relocated from MLAAP. Except for RCRA exempt UXO OB/OD operations conducted on the test ranges, all hazardous waste generated by the Proposed Action would be treated at off-site RCRA hazardous waste treatment facilities and would have a negligible cumulative impact on the environment at IAAAP. Cumulative impact of the Proposed Action on noise, air emissions and point source discharges to surface water would be minimal. The Title V air permits and NPDES industrial and sanitary waste discharge permits will be modified as necessary to support the Proposed Action.

The Proposed Action would have minor positive cumulative effects on the economy of the ROI as a result of the short-term and long-term increases in employment and expenditures during construction and the increased munitions production.

Consideration of the intensity and context of direct and indirect effects of the Proposed Action, indicate that the cumulative effects would not have a significant impact on the affected environment at IAAAP.

4.9.7.2. No Action Alternative

Under the No Action Alternative, IAAAP would not remodel any of its facilities to accommodate the additional munitions functions, and would not construct the 40mm Test Range. The No Action Alternative would have no cumulative effect on the environment.

5. Conclusions

The Optimization Plan for MLAAP and IAAAP was conceived and developed in accordance with the stated objectives of the U.S. Army. These objectives include achieving the optimal balance between flexibility, utilization, retention of critical capabilities, and cost effectiveness. In an effort to achieve these goals, the Proposed Action is to relocate 40mm family of munitions, M112 Demo Block, MICLIC, Spider, Mortars, and mortar components functions from MLAAP to IAAAP.

5.1. Consequences

5.1.1. Proposed Action

Any impact that the Proposed Action may have on the natural environment would be negligible to minor. During the proposed remodeling of Lines 1 and 3, and construction of the 40mm Test Range, there would be *de minimus* increases in air emissions from fugitive dust and construction vehicle exhaust emissions. The air emissions generated by the production and test firing of the incoming munitions would cause *de minimus* impacts to air quality and are not expected to collectively exceed federal air quality thresholds.

Construction-related noise would be temporary and the levels are not expected to be audible beyond the installation boundary. Additional test fires associated with the Proposed Action would not create a significant increase in noise levels on the installation.

Remodeling of Lines 1 and 3 would have minor impact on soils during construction. The soils around the buildings are already disturbed. Sediment and erosion controls would be implemented during construction to prevent any indirect impacts to surrounding soils or surface waters. Construction activity that occurs on the facility exteriors may have a minor, temporary impact on vegetation, which consists mostly of mowed grass and landscaping vegetation. After construction is completed, any affected areas would be restored and re-vegetated to original conditions.

Construction of the 40mm Test Range would have minor and temporary effects on wetlands and wildlife due to the permanent disturbance of less than a half-acre of wetlands and destruction of some trees. These effects will be mitigated by the Wetland Mitigation Plan that will be implemented as part of the Proposed Action (EarthView Environmental, LLC, 2010). Construction of the 40mm Test Range would have negligible effects on cultural resources as documented by the letter from the Iowa SHPO. Construction of a perimeter fence for the 40mm Test Range would require monitoring and other measures to reduce and avoid any impacts to archaeological resources. Construction of a perimeter fence for the 40mm Test Range would be done in accordance

with the mitigation plan submitted in the BA and approved by the USFWS in order to reduce and avoid adverse impacts to the Indiana Bat. The establishment and operation of staging areas for the remodeling, as well as general construction noise may temporarily disturb wildlife. The immediate areas around the 40mm Test Range provide poor to moderate quality wildlife habitat. Any disturbance experienced by wildlife would be limited to the construction period and is expected to be minimal. The operation of 40mm Test Range would have a minor impact on wildlife. The CHPPM noise contours indicate 40mm Test Range operations would have less impact on the surrounding community and wildlife than the current testing at the Firing Site area.

The remodeling of Lines 1 and 3 would not have a significant impact on the structural integrities of the facilities. Remodeling of the facilities would temporarily increase traffic at IAAAP during the construction period; however, the projected increase in traffic is not expected to burden the road system in or around the installation significantly. All hazardous waste generated by the production process would be managed, stored, and disposed in accordance with all applicable environmental regulations and with all hazardous materials management plans implemented at IAAAP. The Proposed Action does not significantly increase the volume of shipments from the IAAAP. Data from 2006-2010 shows an average of 29,678 tons of materials shipped from the IAAAP to various destinations. The current projection for shipping volume in 2012 is 27,600 tons, which represents an 8% drop in volume from what has been experienced during the past five years. In 2010 the IAAAP shipped 0.4 tons (802 pounds) of hazardous waste to MLAAP for disposal. The amount of hazardous waste shipped from IAAAP to MLAAP will continue to decrease due to limitations imposed by the State of Tennessee on the amount of hazardous waste MLAAP may treat from offsite sources, including IAAAP. The IAAAP utilizes several different RCRA permitted facilities for disposal of the waste materials identified in Table 4-11. The waste treated at MLAAP represents less than 3% of the total waste stream. Therefore, the Proposed Action will have negligible impact on the transportation of hazardous wastes treated at the MLAAP facility. As part of the Proposed Action, IAAAP would not need to upgrade the existing waste treatment system to treat the waste streams generated by the incoming munitions functions. All necessary permits for the management of hazardous wastes generated by the incoming munitions will be obtained, as required. A summary of the consequences of the Proposed Action and No Action Alternative is presented in Table 5-1.

The construction, remodeling and operation of the facilities would have little potential to interact with any past, present, or reasonably foreseeable future actions at or outside IAAAP.

**Table 5-1:
Summary of Potential Environmental and Socioeconomic Consequences**

Environmental and Socioeconomic Consequences		
Resource	Proposed Action	No Action
Land Use	Minimal Effects	No Effect
Air Quality	Minor effects Production activities will be permitted under Title V. The test range is exempt from Title V.	No effect
Noise	Minor effects Increased noise on the installation, but none outside of IAAAP.	No effect
Geology and Soils:	Minimal effects	No effect
Geology	Negligible effects Minimal grading required for the test fire range would impact subsurface geology.	No Effect
Topography	Negligible effects Minimal grading required for the test fire range would impact topography.	No effect
Soils	Negligible effects Minimal grading required for the test fire range would impact on soils. Necessary sediment and erosion controls would be in place to reduce and prevent impacts to surrounding soils or surface waters.	No Effect
Prime Farmland	Minimal reduction No effect	No effect
Water Resources	Negligible effects Necessary sediment and erosion controls would be in place to reduce and prevent impacts to surrounding soils or surface waters. Controls may include silt fencing, berms, or re-vegetation. Wetland mitigation measures will be implemented to replace wetlands impacted by the construction of the 40mm Test Range.	No effect
Biological Resources:		
Wildlife	Minor Negligible effects Temporary effects from construction and remodeling and effects from operational noise for the test range firing operation would be minimal.	No effect
Special Status Species	May affect, but not likely to have a significant adverse effect on the Indiana Bat. Mitigation measures to avoid and reduce impacts to the Indiana Bat have been approved by the USFWS.	No effect
Cultural Resources:		
Historic Structures	Negligible effect	No effect
Archaeological Resources	Negligible effect Monitoring and implementing measures to avoid impacts will result in Negligible effects	No effect

Environmental and Socioeconomic Consequences		
Resource	Proposed Action	No Action
Socioeconomics:		
Employment	Minimal effects The Proposed Action will result in the addition of 200 employees, which is a minimal positive effect.	Negative Effect Failure to gain efficiencies will reduce the ability to compete for production contracts No effect
Demographics and Public Services	Negligible effects The relocation of personnel from MLAAP to IAAAP would result in no more than a 0.2% increase in population.	No effect
Environmental Justice and Protection of Children	No effect	No effect
Transportation	Minor effects Current transportation infrastructure will be adequate for temporary increased traffic during construction and increased traffic for additional personnel.	No effect
Utilities	Negligible effects	No effect
Hazardous and Toxic Substances	Minor effects	No effect
Cumulative Effects	No effect	No effect

5.2. No Action Alternative

Under the No Action Alternative, IAAAP would continue production operations for 120mm tank operations, Melt Pour, Warhead pressing and various BRAC directed activities.

The No Action Alternative was considered in terms of the Business and Management factors, Technical factors, Past Performance, and Cost factors set forth in the request for proposal. The No Action Alternative failed to achieve the necessary goals of the Army in these areas. The Army's four stated objectives for GOCO facilities are: (1) Minimize the cost of operations for the Army throughout the life of the contract; (2) Enable the site(s) to support operator contract or flexibility in adapting to requirements (volumes, technology, obsolescence, etc.); (3) Maximize the utilization of on-site U.S. Government assets (facilities, equipment, etc.); and (4) Enable the operating contractor to successfully compete for business in the open market (ammunition or non-ammunition), without any Army workload.

5.3. Conclusions

The Proposed Action would not result in significant adverse direct, indirect, or cumulative impacts to any environmental, cultural, physical, or socioeconomic resource. Based on this EA, the Army has determined that a Finding of No Significant Impact is justified and that no Environmental Impact Statement is required.

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7. Distribution List

Environmental, American Ordnance, IAAAP

Environmental, ACO IAAAP

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Appendix A

Agency Scoping

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