

FINAL ENVIRONMENTAL ASSESSMENT
PROPOSED MULTI-PURPOSE MACHINE GUN RANGE
JOINT BASE MCGUIRE-DIX-LAKEHURST (JB MDL)

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Prepared for



JOINT BASE MCGUIRE-DIX-LAKEHURST
NEW JERSEY

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**FINDING OF NO SIGNIFICANT IMPACT &
FINDING OF NO PRACTICABLE ALTERNATIVE**

**PROPOSED CONSTRUCTION AND OPERATION OF A
MULTI-PURPOSE MACHINE GUN RANGE AT
JOINT BASE MCGUIRE-DIX-LAKEHURST, NEW JERSEY**

Pursuant to provisions of the National Environmental Policy Act (NEPA), 42 U.S. Code 4321 *et seq.*, implementing Council on Environmental Quality (CEQ) Regulations, 40 Code of Federal Regulations (CFR) 1500-1508, and 32 CFR Part 989, *Environmental Impact Analysis Process* (EIAP), the U.S. Air Force (Air Force) conducted an Environmental Assessment (EA) of the potential environmental consequences of the construction and operation of a Multi-Purpose Machine Gun Range (MPMGR) at Joint Base McGuire-Dix-Lakehurst (JB MDL), New Jersey. This EA considers the potential impacts of the Proposed Action on the natural and human environments. The attached EA is hereby incorporated by reference.

Proposed Action and Alternatives

The U.S. Army proposes to construct, operate, and maintain a MPMGR on JB MDL – in the Dix Range Area. The proposed action is to construct, operate, and maintain a MPMGR designed to train individual soldiers in the basic machine gun live-fire training tasks they require to sustain combat proficiency. The range will feature four (4) firing lanes reaching to a distance of 1,500 meters, and fully automated targets to a distance of 1,000 meters. Operation of the range would involve both day and night time firing approximately 3-4 days per week. Alternative 1, the Preferred Alternative, is to construct, operate, and maintain a MPMGR in the 178 acre "Times Square" at JB MDL – Dix Range Area. Alternative 2, the Competing Build Alternative, is to construct, operate, and maintain a MPMGR in the 160 acre area between Range 39 and the Explosive Ordnance Disposal (EOD) Range at JB MDL – Dix Range Area. The No-Action Alternative (Alternative 3) a new MPMGR would not be constructed and the existing sub-standard MPMGR at Range 11 would continue to be used. A total of seven locations were examined utilizing a series of applicable environmental and operational screening criteria in order to discern a facility location. As discussed in section 2.4 of the EA, five of the seven potential sites were eliminated from further consideration as not providing a practicable alternative because these alternatives either failed to meet the site selection screening criteria and/or failed to meet the purpose and need requirements for this project.

Summary of Findings

The analyses of the affected environment and environmental consequences of implementing the Proposed Action (Alternative 1) presented in the attached EA concluded that environmental effects related to the implementation of Alternative 1 were generally equivalent to, or slightly less than, those that would result through the implementation of Alternative 2. No un-mitigatable significant adverse effects would result through the implementation of either Alternative 1 or Alternative 2. No significant effects requiring mitigation were identified. In addition, less than significant cumulative adverse impacts would result from activities associated with either project when considered in conjunction with recent, past, and future projects within the project area. Proposed management practices and adherence to regulatory compliance standards are

identified in the EA which are standard construction management practices that would be implemented by the contractor to comply with permit requirements.

Finding of No Significant Impact & Finding of No Practicable Alternative

Based upon my review of the facts and analyses contained in the attached EA, conducted in accordance with the provisions of NEPA, the CEQ Regulations, and 32 CFR Part 989, I conclude that the Proposed Action will not have a significant environmental impact, either by itself or cumulatively with other ongoing projects at JB MDL, will not involve an element of high risk or uncertainty on the human environment, and its effects on the quality of the human environment are not highly controversial. Pursuant to Executive Order (EO) 11988, *Floodplain Management* and the authority delegated by the Secretary of the Air Force Order 791.1, I find there is no practicable alternative to conducting the Proposed Action within a floodplain. Also, pursuant to EO 11990, *Protection of Wetlands*, I find there is no practicable alternative for implementing the Preferred Alternative without the further risk to public health or safety. The Air Force further finds all practicable measures have been taken to minimize harm to the floodplain and wetlands, and proposed measures to minimize impacts are documented in the EA. Public notice of this EA and project were accomplished as described in Section 1.6 of the EA. No public comments were received concerning wetlands or floodplains. This finding fulfills both the requirements of the referenced EOs and 32 CFR 989.14 requirements for a Finding of No Practicable Alternative. Accordingly, an Environmental Impact Statement is not required. The signing of this Finding of No Significant Impact & Finding of No Practicable Alternative completes the environmental impact analysis process.

Approved by:



ROWAYNE A. SCHATZ, JR.
Major General, USAF
Vice Commander

8 Oct 2015

DATE

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PRIVACY ADVISORY

Public comments on this draft ENVIRONMENTAL Assessment (EA) are requested pursuant to the National Environmental Policy Act, 42 United States Code 4321, *et seq.* All written comments received during the comment period will be made available to the public and considered during Final EA preparation. Providing private address information with your comment is voluntary and such personal information will be kept confidential unless release is required by law. However, address information will be used to compile the project mailing list and failure to provide it will result in your name not being included on the mailing list.

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ENVIRONMENTAL ASSESSMENT ORGANIZATION

PROPOSED CONSTRUCTION AND OPERATION OF A MULTI-PURPOSE MACHINE GUN RANGE AT JOINT BASE MCGUIRE-DIX-LAKEHURST, NEW JERSEY

This Environmental Assessment (EA) evaluates the potential environmental, socioeconomic, and cultural effects associated with the proposed construction and operation of a new Multi-Purpose Machine Gun Range (MPMGR) at Joint Base McGuire-Dix-Lakehurst (JB MDL), New Jersey. As required by the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] §§ 4321-4347), and in accordance with the Council on Environmental Quality (CEQ) regulations implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] §§ 1500-1508) and Air Force Instruction (AFI) 32-7061, *Environmental Impact Analysis Process* (EIAP) (32 CFR Part 989). This EA will facilitate the decision process regarding the Proposed Action and its alternatives, and is organized as follows:

EXECUTIVE SUMMARY: Describes the Proposed Action; summarizes environmental, cultural, and socioeconomic consequences; and compares potential effects associated with the two considered alternatives.

SECTION 1.0 PURPOSE, NEED, AND SCOPE: Summarizes the purpose of and need for the Proposed Action, provides relevant background information, and describes the scope of the EA.

SECTION 2.0 DESCRIPTION OF THE PROPOSED ACTION and ALTERNATIVES: Describes the Proposed Action and presents alternatives for implementing the Proposed Action.

SECTION 3.0 AFFECTED ENVIRONMENT: Describes the existing environmental, cultural, and socioeconomic setting of the proposed project area and its vicinity.

SECTION 4.0 ENVIRONMENTAL CONSEQUENCES: Identifies individual and cumulative potential environmental, cultural, and socioeconomic effects of implementing the Proposed Action and alternatives, and identifies proposed mitigation measures.

SECTION 5.0 COMPARISON OF ALTERNATIVES AND CONCLUSIONS: Compares the environmental effects of the considered alternatives and summarizes the significance of individual and expected cumulative effects of these alternatives.

SECTION 6.0 REFERENCES: Provides bibliographical information for cited sources.

SECTION 7.0 GLOSSARY: Defines terms used in the EA.

SECTION 8.0 LIST OF PREPARERS: Identifies document preparers and their areas of expertise.

SECTION 9.0 AGENCIES AND INDIVIDUALS CONSULTED: Lists agencies and individuals consulted during EA preparation.

APPENDICES:

Appendix A Interagency and Intergovernmental Coordination for Environmental Planning

Appendix B Documentation of Public Review and Comment Period

Appendix C Applicable Laws and Executive Orders

Appendix D Wetland Delineation Report and Listed Species Habitat Survey

Appendix E NEPA Concepts and Terminology

Appendix F Conformity Determination – Record of Non-Applicability

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ENVIRONMENTAL ASSESSMENT SIGNATURE PAGE

LEAD AGENCY: Headquarters Air Mobility Command
COOPERATING AGENCIES: None
TITLE OF PROPOSED ACTION: Proposed Construction and Operation Multi-Purpose Machine Gun Range at Joint Base McGuire-Dix-Lakehurst
AFFECTED JURISDICTION: Ocean County, New Jersey
POINT OF CONTACT: Mr. Joseph Rhyner, 87th AMC, Joint Base McGuire-Dix Lakehurst, New Jersey, 08640-5501. Tel 609-754-6166
PROPONENTS: Joint Base McGuire-Dix-Lakehurst

DOCUMENT DESIGNATION: Final Environmental Assessment

ABSTRACT: The U.S. Army proposes to construct, operate, and maintain a Multi-Purpose Machine Gun Range (MPMGR) on Joint Base McGuire-Dix-Lakehurst (JB MDL) – in the Dix Range Area. The U.S. Army has determined the current Machine Gun Range does not meet the size requirements for basic training as outlined in Training Circular (TC) 25-8 Training Ranges (DA 2010). The proposed new MPMGR range would meet critical live-fire individual marksmanship training needs for both active and reserve component units that train on the installation. This Environmental Assessment (EA) evaluates the individual and cumulative effects of the Proposed Action, Alternatives to the Proposed Action, and the No Action Alternative with respect to the following criteria: geographic setting, land use, air space, air quality, noise, topography, geology, soils, water resources, biological resources, cultural resources, socioeconomics, environmental justice, infrastructure, hazardous and toxic materials/wastes, and human health and safety. The evaluation performed within this EA concludes there would be no significant adverse impact, either individually or cumulatively, to the local environment or quality of life as a result of implementing the Proposed Action. This EA's analysis determines, therefore, an Environmental Impact Statement (EIS) is unnecessary for implementing the Proposed Action, and that a Finding of No Significant Impact (FONSI) and Finding of No Practical Alternative (FONPA) is appropriate.

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LIST OF ACRONYMS AND ABBREVIATIONS

%	Percent	CH ₄	Methane
°F	Degrees Fahrenheit	CO	Carbon Monoxide
µg/m ₃	Micrograms Per Cubic Meter	CO ₂	Carbon Dioxide
ABPL	At or Below Poverty Level	CZ	Clear Zone
ADNL	A-Weighted Day-Night Level	DA	Department of the Army
AFCEE	Air Force Center for Environmental Excellence	DAQ	Division of Air Quality
AFI	Air Force Instruction	dBA	A-Weighted Decibels
AFPD	Air Force Policy Directive	dBc	C-Weighted Decibels
AGL	Above Ground Level	DPCC	Discharge Prevention, Control, Countermeasures and Discharge Cleanup Removal
AICUZ	Air Installation Compatibility Use Zone		
AIRFA	American Indian Religious Freedom Act	DoD	Department of Defense
amsl	Above Mean Sea Level	DoDI	Department of Defense Instruction
APE	Area of Potential Effect	EA	Environmental Assessment
APZ	Accident Potential Zone	EIAP	Environmental Impact Analysis Process
AQPP	Air Quality Permitting Program	EIS	Environmental Impact Statement
AR	Army Regulation	EO	Executive Order
ARPA	Archaeological Resource Preservation Act	EOD	Explosive Ordnance Disposal
ARRM	Army Range Requirements Model	ESA	Endangered Species Act
AT/FP	Anti-Terrorism/Force Protection	E&S	Erosion and Sedimentation
BGEPA	Bald and Golden Eagle Protection Act of 1940	FAA	Federal Aviation Administration
BMPs	Best Management Practices	FICUN	Federal Interagency Committee on Urban Noise
BNOISE	Blast Noise Assessment Model	FONPA	Finding of No Practical Alternative
BOMARC	Boeing Michigan Aeronautical Research Center	FONSI	Finding of No Significant Impact
CAA	Clean Air Act	HAP	Hazardous Air Pollutant
CAAA	Clean Air Act Amendments	HQ AMC	Headquarters Air Mobility Command
CDNL	C-Weighted Day-Night Level	HTMW	Hazardous and Toxic Materials or Waste
CDP	Census-Designated Place	ICRMP	Integrated Cultural Resources Management Plan
CEQ	Council on Environmental Quality		
CFR	Code of Federal Regulations		

IICEP	Interagency and Intergovernmental Coordination for Environmental Planning	NJDLUR	New Jersey Department of Land Use Regulation
IONMP	Installation Operational Noise Management Plan	NJ HPO	New Jersey Historic Preservation Office
IP	Individual Permit	NOA	Notice of Availability
IPAC	Information, Planning, and Conservation System	NOI	Notice of Intent
ISBC	Infantry Squad Battle Course	NO _x	Nitrogen Oxide
JB MDL	Joint Base McGuire-Dix-Lakehurst	NRCS	Natural Resources Conservation Services
L _{dn}	Day-Night Level	NY ARTCC	New York Air Route Traffic Control Center
MBTA	Migratory Bird Treaty Act of 1918	NZ	Noise Zone
MEC	Munitions and Explosives of Concern	O ₃	Ozone
mm	Millimeter	OMB	Office of Management and Budget
MOU	Memorandum of Understanding	PAHs	Petroleum Aromatic Hydrocarbons
MOUT	Military Operations on Urbanized Terrain	Pb	Lead
mph	Miles per Hour	PM	Particulate Matter
MPMGR	Multi-Purpose Machine Gun Range	PM _{2.5}	Particulate Matter 2.5 Microns
MWR	Morale, Welfare and Recreation	PM ₁₀	Particulate Matter 10 Microns
N.J.A.C.	New Jersey Administrative Code	POV	Personal Owned Vegicle
NAAQS	National Ambient Air Quality Standards	ppm	Parts Per Million
NAES	Naval Air Engineering Station	RAPCON	Radar Approach Control
NAGPRA	Native American Graves and Protection and Repatriation Act	ROI	Region of Influence
NEPA	National Environmental Policy Act	SARNAM	Small Arms Range Noise Assessment Model
NH ₃	Ammonia	SAW	Squad Automatic Weapon
NHPA	National Historic Preservation Act	SDZ	Surface Danger Zone
NJDEP	New Jersey Department of Environmental Protection	SHPO	New Jersey State Historic Preservation Office
NJDFW	New Jersey Division of Fish and Wildlife	SIP	State Implementation Plan
		SO ₂	Sulfur Dioxide
		SPCC	Spill Prevention, Control, and Countermeasures
		TC	Training Circular
		TCP	Traditional Cultural Properties
		tpy	Tons Per Year
		TSP	Total Suspended Particles
		U.S.	United States
		USAF	United States Air Force

USC	United States Code
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UXO	Unexploded Ordnance
VOCs	Volatile Organic Compounds

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EXECUTIVE SUMMARY

Pursuant to provisions of the National Environmental Policy Act (NEPA), 42 U.S. Code 4321 *et seq.*, implementing Council on Environmental Quality (CEQ) Regulations, 40 Code of Federal Regulations (CFR) 1500-1508, and 32 CFR Part 989, *Environmental Impact Analysis Process* (EIAP), the U.S. Air Force (Air Force) conducted an Environmental Assessment (EA) of the potential environmental consequences of the construction and operation of a Multi-Purpose Machine Gun Range (MPMGR) at Joint Base McGuire-Dix-Lakehurst (JB MDL), New Jersey. This EA considers the potential impacts of the Proposed Action on the natural and human environments.

Proposed Action and Alternatives

The U.S. Army proposes to construct, operate, and maintain a MPMGR on JB MDL – in the Dix Range Area. The range would be used to train and test individual soldiers on the skills necessary to zero in, detect, identify, engage, and defeat stationary and moving infantry targets along with stationary armor targets in a tactical array using machine guns. The Proposed Action is to construct, operate, and maintain a MPMGR designed to train individual soldiers in the basic machine gun live-fire training tasks they require to sustain combat proficiency. The range would feature four (4) firing lanes reaching to a distance of 1500 meters, and fully automated targets to a distance of 1000 meters. The event specific target scenario is computer driven and scored from the range operations center. The range would provide immediate performance feedback to the soldiers using the range. Operation of the range would involve both day and night time firing approximately 3-4 days per week. Alternative 1, the Preferred Alternative, is to construct, operate, and maintain a MPMGR in the 178-acre "Times Square" area at JB MDL – Dix Range Area. Alternative 2, the Competing Build Alternative, is to construct, operate, and maintain a MPMGR in the 160-acre area between Range 39 and the Explosive Ordnance Disposal (EOD) Range at JB MDL – Dix Range Area. Under the No-Action Alternative (Alternative 3) a new MPMGR would not be constructed and the existing sub-standard MPMGR at Range 11 would continue to be used. A total of seven locations were examined utilizing a series of applicable environmental and operational selection criteria in order to discern a facility location. As discussed in Section 2.4, five of the seven potential sites were eliminated from further consideration as not providing a practicable alternative because these alternatives failed to meet the site selection criteria, and/or failed to meet the purpose and need requirements for this project.

Summary of Findings

The analyses of the affected environment and environmental consequences of implementing the Proposed Action (Alternative 1) presented in the EA concluded that environmental effects related to the implementation of Alternative 1 were generally equivalent to, or slightly less than, those that would result through the implementation of Alternative 2. No unmitigatable significant adverse effects would result through the implementation of either Alternative 1 or Alternative 2. Implementation of Alternative 3 would not result in any positive or adverse environmental effects. No significant effects requiring mitigation were identified. In addition, no significant cumulative adverse impacts would result from activities associated with either project when considered in conjunction with recent, past, and future projects within the project area. Best Management Practices (BMPs) to further reduce insignificant adverse environmental effects associated with implementation of the Proposed Action at Alternative 1 and Alternative 2 are presented in the EA. In addition, proposed management practices and adherence to regulatory

compliance standards are identified in the EA which are standard construction management practices that would be implemented by the contractor to comply with permit requirements.

The following summarizes the environmental consequences related to Alternative 1 and Alternative 2, and are evaluated in detail in the EA. As indicated, the environmental consequences were determined to have no significant adverse effects requiring a mitigation plan. JB MDL will utilize the following BMPs to further reduce environmental effects:

- **Land Use.** No significant land use impacts requiring mitigation were identified in association with either Alternative 1 or Alternative 2. Construction and operation of the MPMGR is consistent with the designated land use of the military installation. Construction would involve cutting of vegetation (but no stump removal) within the wetland areas. Although the area would remain as wetlands, the wetland type would be altered, creating an insignificant long term land use impact. Because these land use impacts are primarily directly related to the changing land use of wetlands please refer to "Water Resources" below and **Section 4.6.4** which details the wetland BMPs that would be implemented to further reduce the insignificant effects to land use.
- **Air Space.** No adverse air space effects would be anticipated to result from the implementation of either Alternative 1 or Alternative 2. The construction and operation of the proposed MPMGR would not impede or alter the current air space or flight patterns at or in the vicinity of the JB MDL, as the air space above the JB MDL Dix Range Area is restricted. No mitigation measures or BMPs are required in association with this resource.
- **Air Quality.** No significant air quality effects requiring mitigation were identified in association with either Alternative 1 or Alternative 2. No new air emission sources would be introduced and no increases in air emissions would be generated as part of the Proposed Action. Fugitive emissions would be generated from construction activities, including excavation, trenching, and other ground-disturbing activities. Implementation of standard BMPs for dust control (e.g., regularly watering exposed soils, soil stockpiling, soil stabilization, etc.) would reduce potential short term impacts to negligible levels. Combustion emissions resulting from construction activities under both alternatives would be below *de minimis* thresholds for a General Conformity determination. Therefore, implementation of the Proposed Action would not result in any significant air quality impacts.
- **Noise.** No significant noise effects requiring mitigation were identified in association with either Alternative 1 or Alternative 2. Implementation of Alternative 1 or Alternative 2 would result in short-term effects to the noise environment from the construction of the proposed MPMGR; given the temporary nature of proposed construction activities, the limited time frame in which the construction equipment would generate noise, and the lack of sensitive receptors in the vicinity of Alternative 1 and Alternative 2, this effect is not considered significant. The increase in small arms noise within the project study area associated with the operation of the MPMGR at either Alternative 1 or Alternative 2 would not result in any short term or long term significant adverse effects to the noise environment. Approximately 1,418 additional off-post acres would fall within the Noise Zone II as a result of training at the MPMGR. The majority of the additional Noise Zone II acreage falls within segments of the Bryndan T. Byrne State Forest as well as

cranberry bog farm land. However, 8 new sensitive receptors (all residences) also would fall within the new Noise Zone II for the installation. It is likely that the incremental increase in noise caused by training at the proposed MPMGR would not be perceptible to the identified new receptors since these residences are currently located less than ½ mile from an active, privately run gun club with operating firing and skeet ranges. No additional off-post acreage of Noise Zone III would be expected and, as such, the risk of complaints from off-base is low. Overall, implementation of either Alternative 1 or Alternative 2 is not expected to have long-term significant adverse noise impacts. These data should be incorporated into an updated Air Installation Compatibility Use Zone (AICUZ) plan.

- **Geology, Topography, Soils.** Implementation of Alternative 1 would not result in any significant geologic, topographic or soils effects requiring mitigation measures. However implementation of Alternative 2 would require an extensive amount of grading in order to achieve the necessary line of sight to the targets on the northernmost firing lane of Alternative 2. The additional grading required is not a significant impact to local or regional geology, topography, or soils; however the additional grading presents additional engineering complications (e.g. erosion, and slope stability) which would require consideration during the design of the range. The following BMPs are recommended prior to initiation of any on-site construction to prevent direct-construction-related and operation and maintenance-related soil erosion effects:
 - o JB MDL would prepare a detailed, site-specific Erosion and Sedimentation (E&S) Control Plan and submit the site-specific E&S Control Plan to the Ocean County Soil Conservation District office for review and certification. The U.S. Army should receive certification from the Ocean County Soil Conservation District prior to initiating construction.
 - o JB MDL would plant approved native grasses that are best suited to the specific soil types and growing conditions to stabilize soils and prevent soil erosion from increased stormwater flow.
 - o During routine maintenance activities (e.g. annual mowing) JB MDL would make note and observe any locations of rutting and/or soil erosion. These areas should be promptly stabilized and re-planted with native grasses.

The additional grading required at Alternative 2 presents additional engineering complications (e.g. erosion, and slope stability) which would require consideration during the design of the range.

- **Water Resources.** No significant, long-term, adverse effects to surface water resources would be anticipated from implementation of Alternative 1 or Alternative 2. Wetlands are present within both alternative locations (6.12 acres within Alternative 1 and 23.70 acres within Alternative 2). Construction of the MPMGR at either alternative location would require clearing of existing vegetation within wetlands, however no grading or stump removal would occur within the wetlands. The NJDEP has indicated that if no grading or stump removal occurs within the wetlands, then wetland permitting and mitigation would not be required. Stump removal, grading, and trenching across the remainder of the site may result in the increased rate at which stormwater runoff flows across the site which would be managed through the adherence to the following regulatory compliance standards, standard construction measures, and BMPs :

-
- o Stump removal and grading would occur only in the uplands. Trees within the wetlands would be cut at three inches or below and their stumps and roots would remain in place in order to minimize ground disturbance and potential soil erosion. A New Jersey Department of Environmental protection (NJDEP) wetland permit is not required. Additionally, long-term maintenance of the range vegetation in the upland and wetland areas would only involve selective brush clearing and sapling cutting in order to maintain a line of sight.
 - o No range targets would be located within wetlands; range targets would be located only in uplands.
 - o Directional drilling would be conducted in areas where the proposed electrical line and fiber-optic line may encroach upon wetlands. The use of directional drilling beneath wetlands would minimize adverse effects to these regulated areas and avoid the need for obtaining NJDEP permits.
 - o The proposed paths for the electrical line and fiber-optic line would be as close to perpendicular to the wetlands as possible, thus minimizing encroachment into these areas.
 - o No new roads would be constructed in wetlands. Existing sand access roads that cross over wetland areas would be improved with crushed gravel and would not be paved with asphalt. Improvement to existing access roads would be limited to the current existing footprint of the road.
 - o To minimize adverse effects to surface water resources and wetlands to the extent practicable, while still maintaining the standards for range operation and meeting the training objectives; JB MDL would prepare a detailed, site-specific E&S Control Plan for submission to the Ocean County Soil Conservation District office for review and certification.

The physical characteristics of Alternatives 1 and 2 give an indication as to the likelihood of contaminant movement (lead) outside of the range area and into sensitive wetland areas. Large ranges such as the proposed MPMGR tend to have bullets dispersed over a wide area, making the management of the area more challenging than if the dispersal was over a smaller area. However, the proposed action does not call for an overall increase of firing base wide. The U.S Army is in the process of switching from the traditional lead-containing training round to non-lead training rounds. Furthermore, the Army is beginning to use the non-lead 5.56mm M855A1 (Performance Enhanced Round) for fiscal year 2015 training. The 7.62mm M80A1 round is still in development and is expected to become available for wider use in fiscal year 2017 (Nance 2014). As a result, no significant impacts related to lead dispersal across the range and specifically the wetland areas would be expected.

- **Biological Resources.** No significant construction-related direct and indirect unavoidable effects to biological resources (vegetation and wildlife habitat) requiring mitigation are anticipated from implementation of either Alternative 1 or 2. However direct and indirect effects to biological resources associated with the disturbance of 152 acres of vegetation and 8 acres of sparsely vegetated land under Alternative 1, and the disturbance of 160 acres of vegetation under Alternative 2 would occur. Construction activities in these areas would involve clearing of existing vegetation, and stump removal and grading in the uplands, thus permanently changing the current habitat. The following project planning actions and BMPs would serve to further minimize adverse

effects to biological resources to the extent practicable, while still maintaining the standards for range operation and meeting the training objectives:

- o JB MDL performs a variety of periodic natural resource surveys for rare, threatened, and endangered species and their habitats. The timing of when these surveys can be performed would be coordinated with the pre-construction project planning aspect of the proposed Alternative. Thus, the JB MDL would focus its natural resource surveying efforts to those species with the potential to occur at the proposed Alternative project site. As the JB MDL INRMP states, "JB MDL will implement conservation agreements, management plans, and recovery plans for listed species in accordance with ESA Section 7 as required."
- o JB MDL would obtain an Ocean County Soil E&S Control Plan Certification and corresponding electronic filing with the NJDEP in order to minimize the effects to surface water and downgradient habitats and biological resources caused by storm water runoff as a result of implementation of either Alternative 1 or Alternative 2. Storm water collection systems within the proposed MPMGR would be designed to account for the increase in storm water runoff and the implementation of a Soil E&S Control Plan would assist in reducing the short-term and long-term, minor, adverse effects to downgradient resources to less than significant levels. Concurrent electronic filing of the E&S Plan with the NJDEP would also be conducted.
- o JB MDL would ensure that activities are in accordance with the 2006 MOU between the DOD and the USFWS. At a minimum, mechanical tree trimming or removal of trees would not occur between 15 March and 31 July; however, non-mechanical tree trimming may be permitted once trees are checked for nesting activity; this would minimize impact to birds per the MBTA.
- o Per the NJDEP correspondence presented in Appendix A, if the construction of the range necessitates any in-water work within Gaunts Brook, JB MDL would not perform this work between April 1 and June 30 in order to protect warm-water fish nest building and spawning.
- o JB MDL would fence the perimeter of the MPMGR site with appropriate gauge fencing during construction to keep specimens outside of the proposed MPMGR site.
- o JB MDL would perform annual site maintenance, such as the trimming or removal of tress, outside of the nesting and breeding seasons.
- o JB MDL would plant grass to prevent soil erosion.
- **Cultural Resources.** No significant effects to cultural resources requiring mitigation were identified in association with either Alternative 1 or Alternative 2. Based on the use of predictive models in relation to environmental and geographic parameters, it can be determined that portions of the Alternative 1 (18.31 acres) and Alternative 2 (12.67 acres) are within approximately 150 feet of Gaunts Brook and are considered highly sensitive for the potential presence of archaeological sites. Construction in the highly

sensitive areas may affect pre-historic resources within these sensitive areas. JB MDL completed Section 106 consultation with the New Jersey Historic Preservation Office (NJ HPO), which concurred that there are no historical architectural resources within the Area of Potential Effect (APE) or within ¼ mile of the APE. JB MDL would initiate the following BMPs to reduce potential non-significant effects to cultural resources:

- o In the case of an inadvertent discovery of prehistoric artifacts during site construction activities, all construction would stop and the NJ HPO, The Delaware Nation and the Delaware Tribe of Indians would be contacted for further discussion.
 - o If human remains and associated objects have been determined to be Native American, the provisions of Native American Graves and Repatriation act (NAGPRA) apply, and the regulations outlined in 43 CFR Part 10 must be followed. Immediately upon notification that Native American human remains and associated objects have been found on JB MDL, the cultural resources manager will ensure that police protection of the site will continue, and notify by phone, or in writing within one working day, HQ AMC/A7AN and the tribal councils of local Native American groups.
- **Socioeconomic and Environmental Justice.** No significant, adverse socioeconomic or environmental justice effects would be anticipated from the implementation of either Alternative 1 or Alternative 2.
- **Infrastructure.** No adverse, construction-related or operational-related effects to transportation infrastructure would be anticipated from the implementation of the either Alternative 1 or Alternative 2. No mitigation measures or BMPs are required in association with this resource.
- **Hazardous and Toxic Materials and Waste.** No hazardous and toxic materials/wastes effects requiring mitigation measures are anticipated. It is possible however, with any construction project that inadvertent spills or leaks of fuel or other potentially hazardous materials that could adversely affect the environment could occur. The use of the range will result in the long-term deposition of bullets across the extent of the range, including Gaunts Brook. This is an unavoidable long-term effect is not considered significant. The soil characteristics of Alternative 1 indicate a high likelihood of contaminant movement out of the range. The acidic, porous, sandy soils in the project study area allow compounds to migrate easily into wetlands. However, the proposed action does not call for an overall increase of firing base wide. Furthermore, the U.S Army is in the process of switching from the traditional lead-containing training round to non-lead training rounds. The Army is beginning to use the non-lead 5.56mm M855A1 (Performance Enhanced Round) for fiscal year 2015 training. The 7.62 mm M80A1 round is still in development and expected to become available for wider use in fiscal year 2017 (Nance 2014). JB MDL will initiate the following BMP to reduce the potential effects of lead distribution across the range area:
 - o JB MDL would switch to using non-lead containing training ammunition when in becomes available and approved for widespread training use. It is expected that non-lead training round options will be available for the 5.56 mm and 7.62mm rounds by the time the proposed MPMGR would be constructed. Additional non-

lead-containing rounds would be phased in for use at the proposed MPMGR as they become available and approved by the U.S. Army for training use.

- **Safety.** No safety-related issues requiring mitigation measures are anticipated as a result of implementation of either Alternative 1 or Alternative 2. JB MDL conducted a risk acceptance study of the proposed MPMGR at the Alternative 1 location to determine whether a “batwing” Surface Danger Zone (SDZ) or a “cone” SDZ would be considered for the design and operation of the MPMGR. Based on that study, analysis of the “batwing” SDZ indicated that there was minimal potential for ricochets leaving the installation boundary, however the overall risk was determined to be “Low”. Based on that analysis, JB MDL has accepted the use of the “cone” SDZ and the risk level associated with the range at the Alternative 1 location. The SDZ under Alternative 1 remains within the JB MDL Installation boundaries and does not cross either Range Road or Pinehurst Road. The SDZ for both the Alternative 1 and Alternative 2 locations encompasses Ranges 39 and 39A and the downrange portions of Ranges 59A through 85. Use of these ranges (e.g. Ranges 39 and 39A and the downrange portions of Ranges 59A through 85) would require scheduling and coordination with JB MDL Range Control while the MPMGR is in use.

The presence of UXO and/or MEC is a high probability within both the Alternative 1 and Alternative 2 project study areas. However, a very low potential for impacts to public health would be expected because a pre-construction UXO sweep would be performed as is standard DoD practice in such locations. JB MDL policy requires a UXO sweep prior to any digging in areas of high potential for UXO to be present.

JB MDL would implement the following BMPs to reduce the potential safety dangers associated with encountering UXO or MECs during construction:

- o JB MDL policy requires a UXO sweep prior to any digging in areas of high potential for UXO to be present. As a mitigating measure to prevent the long-term adverse effects of UXO and/or MEC a MEC/UXO survey/sweep would be conducted.
- o Pursuant to the Air Land Sea Application Center 2001 document, *Multiservice Procedures for Unexploded Explosive Ordnance Operations*, the JB MDL shall execute UXO support activities.
- o UXO support activities during construction activities may require only UXO safety support or a complete UXO subsurface clearance response, depending on an assessment of the probability of encountering UXO and the level of confidence associated with the determination. The level of effort for construction support is site/task specific and would be determined by the project team in coordination with JB MDL.
- o All users of the range facilities at JB MDL would coordinate their use of Ranges 39 and 39A as well as the downrange portions of Ranges 47A through 85 with JB MDL Range Control Officer to ascertain whether or not the MPMGR is in operation and whether or not use of these ranges is safe and approved.

CONCLUSION

The evaluation performed within this EA concludes there would be no significant adverse impact, either individually or cumulatively, to the local environment or quality of life as a result of implementing the Proposed Action at the Preferred Alternative location (see **Table ES-1**). This EA's analysis determines that an Environmental Impact Statement (EIS) is unnecessary for implementing the Proposed Action, and that a Finding of No Significant Impact (FONSI) and Finding of No Practical Alternative (FONPA) is appropriate. The Preferred Action Alternative (i.e. Alternative 1) was determined by the JB MDL to provide the best combination of land and resources to sustain quality military training and to maintain and improve this Nation's readiness posture.

TABLE ES-1
Summary Descriptions of Effects
Associated with Alternatives 1, 2, and 3 at the Project Study Areas

Resource Area	Alternative 1 Preferred Alternative		Alternative 2 Competing Build Alternative		Alternative 3 No Action Alternative	
	Const.	Op.	Const.	Op.	Const.	Op.
Land Use	●	●	●	●	□	○
Air Space	□	○	□	○	□	○
Air Quality	■	○	■	○	□	○
Noise	■	●	■	●	□	○
Topography, Geology, and Soils	■	●	●	●	□	○
Water Resources	■	●	■	●	□	○
Biological Resources	●	●	●	●	□	○
Cultural Resources	■	○	■	○	□	○
Socioeconomics	□	○	□	○	□	○
Environmental Justice	□	○	□	○	□	○
Infrastructure	--	--	--	--	--	--
Utilities Infrastructure	□	○	□	○	--	--
Transportation Infrastructure	□	○	□	○	--	--
Hazardous and Toxic Materials/Wastes (HTMW)	■	●	■	●	□	○
Public Safety	■	●	■	●	□	○

Key to Table ES-1 Symbols

Significant Adverse Effect	Non-Significant Adverse Effect	No Effect	Non- Significant Positive Effect	Significant Positive Effect
Short-Term Effect				
■	□	□	■	△
Long-Term Effect				
●	●	○	◎	▲

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1.0 Purpose and Need for the Proposed Action

1.1 Introduction

The U.S. Army proposes to construct, operate, and maintain a Multi-Purpose Machine Gun Range (MPMGR) on Joint Base McGuire-Dix-Lakehurst (JB MDL) – in the Dix Range Area. The U.S. Army has determined the current Machine Gun Range does not meet the size requirements for basic training as outlined in Training Circular (TC) 25-8 Training Ranges (DA 2010). The proposed new MPMGR range would meet critical live-fire individual marksmanship training needs for both active and reserve component units that train on the installation.

This Environmental Assessment (EA) addresses the potential effects of the Proposed Action on the human and natural environment as required by the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] §§ 4321-4347), and in accordance with the Council on Environmental Quality (CEQ) regulations implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] §§ 1500-1508) and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (EIAP) (32 CFR Part 989).

1.2 Background

JB MDL encompasses 41,800 acres in Ocean and Burlington Counties, New Jersey (**Figure 1-1**). The JB MDL – Dix Area encompasses 30,635 acres (**Figure 1-2**), of which 13,765 acres are designated as range and impact area. The installation provides facilities for military training of Active and Reserve Duty Army, Air Force, Army National Guard, Navy and Marine Corps as well as for other U.S. Government agencies (e.g. U.S. Coast Guard; Federal Bureau of Investigation; Bureau of Alcohol, Tobacco, and Firearms; Department of Homeland Security; and the U.S. Postal Service), and State and local police agencies. This requires JB MDL to maximize the utilization of its training land and ranges to ensure military and law enforcement training requirements are met.

1.3 Purpose of the Proposed Action

The purpose of the Proposed Action is to construct and operate a MPMGR to meet the training and qualification objectives using standard Army Range and required weapons systems. This range would provide a year-round use facility for comprehensive and realistic training in basic machine gun marksmanship skills. This range would be used by the soldiers assigned to units on the installation and reserve component soldiers that routinely train at the installation.

JMBDL Location Map

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL

Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

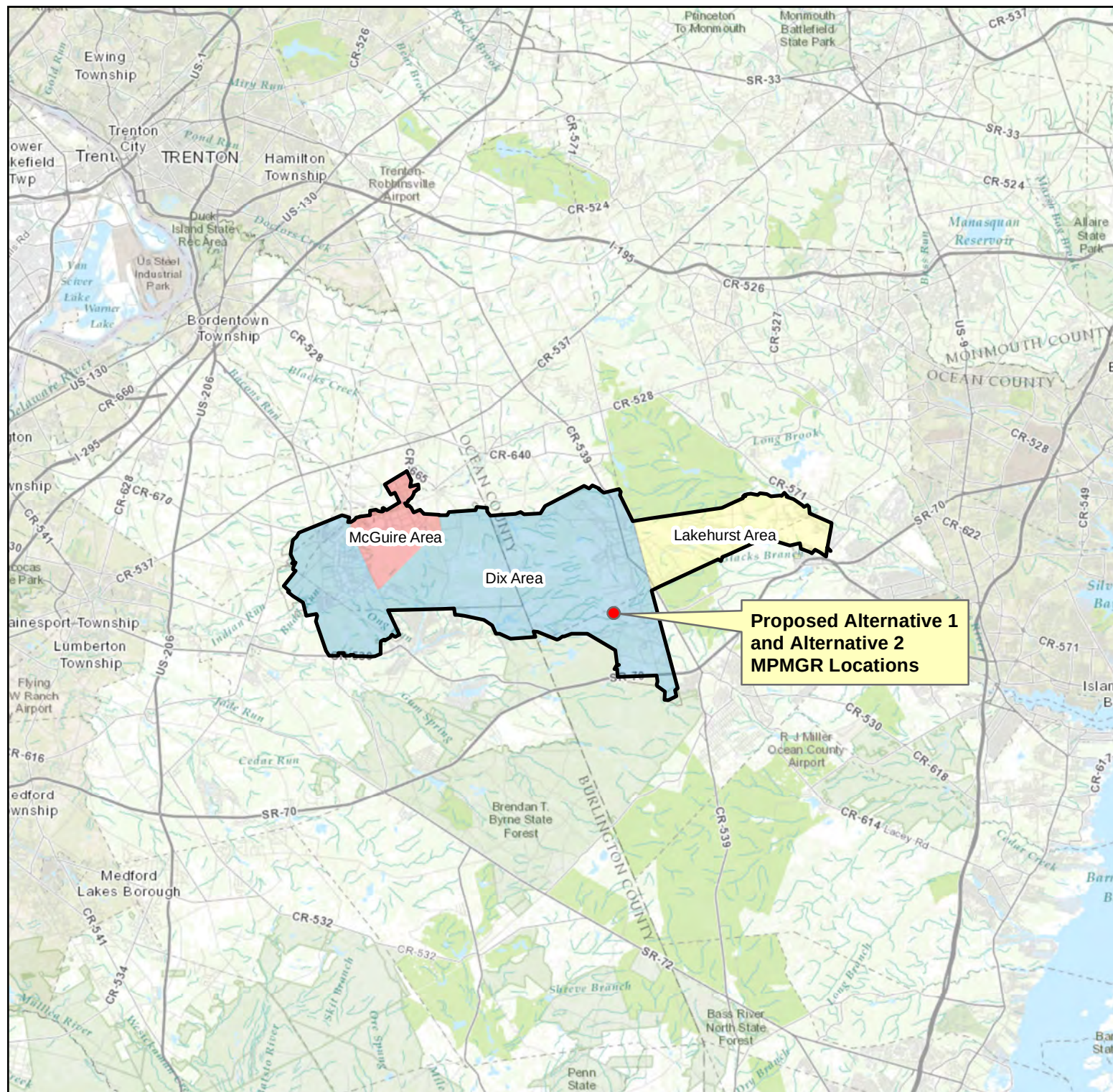
Site Vicinity



Map Ref. :

World Topo Map from ESRI
<http://services.arcgis.com/ArcGIS/services>

Figure 1-1



JMBDL Installation Map

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL
Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

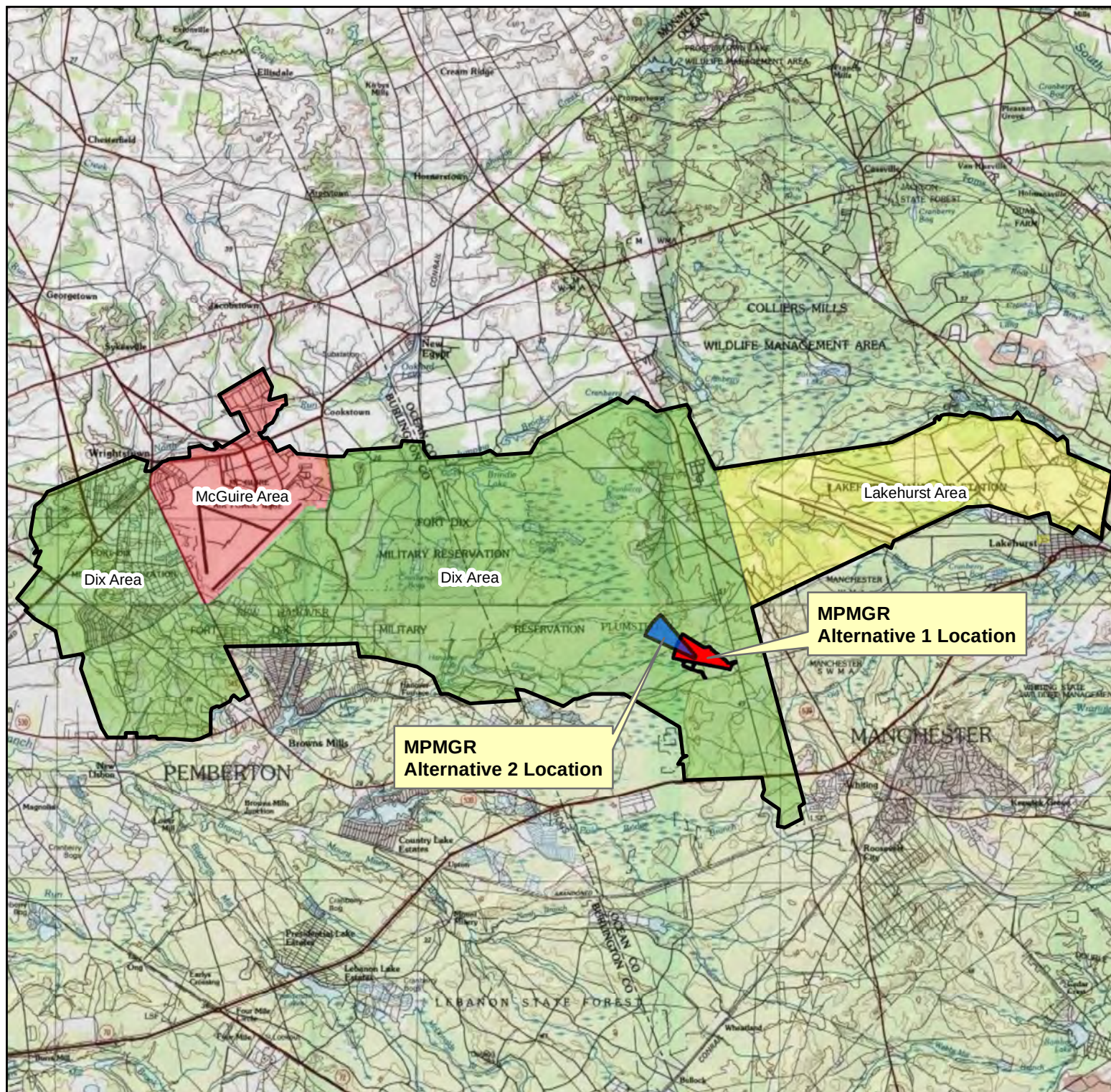
Site Vicinity



Map Ref. :

USA Topo Maps from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Figure 1-2



The range would be used to train and test individual soldiers on the skills necessary to zero in, detect, identify, engage, and defeat stationary and moving infantry targets along with stationary armor targets in a tactical array using machine guns. Weapons used on this range primarily include the M249 squad automatic weapon (SAW) (5.56 x 45 mm), the M240B machine gun (7.62 x 51 mm), the M2 machine gun (.50 caliber), the MK19 automatic grenade launcher (40mm grenade), and an assortment of sniper weapons which utilize the same or similar calibers previously mentioned. In addition other weapons systems using the same or similar calibers as discussed above may also be used at this range (DA 2010).

1.4 Need for the Proposed Action

Soldiers must enter engagements with the best possible assurance of success and survival. Therefore, the U.S. Army requires soldiers to be proficient in individual live-fire, marksmanship skills with their assigned machine guns in order for them to conduct operations effectively in wartime and to be prepared for future global combat operations.

JB MDL does not have sufficient modernized machine gun ranges to conduct the marksmanship training and testing required of each soldier. The Standards in Training Commission has established a requirement for each soldier to qualify with his/her individual weapons twice annually. The Army Range Requirements Model (ARRM), which projects how many ranges by type are needed to meet the training requirements of the soldiers assigned to or routinely train on the installation, shows that JB MDL requires one MPMGR to meet its training requirements. The current Machine Gun Range (Range 11) on JB MDL – Dix Range Area extends to a distance of 1000 meters, and is fully automated to a distance of 800 meters. Current Army Range requirements demand a 1500 meter range, and one that must be fully automated up to a distance of 1000 meters (DA 2010).

1.5 Scope of the Environmental Analysis and Decision to be Made

This EA considers direct, indirect, and cumulative effects of the Proposed Action and the No Action alternatives. It was prepared in accordance with the NEPA of 1969 [42 USC 4321 *et seq.*], CEQ Regulations 40 CFR Parts 1500-1508, and Air Force Instruction (AFI) 32-7061, *Environmental Impact Analysis Process* (EIAP) (32 CFR Part 989). A specific requirement for this EA is an appraisal of effects of the proposed project, including a determination of a Finding of No Significant Impact (FONSI) and Finding of No Practical Alternative (FONPA) or a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS).

The construction and operation of the proposed MPMGR on JB MDL – Dix Range Area is the focus of this EA. This EA provides a discussion of the affected environment and the potential effects to physical, natural, and socioeconomic resources. The following resources are analyzed for the Proposed Action and No Action alternatives:

- Land use and Cover
- Air Quality
- Noise
- Topography, Geology, and Soils
- Water Resources (Including Wetlands)
- Biological Resources (Including Special Status Species)
- Cultural Resources
- Socioeconomics and Environmental Justice

-
- Infrastructure
 - Hazardous and Toxic Materials and Waste
 - Air Space
 - Human Health and Safety

Based on the evaluation of the alternatives in the EA, the Army would decide whether or not to implement the Proposed Action. Additionally, JB MDL would decide whether or not to allocate 160 to 180 acres for an expanded MPMGR at its preferred location.

1.6 Agency and Public Involvement

NEPA requirements help ensure that environmental information is made available to the public during the decision making process and prior to actions being taken. The premise of NEPA is that the quality of Federal decisions will be enhanced if proponents provide information to the public and involve the public in the planning process. The Intergovernmental Coordination Act and Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, require Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. Air Force Instruction (AFI) 32-7060 requires Headquarters Air Mobility Command (HQ AMC) to implement a process known as Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), which is used for the purpose of agency coordination and implements scoping requirements.

Through the IICEP process, JB MDL has notified relevant Federal, state, and local agencies of the action proposed and provided them with sufficient time to consider and make known their environmental concerns specific to the Federal proposal. Agency responses are incorporated into the EA. JB MDL has coordinated with agencies such as the U.S. Environmental Protection Agency (USEPA); U.S. Fish and Wildlife Service (USFWS); New Jersey Office of Permit Coordination and Environmental Review; and other Federal, state, and local agencies. Copies of the IICEP correspondence sent and received is included in **Appendix A** of this document.

Public participation is a significant component of the NEPA process. The following key public notification and participation events have occurred or would occur as part of this environmental review process:

- JB MDL has conducted Interagency and IICEP. Copies of IICEP letters submitted to respective agencies and individuals, as well as responses received are included in **Appendix A**. These agencies would be furnished with copies of the Final EA when it is publicly circulated.
- JB MDL attempts to contact each Federally-recognized tribe when any Federal decision may have the potential to significantly affect protected tribal resources, tribal rights, or Indian land.
- There are three Federally recognized Native American tribes that have an affiliation with New Jersey; The Delaware Tribe of Indians, Delaware Nation, and Stockbridge Munsee Community of Mohegan Indians. These Native American tribes were invited to government-to-government consultation with JB MDL. Delaware Tribe and Delaware Nation both responded positively that they have an interest in the area of New Jersey where JB MDL is located. The Delaware Tribe of Indians and the Delaware Nation have both expressed an interest in consulting on JB MDL undertakings that have the potential to significantly affect Native American cultural resources. JB MDL is currently in the process

of establishing a government-to-government relationship with the two tribes that would help clarify properties of interest to the tribes. Until that relationship has been established, tribes are consulted on an individual project basis. These two tribes were invited to participate in the EA (prior to finalizing the NEPA process) as Sovereign Nations as required under Department of Defense Instruction (DoDI) 4710.02, which implements the *Annotated Department of Defense (DoD) American Indian and Alaska Native Policy* (dated 27 October 1999); the National Historic Preservation Act (NHPA); the Native American Graves and Protection and Repatriation Act (NAGPRA); American Indian Religious Freedom Act (AIRFA); Archaeological Resource Protection Act (ARPA); NEPA, EO 13007, *Indian Sacred Sites*; EO 13175, *Consultation and Coordination with Indian Tribal Governments*; Executive Memorandum dated November 5, 2009, *Memorandum on Tribal Consultation*; and AFI 32-7065, *Cultural Resources Management Program*. JB MDL would ensure that any effects of the Proposed Action on Native American cultural resources would be fully considered in the NEPA document. All consultation requirements must be satisfied before a FONSI can be signed. Copies of the correspondence documenting the Native American Consultation efforts related to his proposed Action are included in **Appendix A**.

- JB MDL, as the proponent of the proposed project, published a Notice of Availability (NOA) for the Draft EA, Draft Finding of No Significant Impact (FONSI) and Draft Finding of No Practical Alternative (FONPA) on October 30, 2014. The NOA announced the general circulation of the Draft EA and Draft FONSI/ FONPA. The Draft EA and Draft FONSI/FONPA were distributed it for a 30-day public comment period from October 31, 2015 through November 30, 2014. The public notice was published in the *Burlington County Times* and in the *Asbury Park Press*, periodicals of local and regional circulation, respectively. The Draft EA and Draft FONSI/FONPA were also available for public review at the *Manchester Branch of the Ocean County Library* and the *Pemberton Branch of the Burlington County Library*. Written comments regarding the Draft EA and Draft FONSI/FONPA were submitted to: Joseph Rhyner, Department of the Air Force, 87th CES/CEIE, 2404 Vandenberg Ave., JB MDL, New Jersey, 08641. Documentation is provided in **Appendix B**.
- Comments to the Draft EA and Draft FONSI/FONPA were received from the USFWS and the NJDEP which are included in **Appendix B**. No other comments (other than the ones from the USFWS and NJDEP) were received during the public review and comment period. Responses to the comments are also provided in **Appendix B** and incorporated into this Final Environmental Assessment.
- As the proponent, JB MDL may not take any action, other than planning the proposal until the FONSI/FONPA has been approved and signed by HQ AMC/A7.

1.7 Related National Environmental Policy Act Reviews

The National Environmental Policy Act of 1969, NEPA, is a Federal statute requiring the identification and analysis of potential environmental effects of proposed Federal actions before those actions are taken. NEPA established the CEQ that is charged with the development of implementing regulations and ensuring agency compliance with NEPA. CEQ regulations mandate that all Federal agencies use a systematic interdisciplinary approach to environmental planning and the evaluation of actions that might affect the environment. This process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action. The intent of NEPA is to protect, restore, or enhance the

environment through well-informed Federal decisions. The process for implementing NEPA is codified in Title 40 CFR Parts 1500–1508, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act. The CEQ was established under NEPA to implement and oversee Federal policy in this process. To this end, the CEQ regulations specify that an EA be prepared to briefly provide evidence and analysis for determining whether to prepare an EIS or a FONSI, aid in an agency's compliance with NEPA when an EIS is unnecessary, and facilitate preparation of an EIS when one is necessary.

Air Force Policy Directive (AFPD) 32-70, Environmental Quality, states that the U.S. Air Force (USAF) will comply with applicable Federal, state, and local environmental laws and regulations, including NEPA. The USAF's implementing regulation for NEPA is the EIAP, 32 CFR Part 989, as amended.

Related NEPA and planning documents that have been previously prepared and are pertinent to this action are identified below. Where applicable, information from the documents identified below will be utilized and/or referenced in this document as an effort to minimize redundancy.

- Range Development Plan February 2006 (Fort Dix 2006)
- Environmental Assessment for Range Development Plan at Fort Dix, New Jersey June 2009 (USAR 2009)

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2.0 Description of the Proposed Action and Alternatives

2.1 Description of the Proposed Action

The proposed action is to construct, operate, and maintain a MPMGR designed to train individual soldiers in the basic machine gun live-fire training tasks they require to sustain combat proficiency. The range would feature four (4) firing lanes reaching to a distance of 1500 meters, and fully automated targets to a distance of 1,000 meters. The event specific target scenario is computer driven and scored from the range operations center. The range would provide immediate performance feedback to the trainees. Operation of the range would involve both day and night time firing approximately 3-4 days per week.

In addition the proposed range would include:

- A large cleared area extending to 1,500 meters beyond the firing line and consisting of four firing lanes wide. Each firing lane is approximately 95 feet wide at the firing point and fans out to be approximately 550 feet wide at the 1,500 meter distance. The total required area is approximately 160 to 180 acres.
- Trenched communications and power lines located approximately 3 feet deep below the ground surface.
- Fully automated targets to a distance of 1,000 meters.
- Battery powered/radio controlled targets past 1,000 meters.
- One Range Control Tower.
- One 800 square-foot Operations and Storage Building.
- One 800 square-foot Classroom Facility.
- One concrete pad for placement of portable toilets.
- One 185 square-foot Ammo Breakdown Building.
- One 800 square-foot Covered Mess.
- One Bleacher Enclosure.
- Improvement of existing and construction of new access roads to service targets.

Primary facility force protection measures consist of laminated and safety glass. Supporting facilities include communications service, electric service, transformers and lighting, gravel surfaced roads and parking, drainage ditches, and portable latrine facilities. Supporting facility force protection includes security fencing and gates. An unexploded ordnance (UXO) survey would be conducted prior to range construction. Construction time is estimated to take approximately 2 years.

Construction of the range would require clearing of existing vegetation. The trees in upland areas would be clear cut and grubbed to ensure ease of future maintenance. Trees in wetland areas would be cut to 3 inches or less, however the stumps and root systems would be left in place to reduce erosion. Future maintenance actions of the wetlands would include brush clearing and sapling cutting to maintain line of site for the range.

Anti-terrorism/force protection (AT/FP) includes vehicle barriers, appropriate vehicle parking setbacks, security lighting, and gates. Sustainable design would be incorporated where possible. **Figure 2-1** depicts the 95% design of the proposed four-lane MPMGR.

Heating would be accomplished through electrical, geothermal, heat pump, or solar power. No fuel storage tanks and no backup generators are proposed as part of this action.

Training to be conducted on the proposed new MPMGR would include, zero, familiarization, and qualification for the M-149, M-240, M-2, and MK-19 weapon systems. Approximately 1,200 personnel would train on the range on a yearly basis. The approximate annual ammunition usage would be:

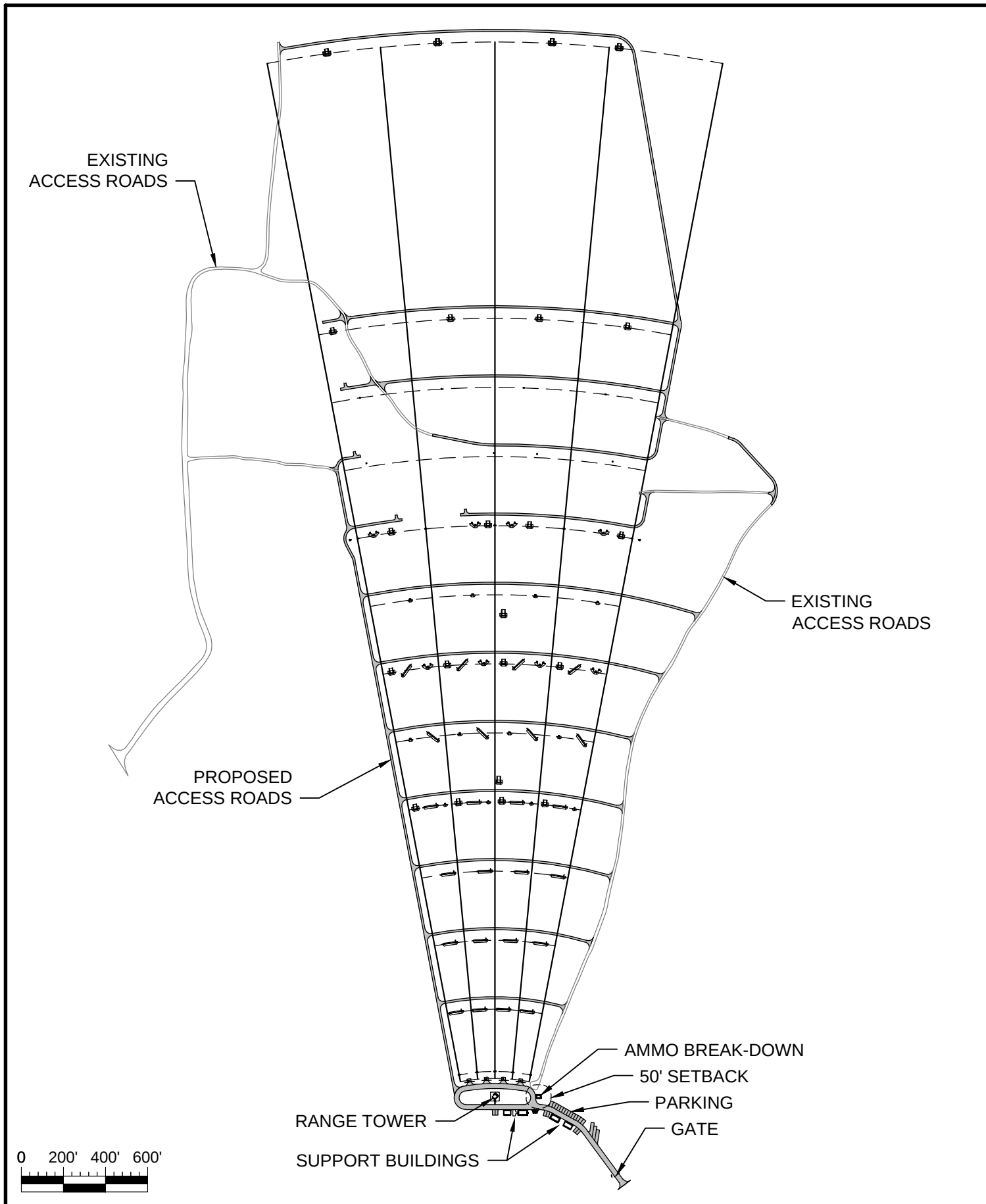
- 90,000 rounds - 5.56mm
- 70,000 rounds – 7.62 mm
- 40,000 rounds – 50 cal.
- 14,000 rounds - 40mm

No large caliber weapons or ordnance would be expended on this range.

The Proposed Action would require the establishment of an approximately 3,600 acre Surface Danger Zone (SDZ). A Safety Danger Zone is an area associated with a training range that is designed to protect people during weapons training. It may include land, water, and airspace. When a range is in active use, the SDZ is an exclusion area that is strictly controlled and could contain projectiles, fragments, or components from firing, launching, or detonating weapons and explosives. An SDZ is composed of three parts:

1. **Weapons Firing Position:** Position from which the munitions are fired.
2. **Impact Area:** The target or intended area of munitions impact where munitions and munitions fragments are expected to land.
3. **Secondary Danger Area:** A safety buffer area where fragments from munitions may land (www.lejeune.marines.mil/SDZ.aspx)

In addition, specific Best Management Practices (BMPs) would be implemented as part of the Proposed Action during the construction and/or operation phases of the Proposed Action to reduce, limit, and/or eliminate construction-related soil erosion and sedimentation issues; noise issues; effects to wetlands and biological resources including special-status species; and human health concerns.



Source:
Plans entitled "Multipurpose Machine Gun Range,
PN 071768 P2 393975 FY14, 95% Submittal",
dated February 2014, by USACE Louisville District

Task Order No. 5013
AMEC Project No. 77485.0014

Environmental Assessment (EA)
Multi Purpose Machine Gun Range at JMBDL
Contract No. FA4484-07-D-0005
Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey

Proposed Multi-Purpose Machine Gun Range
95% Design

Figure 2-1

2.2 Criteria for Evaluating Alternative Sites

Several potential sites at JB MDL – Dix Range Area were initially identified for placement of the MPMGR. JB MDL developed essential selection criteria in an effort to identify and evaluate feasible alternatives and to screen out those alternatives that were not suitable for development of the MPMGR. Those selection criteria were as follows:

- Meets mission and safety requirements; and the design of the range supports Army training requirements (TC 25-8).
- Environmental mitigation can be accomplished and is economically practical.
- Minimize environmental effects (with focus on wetlands and special status species).
- Minimize use conflicts (e.g. does not conflict with the operation of other training ranges).
- Minimizes construction costs and site preparation costs by reducing the need for extensive earth moving and cut and fill and clearance of munitions and explosives of concern (MEC).
- Has sufficient area to encompass the SDZ relative to the range.

2.3 Description of Alternatives Carried Forward for Analysis

2.3.1 Alternative 1 – Preferred Alternative

The Preferred Alternative is to construct, operate and maintain an MPMGR in the 178-acre “Times Square” area at JB MDL – Dix Range Area. This site currently meets all of the screening requirements. This alternative requires minimal earth moving, has minimal environmental impact, and/or environmental impacts that can be adequately mitigated. Construction at this location may result in limited conflict of scheduling with Range 39A and the Explosive Ordnance Disposal (EOD) site, also known as the Verdun Range.

A conceptual layout of the MPMGR at Alternative 1 can be seen in **Figure 2-2A**. The MPMGR would be bordered to the east by Pinehurst Road and to the south by Hanover Furnace - Manchester Road (Range Road). The estimated size of the range at this area is 178 acres.

Existing electric and communication utilities are established along Hanover Furnace - Manchester Road (Range Road) and Pinehurst Road which are immediately adjacent to the Preferred Alternative location. These utilities would be brought into the site for a distance of approximately 1,500 feet. Water service is not part of the Proposed Action at the Preferred Alternative location. Sanitary services would be provided through the use of portable, contractor-serviced toilets.

Under the Preferred Alternative, the existing MPMGR at Range 11 would remain operational, but no longer used after the new MPMGR is constructed and becomes operational. There would be no expected increase in personnel, soldiers on base, or increased training operations related to the Preferred Alternative.

2.3.2 Alternative 2 – Competing Build Alternative

The Competing Build Alternative is to construct, operate and maintain an MPMGR in the 160-acre area between Range 39 and the Explosive Ordnance Disposal (EOD) range at JB MDL –

Dix Range Area. This site currently meets all of the screening requirements. This alternative requires a greater amount of earth moving than Alternative 1, and has minimal environmental impact, and/or environmental effects that can be adequately mitigated. Construction at this location may result in limited conflict of scheduling with Range 39A and the EOD Range (also known as the Verdun Range).

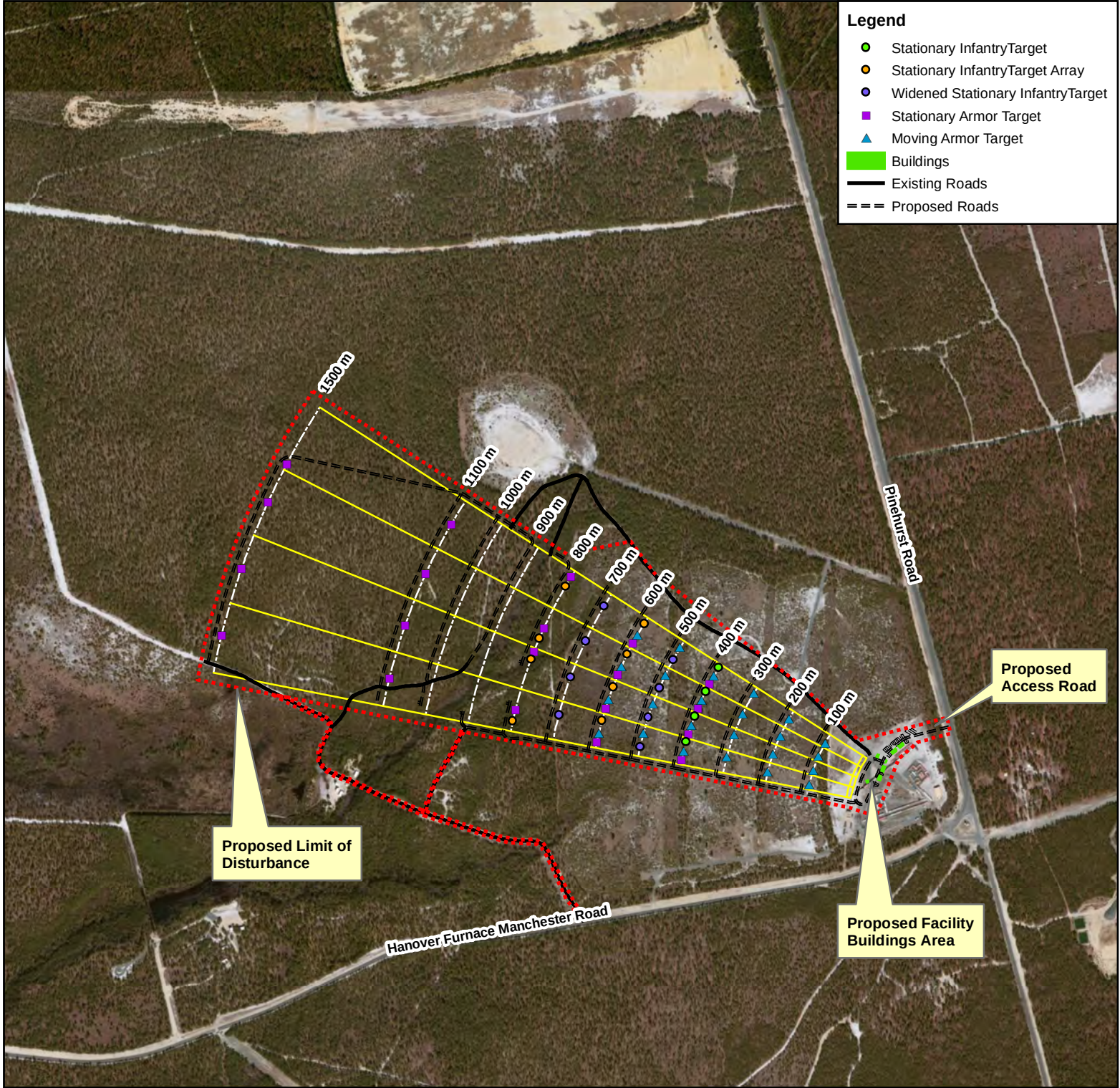
A conceptual layout of the MPMGR at Alternative 2 can be seen in **Figure 2-2B**. The MPMGR Competing Build Alternative location is bordered on the north by the EOD Range and Range 47A; to the east by the “Times Square” area and Pinehurst Road; to the south by Ranges 39 and 39A and Hanover Furnace Manchester Road (Range Road); and extends west into the Range Impact Area. This approximately 160-acre area is forested with a young tree canopy of 20-30 feet in height that would require clearing as part of this Alternative. Approximately 23.70 acres of forested wetlands are present on this site.

Existing electric and communication utilities are established along Hanover Furnace - Manchester Road (Range Road) and Pinehurst Road and currently extend into Range 39A. These utilities would be brought into the site for a distance of approximately 1000 feet. Water service is not part of the Proposed Action at the Competing Build Alternative location. Sanitary services would be provided through the use of portable, contractor-serviced toilets.

Under the Competing Build Alternative, the existing MPMGR at Range 11 would remain in operation after the new MPMGR is constructed and becomes operational. There would be no expected increase in training operations related to the Competing Build Alternative.

2.3.3 Alternative 3 – No Action Alternative

Under this alternative the installation would not construct a new MPMGR and the current MPMGR at Range 11 would continue to be used. Since Range 11 does not meet the requirements in the Standards in Training Commission’s ARRM, there would not be adequate, modernized machine gun marksmanship ranges on the installation. Consequently, soldiers would be required to conduct marksmanship training at other installations in order to maintain a deployable status. This would result in the units to which these soldiers are assigned to as not being combat ready and not meeting stated deployment criteria.



- Legend**
- Stationary Infantry Target
 - Stationary Infantry Target Array
 - Widened Stationary Infantry Target
 - Stationary Armor Target
 - ▲ Moving Armor Target
 - Buildings
 - Existing Roads
 - - - Proposed Roads

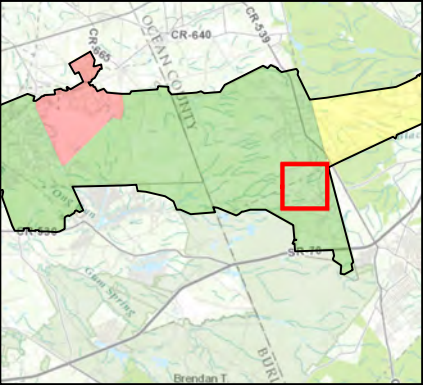
Alternative 1 Conceptual Layout

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL

Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



Map Ref. :
World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>
Range Layout from pg. 12 of the 95% Submittal of the Multi-Purpose Machine Gun Range at JB MDL by the U.S. Army Corps of Engineers Louisville District

Figure 2-2a

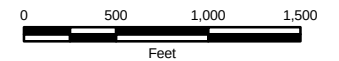
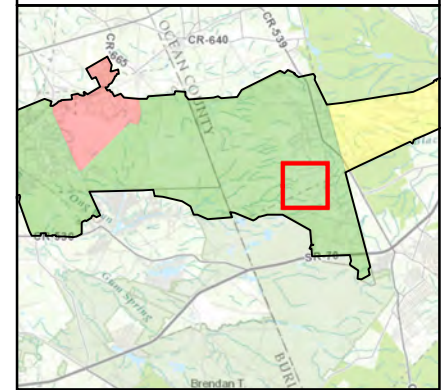
Alternative 2 Conceptual Layout

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL

Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



Map Ref. :

World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>



Figure 2-2b

2.4 Alternatives Considered but Eliminated from Further Study

JB MDL considered several potential sites for the MPMGR and applied the selection standards in **Section 2.2** to determine viable alternatives. The following sections briefly discuss the alternatives that were investigated but eliminated from study and the reason for their elimination.

The alternatives that were eliminated from further study did not meet one or more of the primary site selection criteria presented in **Section 2.2**; therefore, these alternatives failed to meet the purpose and need requirements discussed in **Sections 1.2** and **1.3**. A total of seven locations were examined (see **Figure 2-3**) utilizing a series of applicable environmental and operational criteria in order to discern a facility location, five of which were eliminated from further consideration. **Table 2-1** provides a summary comparing the various alternatives with the selection criteria. In addition to operational or logistical deficiencies that each of the eliminated alternatives had, four of the five locations that were eliminated also had significantly more wetlands that would be affected in comparison to the Preferred and Competing Build Alternatives as depicted in **Figure 2-3**. The sections below describe the five alternatives considered for implementation of the proposed action but which were eliminated from further consideration.

2.4.1 Upgrade of Range 11

Range 11 currently serves as the existing Machine Gun Range. Under this alternative, JB MDL would extend Range 11 to the required 1,500 meter distance, install fully automated targetry to a distance of 1,000 meters, and install battery-operated targetry to the 1,500 meter distance. This action was withdrawn from consideration as an extension of the current range out to 1,500 meters would not be reasonable due to the extensive wetland complex that exists beyond the current 1,000 meter distance. Approximately 173 acres of wetlands would be impacted if Range 11 would be upgraded. This alternative failed to meet the following selection criteria and, therefore, is not a feasible alternative for the following reasons:

- Does not minimize environmental impact – Approximately 173 acres of wetlands would be impacted.
- Does not minimize use conflicts – Construction at Range 11 would deny use of adjacent ranges during the construction activities, thus impacting training.
- Mitigation is not economically practical – Mitigation of approximately 173 acres of wetlands would result in costs that far exceed other potential alternatives with fewer wetlands.

2.4.2 Construct and Operate the MPMGR at Range 16

Under this alternative, JB MDL would construct and operate the MPMGR at the existing Range 16. This action was withdrawn from consideration as construction of the MPMGR at Range 16 would cause significant use conflicts with Ranges 10 through 24 during the length of the 2-year construction period. Ranges 10 to 24 experience the largest concentration of daily use at JB MDL. The construction area for the MPMGR at Range 11 would fall within the SDZs of Ranges 10 to 24 and would deny the use of these ranges during the construction period. Shutdown of these ranges for 2 years would not be practical. This alternative failed to meet the following selection criteria and, therefore, is not a feasible alternative for the following reasons:

-
- Does not minimize use conflicts – Construction at Range 16 would deny use of numerous adjacent high-use ranges during the construction activities, thus impacting training.
 - Does not provide sufficient area to accommodate the SDZ and would affect long-term use of adjacent ranges.

2.4.3 Construct and Operate the MPMGR at Range 65

Under this alternative, JB MDL would construct and operate the MPMGR at the existing Range 65. This action was withdrawn from consideration as the terrain at Range 65 would require an extensive amount of cutting and filling to establish the MPMGR at this location to overcome an approximately 90-foot grade difference across the site. Range 65 has an extraordinary amount of MEC present from current and previous activities at this range. In addition, an extensive wetland complex is present in the down range area as is the Pine Barrens Reed Grass Savanna, which is a protected ecosystem. Over 75 acres of wetland would be impacted by this alternative. Furthermore construction of the MPMGR at Range 65 would deny training at Ranges 61 and 85 during the construction. This alternative failed to meet the following selection criteria and, therefore, is not a feasible alternative for the following reasons:

- Does not minimize environmental impact – Over 75 acres of wetlands and associated Pine Barrens Reed Grass Savanna would be impacted.
- Does not minimize use conflicts – Construction at Range 65 would deny use of numerous adjacent ranges during the construction activities, thus impacting training.
- Construction is not economically feasible – Significant increased construction costs would be involved related to extensive grading and earth moving to facilitate the proper line of site for the MPMGR. In addition, the significant amount of MEC downrange in this location results in significantly higher clearance activities.
- Mitigation is not economically practical – Mitigation of over 75 acres of wetlands and associated Pine Barrens Reed Grass Savanna would result in costs that far exceed other potential alternatives with fewer wetlands.

2.4.4 Construct and Operate the MPMGR at Range 61

Under this alternative, JB MDL would construct and operate the MPMGR at the existing Range 61. This action was withdrawn from consideration as unfavorable terrain and the “narrowness” of this range area would result in the need for extensive cut and fill to develop the MPMGR to overcome an approximately 50-foot grade difference across the site and would create a SDZ issue (due to the narrowness of the range configuration in that area). Construction of the MPMGR at Range 61 would require shut-down of Ranges 65, 85, and 59C during the 2-year construction period. Range 61 has an extraordinary amount of MEC present from current and previous activities at this range. Furthermore, the proposed Infantry Squad Battle Course (ISBC) is planned for Range 61. This alternative failed to meet the following selection criteria and, therefore, is not a reasonable alternative for the following reasons:

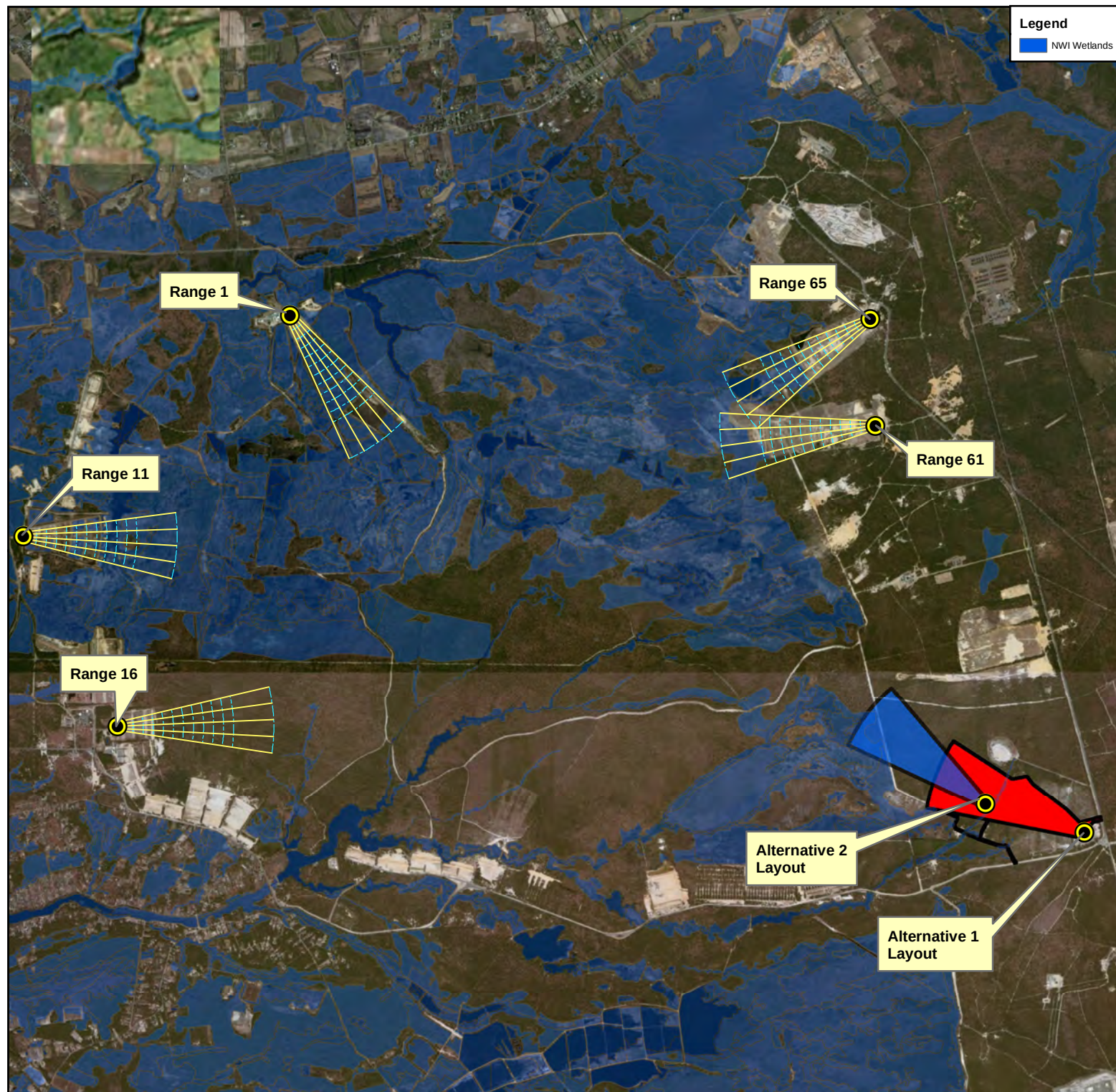
- Does not minimize environmental impact – Over 20 acres of wetlands would be impacted.

-
- Does not minimize use conflicts – Construction at Range 61 would deny use of numerous adjacent ranges during the construction activities, thus impacting training. In addition the proposed ISBC is planned for Range 61.
 - Does not provide sufficient area to accommodate the SDZ and would affect use of adjacent ranges.
 - The significant amount of MEC downrange in this location results in significantly higher clearance activities making this alternative economically unfeasible.
 - Construction is not economically feasible – Significant increased construction costs would be involved related to extensive grading and earth moving to facilitate the proper line of site for the MPMGR.

2.4.5 Construct and Operate the MPMGR at Range 1

Under this alternative, JB MDL would construct and operate the MPMGR at the existing Range 1. This action was withdrawn from consideration as construction of the MPMGR at Range 1 would create a conflict with existing operations at that location. An extensive amount of tree clearing would be required and there is an extensive wetland complex downrange in that location; approximately 192 acres of wetlands would be impacted by this alternative. Additionally, two bald eagle (*Haliaeetus leucocephalus*) nests are located within the vicinity of this range. Range 1 has an extraordinary amount of MEC present from previous activities at that location. The SDZ for the MPMGR at Range 1 would extend south almost to Range Road. The proximity of Range Road to the SDZ is considered unsafe. This alternative failed to meet the following selection criteria and, therefore, is not a reasonable alternative for the following reasons:

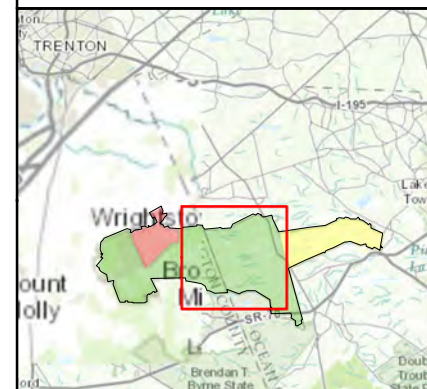
- Does not minimize environmental impact – Over 192 acres of wetlands would be impacted. In addition, two bald eagle nests are located in the immediate vicinity of Range 1. Construction of the MPMGR at Range 1 could impact the nesting habits of this species at this location.
- Does not minimize use conflicts – Construction at Range 1 would conflict with existing operations at that location, this impacting training.
- Does not provide sufficient area to accommodate the Surface Danger Zone and would affect use of adjacent ranges and/or Range Road.
- The significant amount of MEC downrange in this location results in significantly higher clearance activities making this alternative economically infeasible.
- Mitigation is not economically practical – Mitigation of over 192 acres of wetlands would result in costs that far exceed other potential alternatives with fewer wetlands.



Considered Alternative Locations with Wetlands

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL
Contract No. FA4484-07-D-0005
Task Order No. 5013
Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



Map Ref. :

World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Wetlands
http://www.state.nj.us/depl/gis/crossaccept.htm#wetlands_ca

Figure 2-3

**Table 2-1
Comparison of Alternatives with the Selection Criteria
Proposed MPMGR at JB MDL – Dix Area**

Alternative	Selection Criteria					
	Meets Army Range Requirements	Minimizes Environmental Impact	Minimizes Use Conflicts	Sufficient Area to Encompass SDZ	Minimizes Construction and Site Preparation Costs	Economically Practical Environmental Mitigation or BMPs to avoid Mitigation
Preferred Action Alternative (Alternative 1)	Yes	Yes ¹	Yes ³	Yes ⁵	Yes	Yes ¹
Competing Build (Alternative 2)	Yes	No ^{1,2}	Yes ³	Yes	No ^{7,8}	No ²
No Action Alternative (Alternative 3)	No	Yes	Yes	Yes	Yes	Yes
Range 11	Yes	No ^{1,2}	No ⁴	Yes	Yes	No ²
Range 16	Yes	Yes	No ⁴	No ⁶	Yes	Yes
Range 65	Yes	No ^{1,2}	No ⁴	Yes	No ^{7,8}	No ²
Range 61	Yes	No ^{1,2}	No ⁴	No ⁶	No ^{7,8}	No ²
Range 1	Yes	No ^{1,2}	No ⁴	No ⁶	No ⁸	No ²

Notes: A yellow-colored "Yes" differs from a green-colored "Yes" in that the yellow coloration indicates conditions that would need to be met in order to consider the criteria to have less than significant impacts.

- 1 – Wetlands and/or special status species are present which would require permitting and mitigation if not adequately avoided or the impacts minimized to be below regulatory thresholds.
- 2 – Significant acreage of wetlands down range would involve extensive mitigation if not adequately avoided or the impacts minimized to below regulatory thresholds.
- 3 – Use of Range Road and/or some adjacent ranges during range operation would require scheduling and coordination with Range Control
- 4 – Construction and/or operation of range at this location would result in the need to shut down other ranges and/or result in other usage conflicts
- 5 – SDZ Risk Analysis Performed determined risk hazard at Alternative 1 as low.
- 6 – Surface Danger Zone would limit use of other ranges/training areas, extend to public areas and/or extend off post
- 7 – Significant increased construction costs associated with extensive amount of grading and earth moving that would be required
- 8 – Significant amount of MEC downrange would require extensive clearing, adding cost.

3.0 Affected Environment

This section specifically describes current existing conditions at the Dix Range Area of JB MDL, with an emphasis on resources potentially impacted by Alternatives 1 and 2. **Figure 3-1** illustrates the geographic setting for Alternative 1 and Alternative 2.

Section 4.0, Environmental Consequences, identifies potential direct, indirect, and cumulative effects of the identified project alternatives for each of the issue areas presented in this section. **Section 4.0** also discusses BMPs that, when implemented, would reduce the level of identified effects to acceptable levels that would preclude the need for certain regulatory permits and mitigation.

The JB MDL Dix Range Area occurs within the northern portion of the New Jersey Pinelands National Reserve, also referred to as the Pinelands. This reserve consists of approximately 1.1 million acres of protected lands. The Pinelands National Reserve includes portions of seven counties in New Jersey including: Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, and Ocean. In the Pinelands, specific areas have been designated for environmental protection, forestry, and agriculture, with growth being directed and encouraged in and around areas capable of accommodating further development.

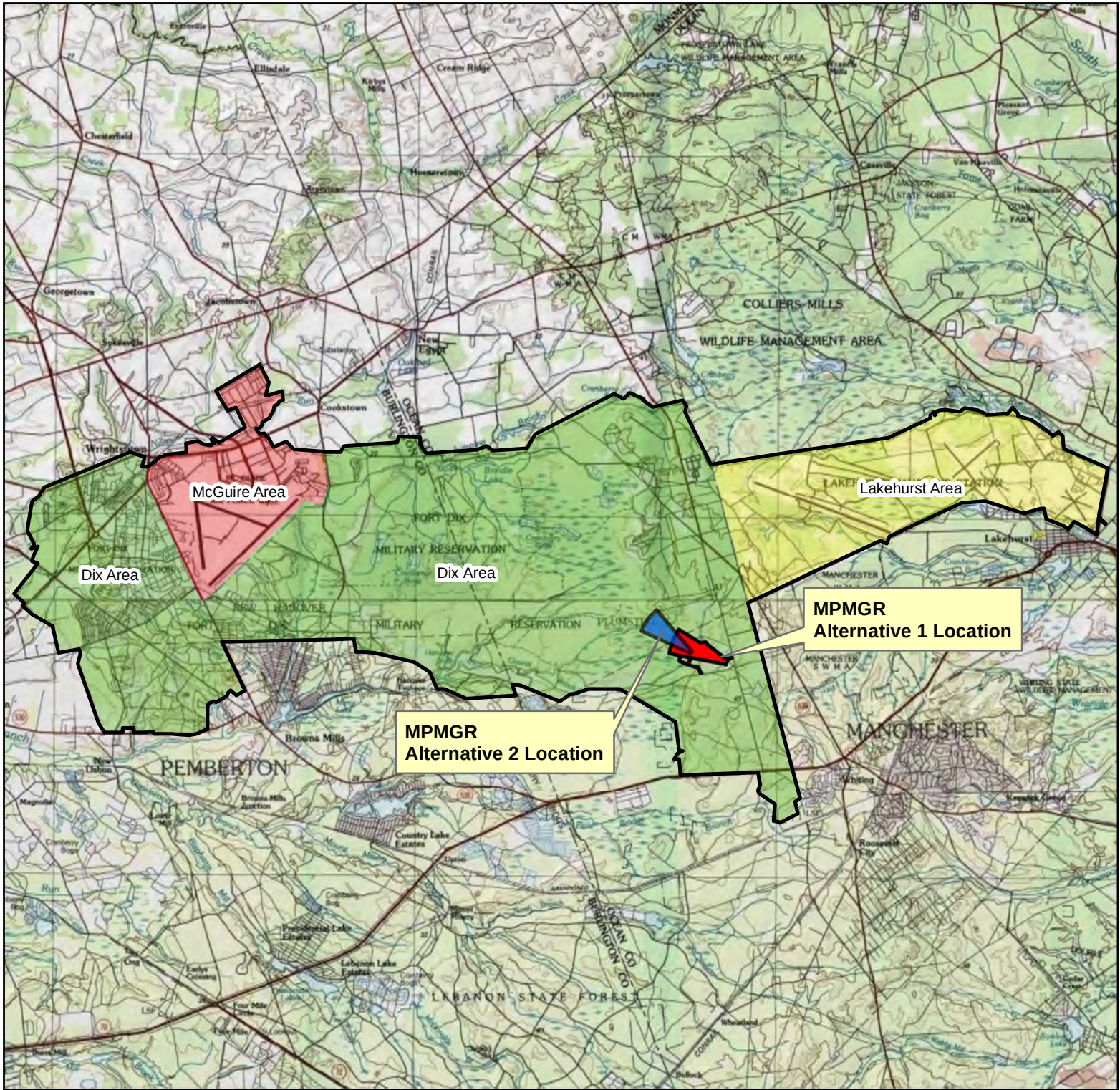
No part of JB MDL is located in an area subject to Coastal Zone Management Act regulations.

3.1 Geographic Setting and Location

The 41,800-acre JB MDL spans across Burlington and Ocean Counties in south central New Jersey, located 18 miles southeast of Trenton, New Jersey (**Figures 3-1**). The JB MDL – Dix Range Area comprises approximately 13,765 acres of range and impact area. Both the Alternative 1 and Alternative 2 project study areas are located within the southeastern portion of the Dix Range Area with Alternative 1 situated in what is referred to as the “Times Square” area and Alternative 2 situated north of Ranges 39 and 39A and south of the EOD Range and Range 47A.

To the north, south, and east of JB MDL are New Jersey conservation and forested land, including the Colliers Mills and Manchester Wildlife Management areas, the Brendan T. Byrne State Forest, and the New Jersey Wildlife and Game Refuge in Cassville. Farther to the east of JB MDL is the Edwin B. Forsythe National Wildlife Refuge, located along the Atlantic Ocean. Encroachment on JB MDL Dix Range Area from adjacent private development is negligible (USAR 2009).

Hot, humid summers and mild winters characterize New Jersey’s climate. The project study area is located in the Pine Barrens Climate Zone of New Jersey. The average temperature for coastal New Jersey ranges from a high of 74.3 degrees Fahrenheit (°F) in July to a low of 33.3 °F in January. The average annual precipitation for coastal New Jersey is 45.13 inches per year, with a majority of the total precipitation falling in the spring and summer months (New Jersey State Climatologist 2012a, New Jersey State Climatologist 2012b).



Geographic Setting

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL
Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity

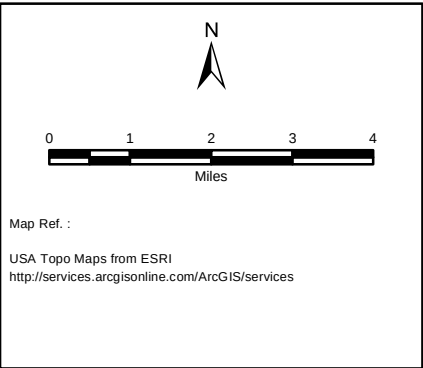


Figure 3-1

3.2 Land Use and Cover

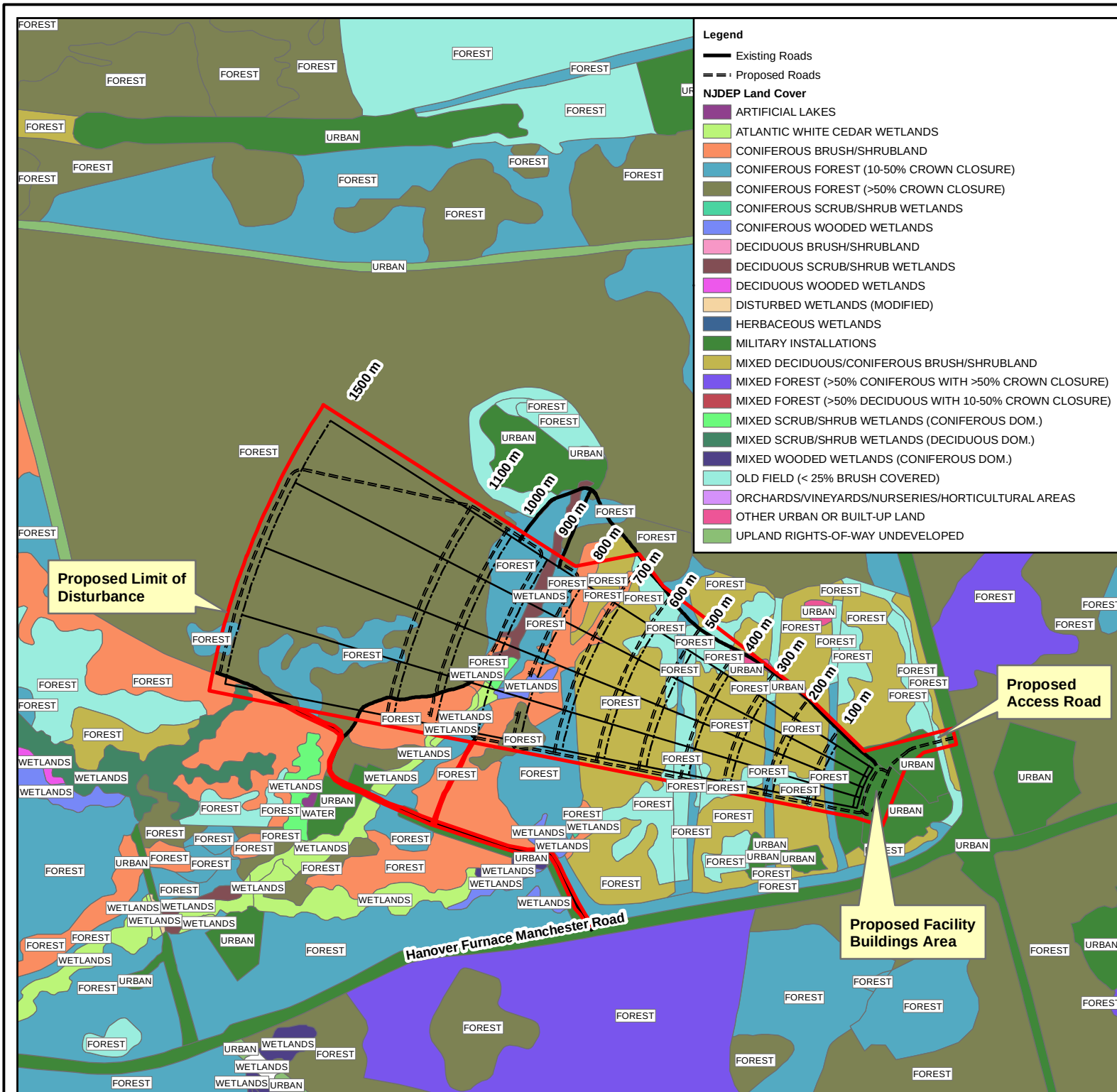
The JB MDL Dix Range Area is roughly 13,765 acres, and currently maintains 62 active training ranges. Land use in the immediate vicinity of both the Alternative 1 and 2 project study areas is primarily military training, including the Mobile MOUT training area located in the southeast corner of the Times Square area, the EOD site to the north that is used for the detonation/destruction of UXO, and mortar fire training to the south of the project study area at Range 39A. The range impact area overlaps with the entirety of the project study area and may contain UXO.

The Mobile MOUT training area that is located on the south eastern portion of Alternative 1 includes approximately 10 acres of cleared land for training. The remaining 168 acres of the project study area are not currently used for active training; however, approximately 44 acres of this area was previously cleared in several long strips for previous equipment engineer training. This area has since incurred scrub-shrub growth. The remaining 124 acres consists of pine/oak forests with successional vegetation including 6.12 acres of wetland areas (Fort Dix 2010, JB MDL 2012b). As depicted on **Figure 3-2A**, land cover at Alternative 1 includes the following:

- Urban (Military)
- Mixed Deciduous/Coniferous Brush/Shrubland
- Coniferous Brush/Shrubland
- Coniferous Forest (10-50% Crown Closure)
- Coniferous Forest (>50% Crown Closure)
- Old Field
- Coniferous Wooded Wetlands
- Mixed Scrub/Shrub Wetland
- Deciduous Scrub/Shrub Wetland

The Alternative 2 project study area is located within the Range Impact Area and is not routinely used for active training. The project study area consists of 136.24 acres of pine/oak forests with successional vegetation and 23.70 acres wetland areas (Fort Dix 2010, JB MDL 2012b). The project study area is bisected by unimproved sand roads which facilitate access to the interior areas of the Range Impact Area. These areas are not used for any specific training operations and are generally off limits due to the presence of UXO. As depicted on **Figure 3-2B**, land cover at Alternative 2 includes the following:

- Coniferous Forest (>50% Crown Closure)
- Coniferous Forest (10-50% Crown Closure)
- Coniferous Wooded Wetlands
- Coniferous Brush/Shrubland

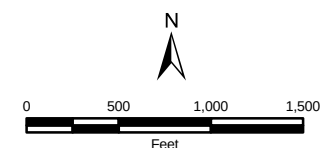
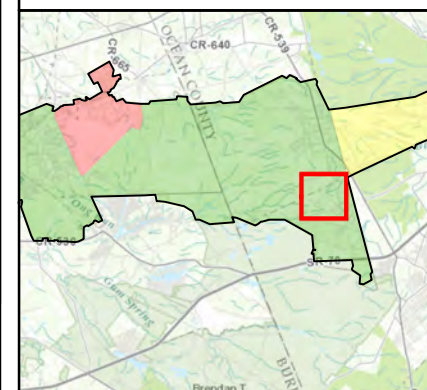


Alternative 1 Layout Land Cover

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL
Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



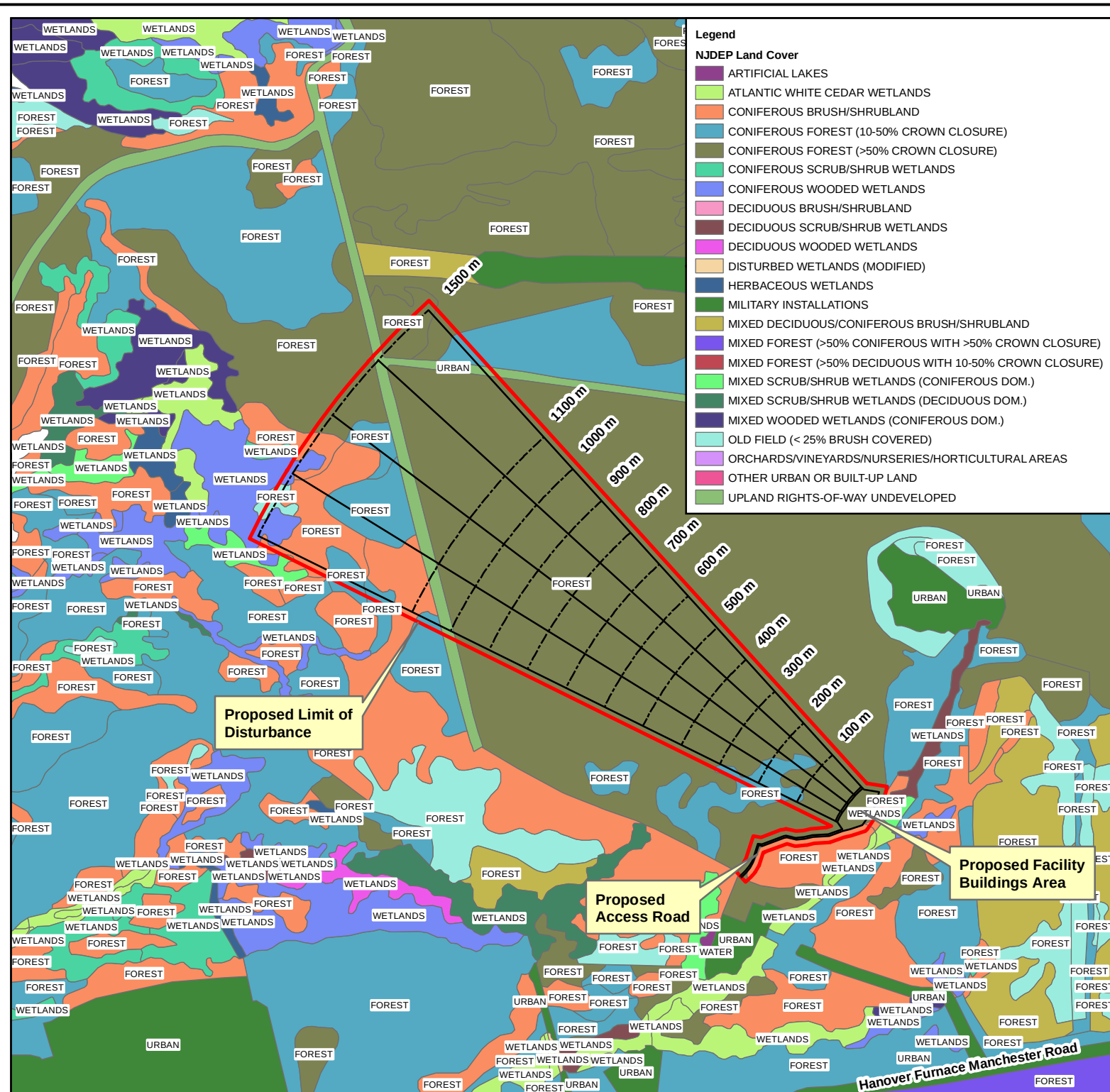
Map Ref. :

World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Land Cover from NJDEP
<http://www.nj.gov/dep/gis/lulc07cshp.html>

Range Layout from pg. 12 of the 95% Submittal of the Multi-Purpose Machine Gun Range at JB MDL by the U.S. Army Corps of Engineers Louisville District

Figure 3-2a

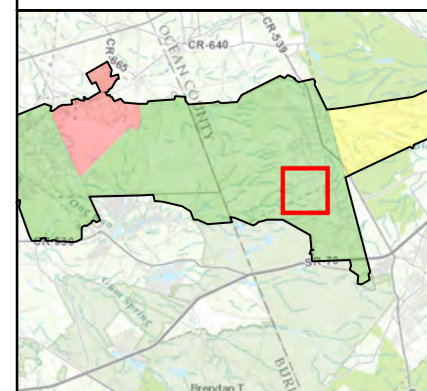


Alternative 2 Layout Land Cover

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL
Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



Map Ref. :

World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Land Cover from NJDEP
<http://www.nj.gov/dep/gis/ulc07cshp.html>

Figure 3-2b

3.3 Air Space

Aircraft safety of JB MDL and the surrounding area is an important aspect of JB MDL planning. The DoD and JB MDL have designated safety zones around the two airfields located at JB MDL. These safety zones extend from each end of runways approximately 2.8 miles, in an effort to minimize the potential for effects associated with aircraft accidents. The designated safety zones include the following three zones:

- Clear Zone (CZ) – Areas closest to each end of the runway, where approximately 27% of the total accidents studied occur.
- Accident Potential Zone (APZ) 1 – Areas that extend beyond the CZ where approximately 10% of the total accidents studied occur.
- APZ 2 – Areas that extend beyond the APZ 1, with lesser (approximately 5%) significant potential for aircraft related accidents.

Airspace overhead and surrounding the JB MDL Dix Range Area has been designated as Restricted Area 5001 A/B (R-5001). R-5001 A/B lies directly east of JB MDL McGuire Area. The western boundary is as close as 6,250 feet from the easterly edge of runway 06/24. The eastern edge of R-5001 A/B extends to Hornerstown Road just west of Lakehurst's Catapult runway. R-5001 A/B extends from the surface to 8,000 feet. New York Air Route Traffic Control Center (NY ARTCC) is the controlling agency for R-5001 A/B. In a letter of agreement, NY ARTCC has delegated the airspace within R-5001 A/B to McGuire Approach Control when not used by HQ US Army, the primary use agency. When R-5001 A/B is active with aerial activity, McGuire Radar Approach Control (RAPCON) would flight-follow aircraft conducting instrument approaches to Runway 24. This ensures that instrument aircraft are separated from range activities. R-5001 A/B is active from the ground surface to 4,000 feet daily from 0700 – 0030 hours. Occasionally it is active to different altitudes from up to 500 feet to 8,000 feet. When R-5001 A/B is active with small arms/artillery training, aircraft are permitted to fly up to, but not including the restricted area border. When the range is not active with artillery, McGuire RAPCON controls R-5001 A/B and it typically remains active to 500 feet due to small arms firing (AMW 2010).

3.4 Air Quality

3.4.1 Ambient Air Quality

The ambient air quality in an area can be characterized in terms of whether or not it complies with the primary and secondary National Ambient Air Quality Standards (NAAQS). The Clean Air Act Amendments (CAAA) requires the USEPA to set NAAQS for pollutants considered harmful to public health and the environment. Primary NAAQS set limits to protect health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings (USEPA 2012a). NAAQS are provided for six principal pollutants, called "criteria pollutants" (as listed under Section 108 of the Clean Air Act [CAA] of 1970), including the following:

- Carbon monoxide (CO)
- Lead (Pb)
- Nitrogen oxides (NO_x)
- Ozone (O₃)
- Particulate matter, divided into two size classes:
 - Aerodynamic size less than or equal to 10 micrometers (PM₁₀)
 - Aerodynamic size less than or equal to 2.5 micrometers (PM_{2.5})
- Sulfur dioxide (SO₂).

Each state and locality has the primary responsibility for air pollution prevention and control. The Federal primary and secondary ambient air quality standards are presented in **Table 3-1**. Under the CAA and the CAAA of 1990, the state and local air pollution control agencies have the authority to adopt and enforce ambient air quality standards more stringent than the NAAQS. The NJDEP Division of Air Quality (DAQ) has implemented all the NAAQS under the New Jersey Administrative Code (N.J.A.C.) 7:27-13.

Table 3-1 National Ambient Air Quality Standards			
Pollutant	Averaging Time	Standard	
		Value	Type
CO	1 hour	35 ppm	Primary
	8 hours	9 ppm	Primary
	30 days	-	-
Pb	Rolling 3-month average	0.15 µg/m ³	Primary & Secondary
NO ₂	1 hour	100 ppb	Primary
	Annual	53 ppb	Primary & Secondary
O ₃	8 hours	0.075 ppm	Primary & Secondary
O ₃	1 hour ¹	0.12 ppm	Primary
Particulate matter ≤ 2.5 µm diameter (PM _{2.5})	24 hours	35 µg/m ³	Primary & Secondary
	Annual	12 µg/m ³	Primary
	Annual	15 µg/m ³	Secondary
Particulate matter ≤ 10 µm diameter (PM ₁₀)	24 hours	150 µg/m ³	Primary & Secondary
SO ₂	1 hours	75 ppb	Primary
	3 hours	0.5 ppm	Secondary

Source: N.J.A.C. 7:27-13, USEPA 2012a.

Notes: ppm = parts per million; ug/m³ = micrograms per cubic meter of air; 1 = The 1-hour O₃ standard was revoked by the USEPA effective 15 June 2005.

3.4.2 Criteria for Attainment/Non-Attainment Areas

Areas are designated by the USEPA as “attainment”, “nonattainment”, “maintenance”, or “unclassified” with respect to the NAAQS. Regions in compliance with the standards are designated as “attainment” areas. In areas where the applicable NAAQS are not being met, a

“nonattainment” status is designated. Areas that have been classified as “nonattainment” but are now in compliance can be re-designated “maintenance” status if the state completes an air quality planning process for the area. Areas for which no monitoring data is available are designated as “unclassified,” and are by default considered to be in attainment of the NAAQS.

Both Alternative 1 and Alternative 2 are located in Ocean County which is currently considered to be in non-attainment for the following pollutants: 8-hour Ozone (1997), and 8-hour Ozone (2008). Ocean County is currently within attainment limits for all other air pollutants. Note that Burlington County; immediately west of the project study area and containing the Dix Area Cantonment Area and the entire McGuire Area; is currently considered to be in non-attainment for the following pollutants: 8-hour Ozone (1997) and 8-hour Ozone (2008).

3.4.3 General Conformity Rule

The General Conformity Provision of the CAA (42 USC 7401 *et seq.*; 40 CFR 50-87) Section 176(c), including the USEPA’s implementation mechanism, the General Conformity Rule (40 CFR Part 51, Subpart W) requires Federal agencies to prepare written Conformity Determinations for Federal actions in or affecting NAAQS non-attainment areas or maintenance areas (see **Section 3.4.2**). Although Ocean County and most of the areas in the Northeast Transport Corridor are currently in non-attainment status for ozone, the procedural requirements of the General Conformity Rule are not required for the Proposed Action as emission sources resulting from training would not be increasing. Instead air emissions would be spread between Range 11 and the proposed new MPMGR at Alternative 1; both within the JB MDL Dix Range Area (USEPA 2012b).

The primary regulatory authority for air quality in New Jersey is the NJDEP – Bureau of Air Quality Planning. The specific project study area does not currently contain any State permitted air emission sources; however, JB MDL currently maintains three (3) Title V Air Pollution Control Operating Permits. Permit number BOP110002 effective through February 2016, issued by the NJDEP Air Quality Permitting Program (AQPP) applies to air pollution generating activities including the fugitive emissions in the Range area (NJDEP 2011). Live fire training activities within the JB MDL Dix Range Area have been included in the permit and approved by the NJDEP AQPP, satisfying the requirements of the N.J.A.C. 7:27-8.3.

3.4.4 Proximate Sensitive Receptors

Proximate sensitive receptors include, but are not limited to, asthmatics, children, and the elderly, as well as specific facilities, such as long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, and childcare centers. One sensitive receptor, a residence, is located within a one-mile radius of the Alternative 1 and Alternative 2 project study areas. The residence is located approximately 0.92 mile east of the Site, along County Route 539.

3.4.5 Existing Emission Sources

The Alternative 1 and Alternative 2 project study areas do not currently possess any permitted air emissions sources, including sources such as emergency generators. **Table 3-2** provides the source summary air emissions for the State of New Jersey, Ocean and Burlington Counties.

Table 3-2 State and County Air Emission Summaries by Source Sector - CY 2011							
State/County	Source Sector	Emissions by Source Sector (Tons 2011)					
		CO	Pb	NO _x	VOC _s	PM _{2.5}	SO ₂
New Jersey	Mobile	870,720	6	122,296	78,747	6,725	3,538
	Fuel Combustion	66,902	1	33,222	10,669	9,632	11,785
	Industrial Processes	2,168	1	3,196	12,759	1,495	762
	Miscellaneous	2,397	1	2,292	14,619	3,405	538
	Biogenics	14,199	0	1,539	125,687	--	--
	Fires	18,744	0	143	4,255	1,601	101
	Solvents	72	0	56	62,131	11	0
	Dust	--	--	--	--	5,065	--
	Agriculture	--	--	--	--	50	--
	TOTAL	976,002	9	162,744	195,867	27,984	16,724
Ocean County	Mobile	55,639	0	6,385	7,009	354	59
	Fuel Combustion	4,103	0	1,501	589	500	395
	Industrial Processes	24	0	42	166	58	2
	Miscellaneous	127	0	17	857	174	4
	Biogenics	1,550	0	94	15,232	--	--
	Fires	4,333	0	30	1,009	354	23
	Solvents	0	0	0	3,707	0	--
	Dust	--	--	--	--	344	--
	Agriculture	--	--	--	--	1	--
	TOTAL	65,776	0	8,069	28,556	1,785	483
Burlington County	Mobile	47,077	0	6,929	4,365	393	103
	Fuel Combustion	4,091	0	1,408	623	555	378
	Industrial Processes	53	0	66	241	19	21
	Miscellaneous	121	0	21	806	136	6
	Biogenics	1,942	0	129	18,362	--	--
	Fires	4,470	0	30	1,016	377	23
	Solvents	3	0	3	3,213	0	0
	Dust	--	--	--	--	346	--
	Agriculture	--	--	--	--	8	--
	TOTAL	57,757	0	8,526	28,626	1,834	531

Source: USEPA 2014; <http://www.epa.gov/air/emissions/index.htm>

3.4.6 Existing Air Pollution Source Permits

The JB MDL maintains three Title V Operating Permits, as discussed above in **Section 3.4.3**. As mentioned, permit number BOP110002 effective through February 2016, issued by the NJDEP AQPP applies to air pollution generating activities within the JB MDL Dix Area, including the fugitive emissions in the Range area (NJDEP 2011). **Table 3-3** provides the air emission summary statement, by air contaminant, for calendar year 2012, the most recent data available at the current time. **Table 3-4** provides the air emission summary statement, by source category, for calendar year 2012, the most recent data available at the current time.

Table 3-3		
JB MDL Dix Area Summary Air Emission Statement - CY 2012		
Air Contaminant	Actual Emissions* (tons/year)	Permit Limit** (tons/year)
CO	17.02	32.5
NO _x	31.00	76.6
Pb	2.38E-02	-
PM-2.5	2.30	-
PM-10	8.26	3.3
SO ₂	2.00	20.3
TSP	12.12	4.2
VOC	13.05	22.7
CO ₂	19.52	-
CH ₄	48.44	-
NH ₃	0.31	-
Total HAPs	4.22	-

Notes: * Actual emissions include significant, insignificant, and fugitive emissions

** Permit Limits are emission limits for only significant sources

3.4.7 Compliance with Federal and State Regulations

Title III of the CAAA established a program for controlling emissions of hazardous air pollutants (HAPs). Under Title III, emission standards have been developed for sources that emit 189 chemical compounds listed in the Act. Initially, Title III would affect major industrial sources of HAPs. A major source is any facility that emits 10 tons or more per year of any HAPs or 25 tons of any combination of HAPs. These sources of emissions must be identified and are required to obtain an operating permit and comply with federally mandated control technology (i.e. maximum achievable control technology) based on emission standards and other conditions. The project study area does not produce any HAP emissions; therefore, Title III of the CAAA does not apply to the site.

The NJDEP Bureau of Air Permits has also established a permitting program, the NJDEP AQPP, in an effort to ensure that stationary sources of air emissions within the State of New Jersey do not adversely affect air quality. The program was developed in an effort to reduce air pollution within the State of New Jersey to acceptable levels and to maintain air pollution levels below those shown in **Table 3-1**. The NJDEP Bureau of Air Permits has also developed and maintained State Implementation Plans (SIP) for the regulation and reduction of specific HAPs, due to the State of New Jersey being designated as non-attainment for ozone (NJDEP 2007, USEPA 2012b). At the present time JB MDL has SIPs for the Lakehurst and McGuire portions of JB MDL. There is currently no SIP for the Dix area; in which both Alternative 1 and Alternative 2 are located.

Table 3-4 JB MDL Dix Area Summary Air Emissions by Source Category - CY 2012												
Source Category	Description	CO	NOx	Pb	PM-2.5	PM-10	SO ₂	TSP	VOC	CO ₂	CH ₄	NH ₃
		tons/year										
External Combustion	Natural Gas Boilers	11.0701	12.2546	0.0001	1.0007	1.0007	0.0290	1.0207	1.0342	15.7801	0.2528	0.0245
	Fuel Oil Boilers	0.7037	2.8150	0.0002	0.1168	0.1520	0.9993	0.3278	0.0479	3.1387	0.0304	0.1126
Internal Combustion	Diesel Generators	3.4866	15.8704	0.0000	1.0497	1.0497	0.9728	1.0497	1.1758	0.5973	1.4842	0.1758
Storage Tanks and Dispensing	Aboveground Storage Tanks and Dispensing Operations	-	-	-	-	-	-	-	8.3588	-	-	-
Process Sources	Paint Shop Spray Booths	-	-	-	-	-	-	-	0.0695	-	-	-
	Carpentry Shop	-	-	-	-	0.0140	-	0.0140	-	-	-	-
	Landfill	-	-	-	-	-	-	-	0.3610	-	46.6700	-
	Degreasers	-	-	-	-	-	-	-	1.8191	-	-	-
Non-Source Fugitives	Munitions	0.0280	0.0682	0.0236	0.0000	4.2108	0.0038	4.2108	0.0280	-	-	-
	Pesticides	0.1508	-	-	-	-	-	-	0.1508	-	-	-
	Vehicular Traffic	-	-	-	0.1334	1.8353	-	5.4967	-	-	-	-

3.5 Noise

Under NEPA, the Noise Control Act of 1972 (42 USC 4903 [P.L. 92-574]), EO 12088, AFI 32-7061, 32 CFR Part 989 and AFI 32-7063, the DoD is required to assess the environmental effects of noise produced by activities at JB MDL. Within such an assessment, strategies are promulgated to establish proper land-use planning criteria that protect on-site and off-site receptors from environmental noise.

The current noise environment at, and in the immediate vicinity of, the project study area includes the operations of aviation-related activities, small arms range activities, large arms (those with bore size greater than 20mm)/artillery range activities, and non-impulse noise. Non-impulse noise is generated from continuous, low-energy noise sources, such as tracked vehicles, wheeled vehicles, and Privately Owned Vehicles (POVs).

3.5.1 Current Noise Environment in Project Study Area

Major noise-producing activities at JB MDL include aviation-related noise, including fixed-wing and rotary-wing aircraft operations in relation to JB MDL McGuire Area and JB MDL Lakehurst Area, as well as tracked vehicles, trucks, small arms, and large arms training operations, much of which occurs throughout the JB MDL Dix Range Area.

The Federal Interagency Committee on Urban Noise (FICUN) has developed guidelines for determining compatible levels of noise exposure for land use planning and control, based on the USAF, Federal Aviation Administration (FAA), and the U.S. Department of Housing and Urban Development. These guidelines have been adopted more-or-less unchanged by the U.S. Department of Defense as part of the AICUZ program. The U.S. Army has developed land use guidelines that mirror FICUN aviation noise guidelines and also include guidelines relative to munitions noise. The Army land use guidelines published in army Regulation (AR) 200-1 established three Noise Zones (NZs) – NZ I, NZ II, NZ III, and a Land Use Planning Zone (LUPZ) **Table 3-5** summarizes the Noise Zone and compatibility guidelines.

The noise environment within the majority of JB MDL generally lies within noise Zone I; however, during training activities the noise environment within the particular sections of JB MDL, especially the Dix Range Area and the immediate vicinity of the air fields at McGuire and Lakehurst Areas, can escalate to noise Zone II and Zone III. JBMDL's 2013 AICUZ study provides current information related to the noise environment at JB MDL.

Under the baseline noise modeling, the project study areas of both Alternative 1 and Alternative 2 fall within Noise Zones II and III for Small Arms and Noise Zones II and III for baseline large arms. Although active training occasionally occurs in the immediate vicinity of the project study area (e.g. use of blanks at the Mobile MOUT Site), neither the 2005 Installation Operational Noise Management Plan (IONMP) nor the February 2013 AICUZ account for, nor has modeled a permanent stationary MPMGR at the specific proposed project location of the MPMGR in the "Times Square" area.

Table 3-5 Noise Zone Classification and Compatibility for Noise Sensitive Land Uses					
Noise Zone	Population Highly Annoyed	Compatibility for Noise Sensitive Land Use	Aviation ADNL (dBA)	Small Arms Peak (dBP)	Impulsive Noise from Large Caliber Weapons (>20mm) and Demolitions (dBC)
LUPZ	9-15%	N/A	60-65	NA	57-62
I	<15%	Compatible	<65	<87	<62
II	15-39%	Normally Not Compatible	65-75	87-104	62-70
III	>39%	Never Compatible	>75	>104	>70

Source: AR 200-1, Chapter 7

Notes: dBA – decibels, A-weighted, dBP – decibels, unweighted, dBC – decibels, C-weighted.

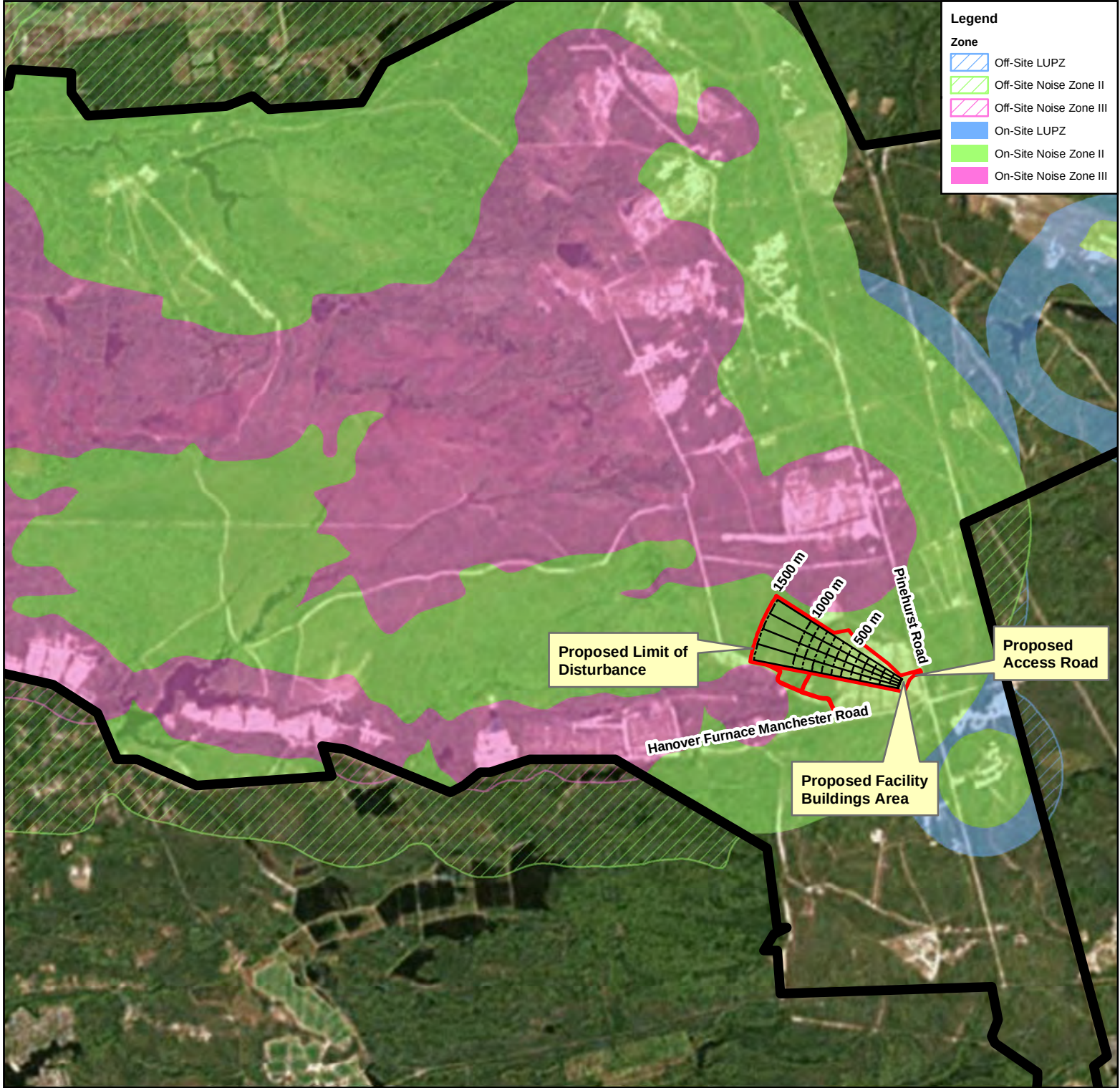
The EOD range to the north of the project study area and Range 39A to the south of the project study area are included in the noise modeling. Training operations at these two nearby ranges produce large arms noise signatures which are different from the noise signature produced at small arms fire as discussed in **Section 3.5** above. The 2005 IONMP Report and the 2013 AICUZ indicate that Noise Zone II for both small arms and large arms extend off post into neighboring communities; including portions of Manchester Township situated south and east of the project study area (Fort Dix 2005, JB MDL 2013b).

3.5.2 Proximate Noise Sensitive Receptors

With regard to the noise environment, sensitive receptors include, but are not limited to, health care facilities, retirement homes, residences, and schools. **Table 3-6** provides the generalized existing land uses for off-post property within noise zones for the JB MDL Range Area. **Figure 3-3** illustrates the baseline aviation and arms composite noise zone contours located in the project study area vicinity as depicted in the 2013 AICUZ.

Table 3-6 Generalized Existing Land Use of Off-Post Properties Within Noise Zones for the JB MDL Range Area				
Land Use Category	Acreage Within Noise Zones			
	LUPZ	Zone II	Zone III	Total
Residential	0	549	18	567
Commercial	1	21	3	25
Industrial	0	69	1	70
Public/Quasi-Public	1	2	0	3
Recreation/Open/Agricultural/Low Density	111	3,952	170	4,233
Total	113	4,593	192	4,898

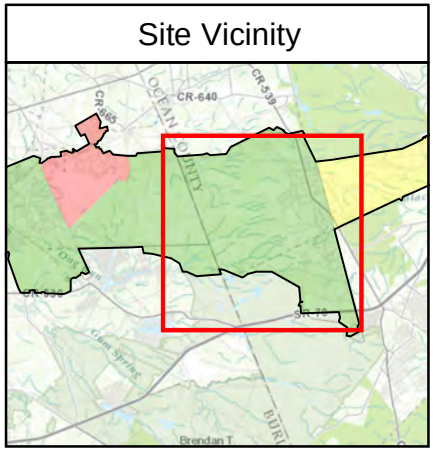
Source: JB MDL 2013b.



- Legend**
- Zone**
- Off-Site LUPZ
 - Off-Site Noise Zone II
 - Off-Site Noise Zone III
 - On-Site LUPZ
 - On-Site Noise Zone II
 - On-Site Noise Zone III

Baseline Aviation and Arms Composite Noise Zone Contours

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL
Contract No. FA4484-07-D-0005
Task Order No. 5013
Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014



Site Vicinity

0 0.5 1 1.5
Miles

Map Ref. :
World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>
Noise Zones from AICUZ (Air Installation Compatible Use Zone) program, July 3 2013
Range Layout from pg. 12 of the 95% Submittal of the Multi-Purpose Machine Gun Range at JB MDL by the U.S. Army Corps of Engineers Louisville District

Figure 3-3

3.6 Topography, Geology and Soils

3.6.1 Topography

The topography of Ocean County consists of gently rolling lands with few steep slopes.

The topographic profile of the Alternative 1 project study area is generally flat with a gentle downhill slope that trends westward. The elevation ranges from around 140 feet above mean sea level (amsl), in the eastern end of the project study area, to 115 feet in the western portion (see **Figure 3-4A**).

The topographic profile of the Alternative 2 project study area is generally flat with a gentle downhill slope that trends westward with the exception of the area that the northern most lane would occupy. That portion of the potential Alternative 2 site is along the side of a ridge. The elevation ranges from around 130 feet amsl in the eastern end of the project study area along the proposed firing line, to 150 feet amsl in northwestern corner of the site and 115 feet amsl on the southwest corner of the site (see **Figure 3-4B**).

3.6.2 Geology

New Jersey contains five major physiographic sections: Inner Coastal Plain, Outer Coastal Plain, Piedmont, Highlands, and Valley and Ridge. The project study area is situated within the Outer Coastal Plains physiographic section of the larger Coastal Plains Physiographic Province. The Outer Coastal Plain is New Jersey's largest physiographic section, occupying 3,400 square miles (45.2% of the state). It consists of sedimentary deposits dating from the Tertiary period, with overlaying patches of sand and gravel. In general, the Outer Coastal Plain contains a greater amount of sand and exhibits gentler terrain than the adjacent Inner Coastal Plain (NJDMVA 2006, USAR 2009).

Both the Alternative 1 and Alternative 2 project study areas are located entirely within the New Jersey Outer Coastal Plain, a wedge of unconsolidated sediments that dips and thickens to the southeast. The New Jersey Geologic Survey (NJGS) indicates that the site lies entirely within an outcropping of the Beacon Hill Gravel formation, an integral part of the Kirkwood-Cohansey Aquifer system. This formation consists of light-colored sandy quartz gravel, is considered a fluvial deposit of Miocene times, and overlies the Cohansey Sand formation. Throughout most of its subsurface extent, the Kirkwood-Cohansey Aquifer is predominately a water-table aquifer, but locally perched water tables and in the underlying Cohansey Sand formation are located to the east, south, and west of the site (NJDMVA 2006). **Figure 3-5A** and **3-5B** indicates the geologic properties located within the Alternative 1 and Alternative 2 project study areas, respectively.

3.6.3 Soil Types and Characteristics

The soil types found within the Alternative 1 project study area are almost entirely identified as Lakehurst sand and Lakewood sand, with a smaller amount of Atsion sand running through the center portion of the site and along the southwest corner (refer to **Figure 3-6A**) (JB MDL 2012b, USDA 2012). As indicated in **Table 3-7A**, the USDA soil map indicates the footprint is underlain by four soil map units:

- Atsion sand (AtsA) – characterized by very deep, relatively flat, poorly drained soils.
- Lakehurst sand (LakB) – characterized by very deep, relatively flat, moderately well drained soils.
- Lakewood sand (LasB) – characterized by very deep, flat, excessively drained soils.
- Lakewood sand (LasC) – characterized by very deep, flat, excessively drained soils.

Locations of soils found at the Alternative 1 project study area are shown in **Figure 3-6A**. Soil characteristics are summarized in **Table 3-7A**. The erodibility factor of a soil is an expression of its inherent resistance to particle detachment (degradation) and transport by rainfall (erosion). It is determined by the cohesive force between the soil particles, and may vary depending on the presence or absence of plant cover, the soil's water content and the development of its structure (OMAFRA 2012, USDA 2012).

The soil types found within the Alternative 2 project study area are almost entirely identified as Lakehurst sand and Lakewood sand, with a smaller amount of Atsion sand running through the center portion of the site and along the southwest corner (refer to **Figure 3-6B**) (JB MDL 2012b, USDA 2012). As indicated in **Table 3-7B**, the USDA soil map indicates the footprint is underlain by six soil map units:

- Atsion sand (AtsA) – characterized by very deep, relatively flat, poorly drained soils.
- Lakehurst sand (LakB) – characterized by very deep, relatively flat, moderately well drained soils.
- Lakewood sand (LasB) – characterized by very deep, flat, excessively drained soils.
- Lakewood sand (LasC) – characterized by very deep, flat, excessively drained soils.

Manahawkin muck (MakAt) – characterized by deep, flat, poorly drained soils that are frequently flooded. Locations of soils found at the Alternative 2 project study area are shown in **Figure 3-6B**. Soil characteristics are summarized in **Table 3-7B**.

3.6.4 Prime and Unique Farmlands

While none of the soil types within either of the Alternative 1 and Alternative 2 project study areas is designated as prime farmland or farmland of statewide importance; one of the soil types found within the Alternative 1 project study area (Atsion sand) and two of the soil types (Atsion sand and Manahawkin muck) found within the Alternative 2 project study area are designated as unique farmland for their capability for cranberry production (see **Tables 3-7A** and **3-6B**) (USDA 2012).

3.6.5 Hydric Soils

According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), the majority of the soils within both the Alternative 1 and Alternative 2 project study areas have been identified as partially hydric or as having hydric

components (JB MDL 2012b, USDA 2012). Manahawkin muck (MakAt) is hydric and is associated with the wetland area in the western extent of Alternative 2. Atsion sand (AtsA), Lakehurst sand (LakB) and Lakewood sand (LasB) contain hydric properties and are found within both the Alternative 1 and Alternative 2 project study areas (refer to **Tables 3-7A** and **3-7B**).

Table 3-7A Soil Types Present Within the Alternative 1 Project Study Area							
Soil Type	Symbol	Acres	% Site	Slope (%)	Hydric Status	Prime or Unique Farmland	Erodibility Factor
Atsion sand	AtsA	14.59	8%	0-2	Partially	Unique ¹	Slight ²
Lakehurst sand	LakB	54.03	30%	0-5	Partially	No	Slight
Lakewood sand	LasB	108.01	61%	0-5	Partially	No	Slight
Lakewood sand	LasC	1.86	1%	5-10	Not	No	Slight

Source: USDA 2012.

Notes: ¹ Unique indicates a designation of a unique farmland soil type.

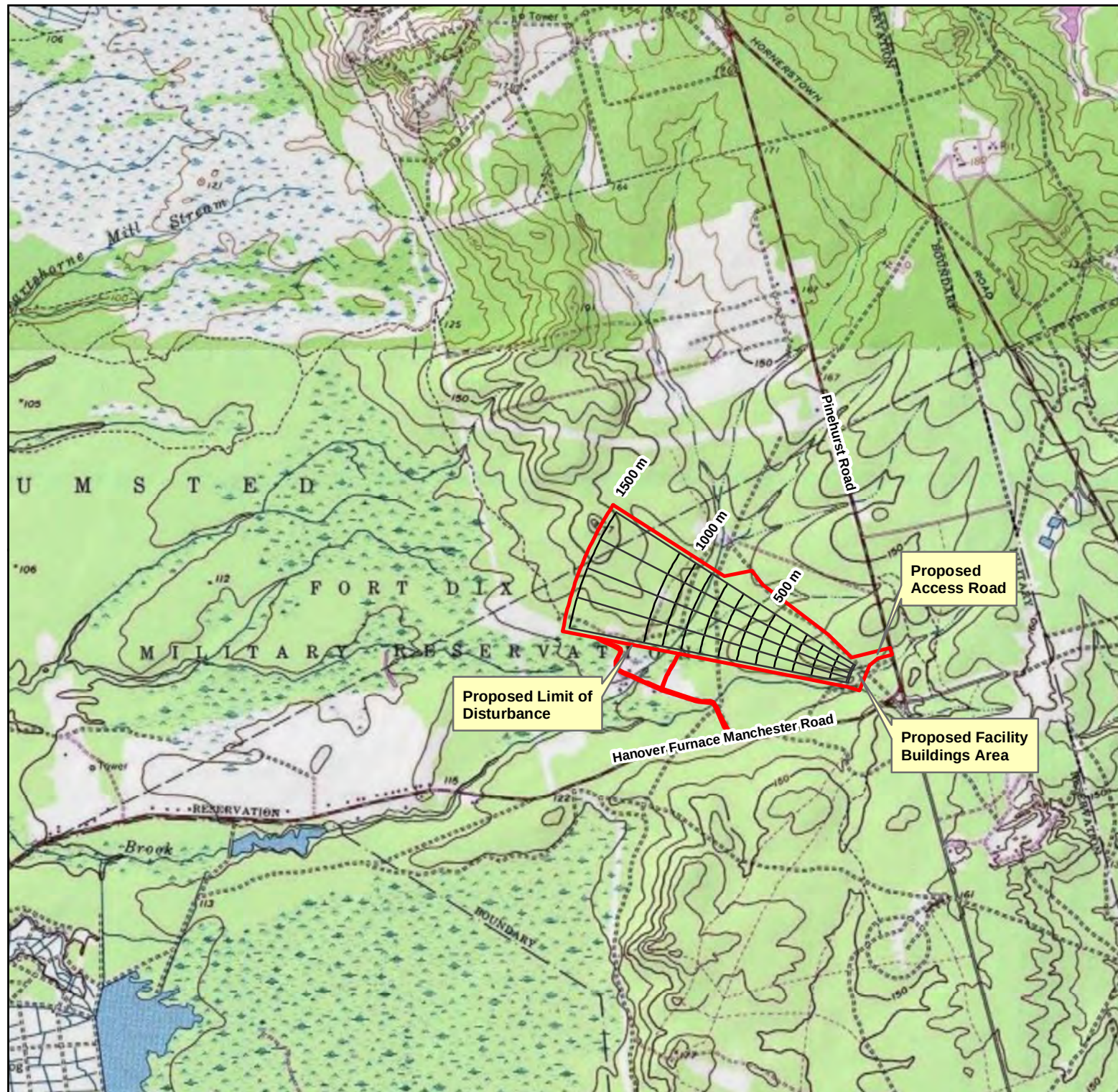
² A "slight" designation indicates that erosion is unlikely under normal climatic conditions.

Table 3-7B Soil Types Present Within the Alternative 2 Project Study Area							
Soil Type	Symbol	Acres	% Site	Slope (%)	Hydric Status	Prime or Unique Farmland	Erodibility Factor
Atsion sand	AtsA	17.85	11%	0-2	Partially	Unique ¹	Slight ²
Lakehurst sand	LakB	41.06	26%	0-5	Partially	No	Slight
Lakewood sand	LasB	71.76	45%	0-5	Partially	No	Slight
Lakewood sand	LasC	25.51	16%	5-10	Not	No	Slight
Manahawkin muck	MakAt	3.26	2%	0-2	Hydric	Unique ¹	Slight
Woodmansie sand	WobB	0.50	>1%	0-5	Not	No	Slight

Source: USDA 2012.

Notes: ¹ Unique indicates a designation of a unique farmland soil type.

² A "slight" designation indicates that erosion is unlikely under normal climatic conditions.



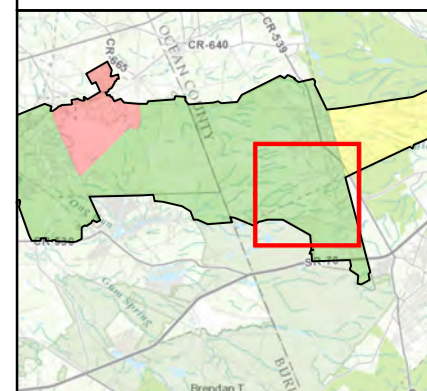
Alternative 1 Layout Topographic Map

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL

Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



0 0.25 0.5 0.75
Miles

Map Ref. :
USGS 7.5 Minute Topographic Map, Whiting
Provided by ESRI <http://services.arcgis.com/ArcGIS/services>

Range Layout from pg. 12 of the 95% Submittal of the Multi-Purpose
Machine Gun Range at JB MDL by the U.S. Army Corps of Engineers
Louisville District

Figure 3-4a

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

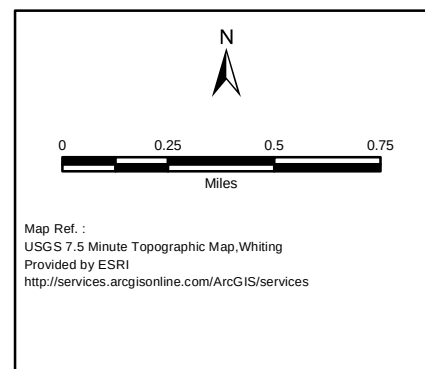
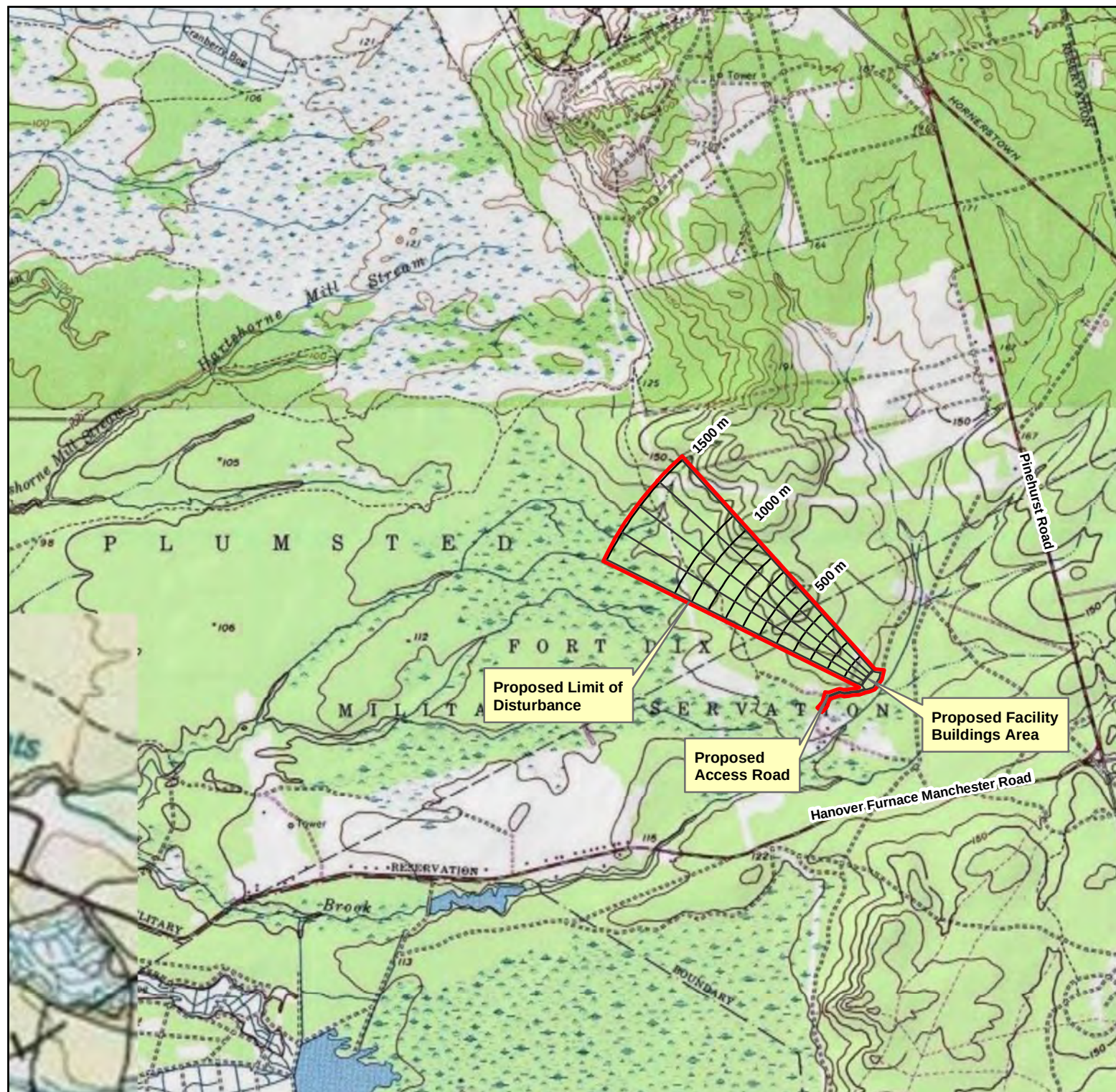
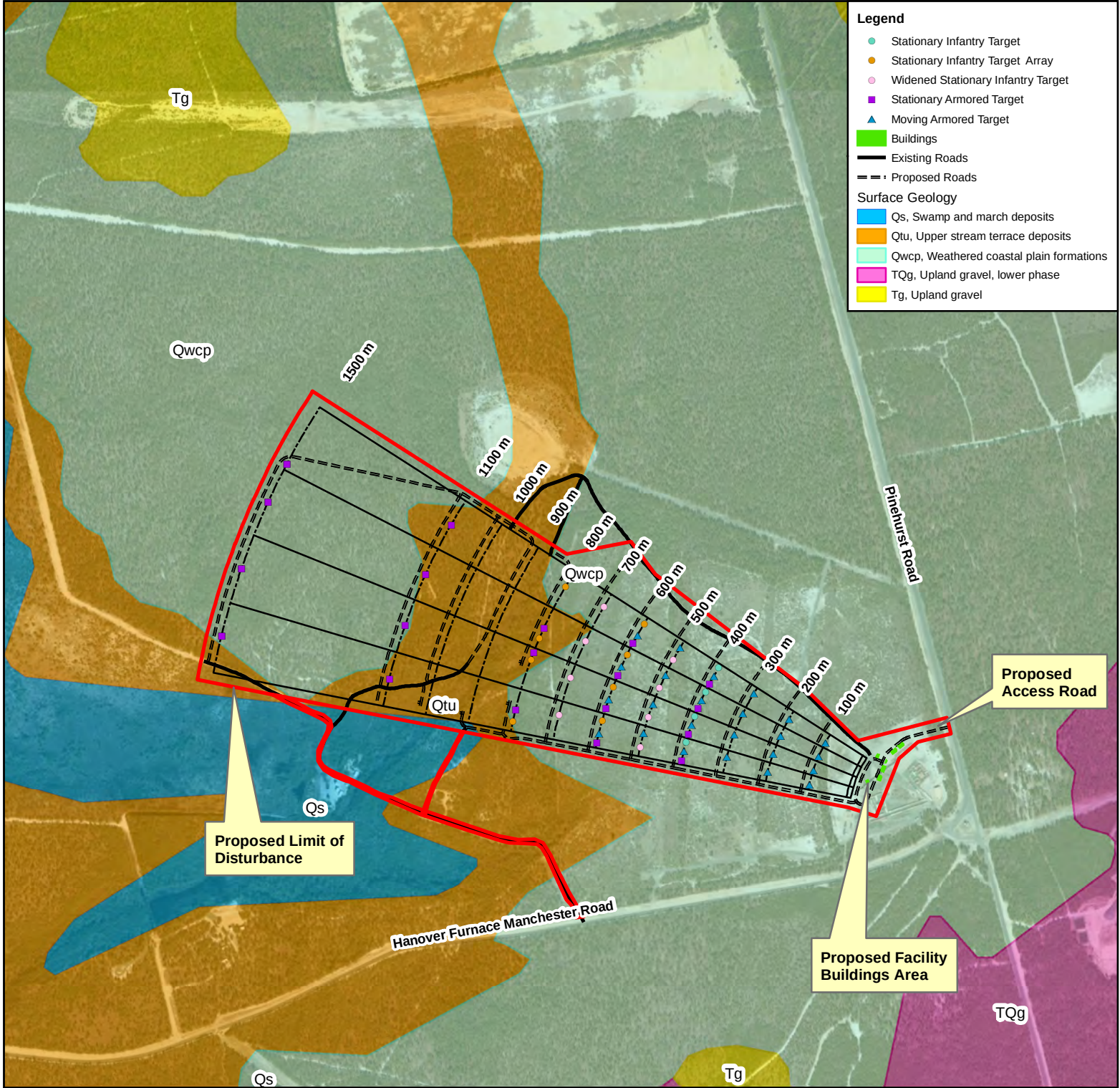


Figure 3-4b





Legend

- Stationary Infantry Target
- Stationary Infantry Target Array
- Widened Stationary Infantry Target
- Stationary Armored Target
- Moving Armored Target
- Buildings
- Existing Roads
- Proposed Roads

Surface Geology

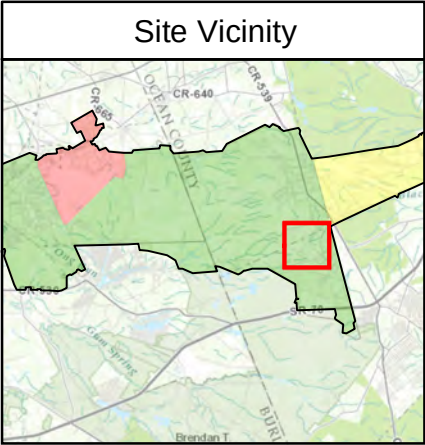
- Qs, Swamp and march deposits
- Qtu, Upper stream terrace deposits
- Qwcp, Weathered coastal plain formations
- TQg, Upland gravel, lower phase
- Tg, Upland gravel

**Alternative 1 Layout
Geologic Map**

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL

Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014



Map Ref. :

World Imagery from ESR!

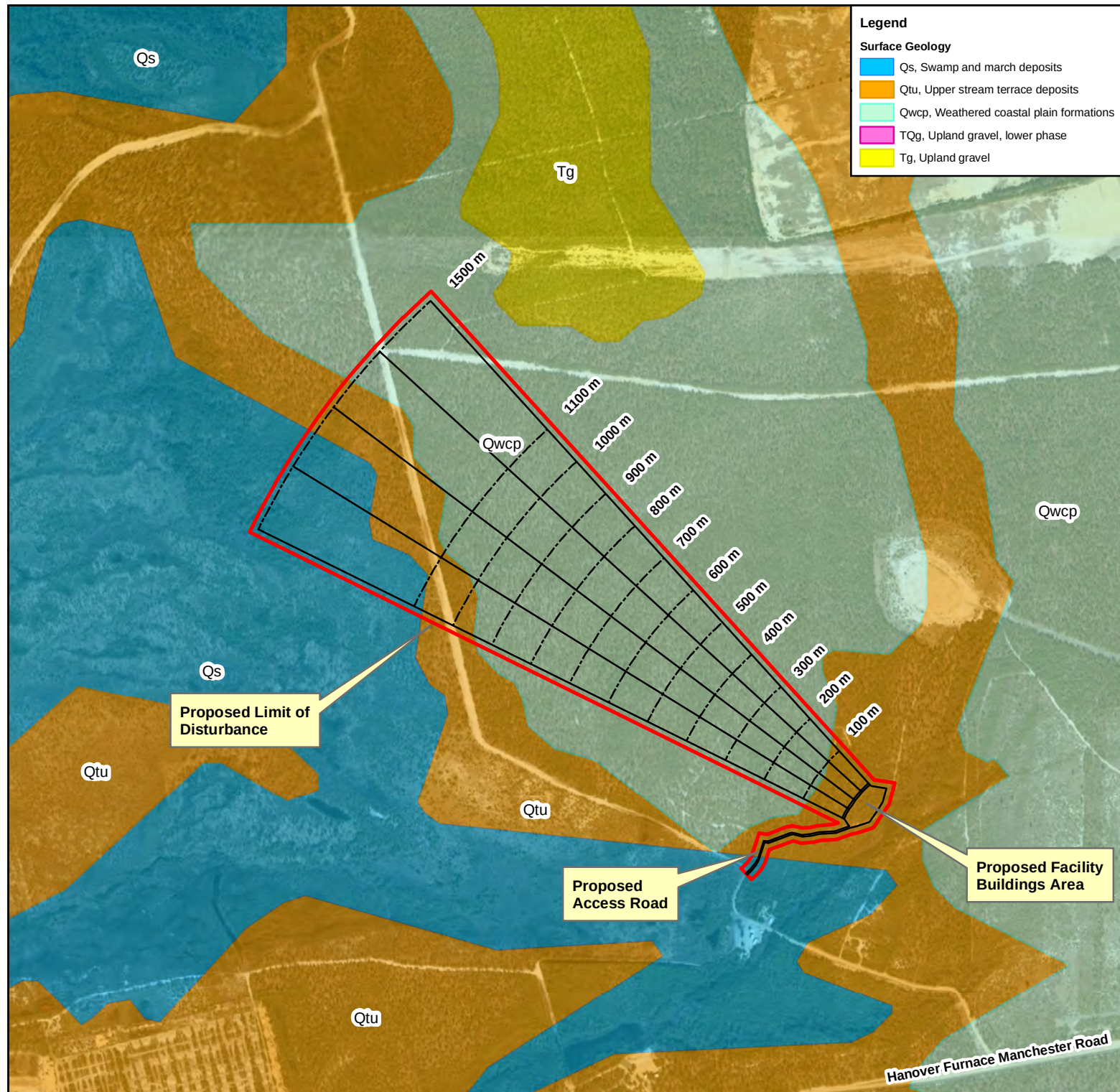
<http://services.arcgisonline.com/ArcGIS/services>

Surface Geology from NJGWS

<http://www.state.nj.us/dep/njgs/geodata/dgs07-2.htm>

Range Layout from pg. 9 of the 35% Submittal of the Multi-Purpose Machine Gun Range at JB MDL by the U.S. Army Corps of Engineers Louisville District

Figure 3-5a



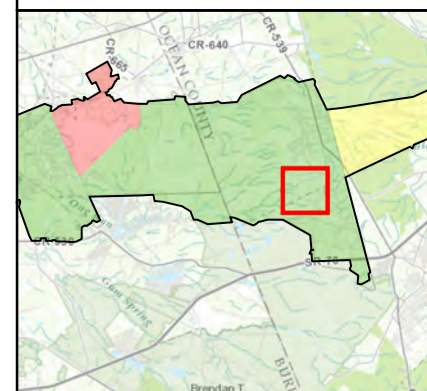
Alternative 2 Layout Geologic Map

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL

Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity

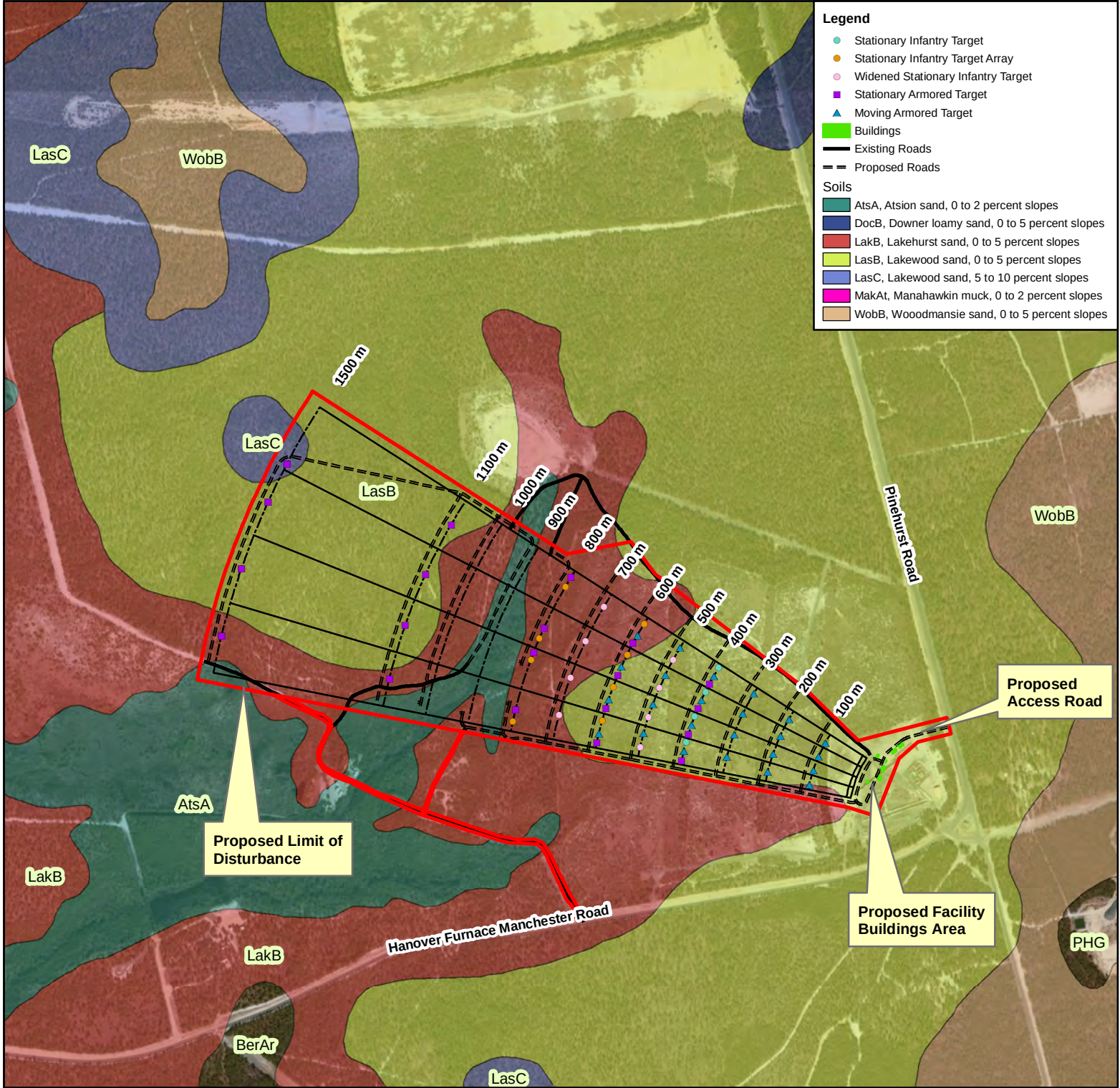


Map Ref. :

World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Surface Geology from NJGWS
<http://www.state.nj.us/dep/njgs/geodata/dgs07-2.htm>

Figure 3-5b



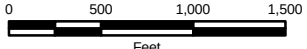
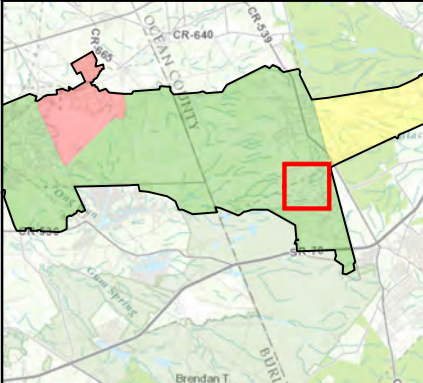
- Legend**
- Stationary Infantry Target
 - Stationary Infantry Target Array
 - Widened Stationary Infantry Target
 - Stationary Armored Target
 - Moving Armored Target
 - Buildings
 - Existing Roads
 - Proposed Roads
- Soils**
- AtsA, Atsion sand, 0 to 2 percent slopes
 - DocB, Downer loamy sand, 0 to 5 percent slopes
 - LakB, Lakehurst sand, 0 to 5 percent slopes
 - LasB, Lakewood sand, 0 to 5 percent slopes
 - LasC, Lakewood sand, 5 to 10 percent slopes
 - MakAt, Manahawkin muck, 0 to 2 percent slopes
 - WobB, Woodmansie sand, 0 to 5 percent slopes

Alternative 1 Layout Soils Map

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL
Contract No. FA4484-07-D-0005
Task Order No. 5013

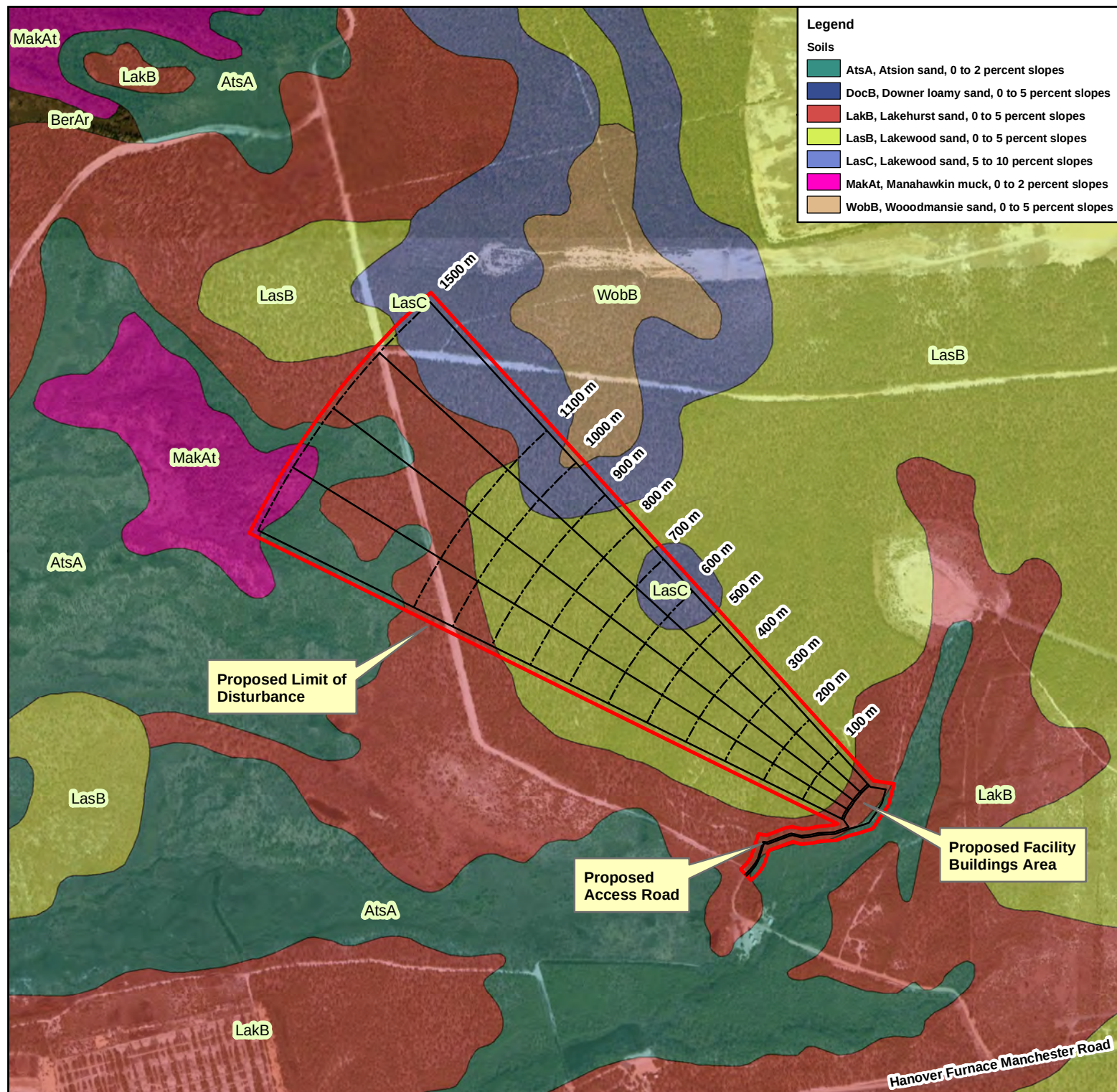
Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



Map Ref. :
World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>
Soils Map from NRCS (SSURGO), NJDEP Digital Data Downloads
<http://soildatamart.nrcs.usda.gov/>
Range Layout from pg. 12 of the 95% Submittal of the Multi-Purpose Machine Gun Range at JB MDL by the U.S. Army Corps of Engineers Louisville District

Figure 3-6a



Alternative 2 Layout Soils Map

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL

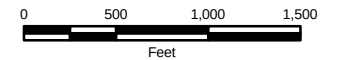
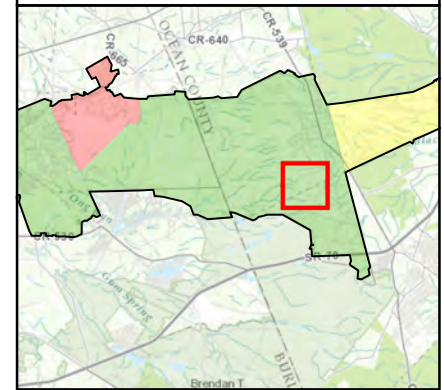
Contract No. FA4484-07-D-0005

Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey

AMEC Project No. 77485.0014

Site Vicinity



Map Ref. :

World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Soils Map Ref. : NRCS (SSURGO), NJDEP Digital Data Downloads
<http://soildatamart.nrcs.usda.gov/>

Figure 3-6b

3.7 Water Resources

3.7.1 Regulatory Framework

Protection and management of water resources on the JB MDL are mandated by various Federal laws, regulations, and guidance. Within the U.S., waters are regulated under Sections 401 (33 USC 1341 *et seq.*) and 404 (33 USC 1344 *et seq.*) of the Federal Clean Water Act (CWA). Water features within the project study area are also under the jurisdiction of the NJDEP because of State assumption of Section 401 and 404 of the CWA.

3.7.2 Surface Water Resources

The headwaters of Gaunts Brook are located within the central portion of the Alternative 1 study area and passes through the central portion of Alternative 1, as depicted in **Figure 3-7A**. The headwaters of Gaunts Brook are located to the east of the Alternative 2 project study area as depicted in **Figure 3-7B**. The Gaunts Brook headwaters in and around the study areas originate as a wet meadow that transitions into a pitch pine (*Pinus rigida*) lowland, and then a network of small braided channels characterized by hummocks vegetated with Atlantic white cedar (*Chamaecyparis thyoides*) and hollows vegetated with sphagnum moss (*Sphagnum* spp.) or containing open water.

Another portion of the Gaunts Brook headwater is also present along the south/southwestern portion of the Alternative 1 study area. This area could not be examined in the field due to the high probability of UXO; however, a cursory examination from a safe distance indicates this area to be primarily wetland and exhibiting a similar vegetation community composition that of pitch pine lowland grading to an Atlantic white cedar swamp. Gaunts Brook headwater areas are also present in the westernmost portion of Alternative 2, although these areas exhibit a much larger contiguous wetland system than the headwater area that bisects Alternative 1.

The Gaunts Brook headwaters flow in a southwesterly direction and eventually form the main channel of Gaunts Brook (JB MDL 2012b). Gaunts Brook empties into Mirror Lake in Browns Mills, Pemberton Township, located approximately 6.5 miles to the west of the site. Mirror Lake, Gaunts Brook and several other tributaries are all portions of the Rancocas Creek watershed (USAR 2009). According to the 2010 USEPA Water Quality Assessment Report, Gaunts Brook is classified as an impaired water body based on the concentrations of copper and lead (USEPA 2010a, USEPA 2010b).

3.7.2.1 Wetlands

Wetlands are defined as areas that are inundated by surface or groundwater with a frequency sufficient to support, and under normal circumstances do or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth/reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas, such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds.

Because of Section 401 and 404 CWA assumption from the federal government, the primary governing regulation for freshwater wetlands in the State of New Jersey is the New Jersey Freshwater Wetlands Protection Act (N.J.S.A. 13:9B-1 *et seq.*) (the “Act”) and to a lesser extent,

the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq. The rules governing the implementation of the Freshwater Wetlands Protection Act and the Water Pollution Control Act are the New Jersey Freshwater Wetlands Protection Act Rules (the “Rules”) at N.J.A.C. 7:7A.

EO 11990 provides guidance on wetlands management. It is the intent of this EO that Federal agencies implement these requirements through existing procedures, such as those established to implement NEPA. This EO requires each Federal agency to provide leadership and take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out that agency’s responsibilities for:

- Acquiring, managing, and disposing of Federal lands and facilities;
- Providing Federally undertaken, financed, and assisted construction and improvements; and
- Conducting Federal activities and programs affecting land use, including but not limited to, water and related land resource planning, regulating, and licensing activities.

32 CFR 989 provides guidance for wetlands management as a sub-analysis of the NEPA process. The USFWS National Wetland Inventory (NWI) map indicates that wetlands occur within both the Alternative 1 and Alternative 2 project study areas.

Approximately 6.12 acres of wetlands are present within the Alternative 1 project study area. The USFWS NWI map indicates wetlands along the headwater channels of Gaunts Brook, near the central portion of the site. These wetlands have been classified as:

- PSS1E – Palustrine, scrub-shrub, broad-leaved deciduous, seasonally-flooded/saturated wetland;
- PSS1E/4E – Palustrine, scrub-shrub, broad-leaved deciduous/needle-leaved evergreen, seasonally flooded/saturated wetland; and
- PEM1/SS1E – Palustrine, emergent, persistent/scrub-shrub, broad-leaved deciduous, seasonally flooded/saturated wetland.

The NJDEP wetlands map also classifies the headwater channels of Gaunts Brook as PSS1E, with an additional indication of a disturbed area wetland (MODD). The NJDEP wetlands map additionally identified a small area in the southwest corner of the Alternative 1 project study area as a palustrine, emergent, persistent, saturated wetland (PEM1B). This small area is associated with the Gaunts Brook headwater described in **Section 3.7.2** that could not be assessed in the field due to the high probability of UXO.

JB MDL contractors performed a wetland delineation of the Alternative 1 project study area on 13-14 September 2012 (**Appendix D**). Through the September 2012 wetland delineation, it was determined that approximately 6.12 acres of wetlands are located within the Alternative 1 project study area. The wetland areas identified during the field effort roughly coincided with the wetlands indicated by the USFWS NWI and NJDEP maps. As indicated, these wetland areas are mostly associated with the headwater channels of Gaunts Brook. The 2012 *Wetland Delineation Report and Listed Species Habitat Survey Proposed Mult-Purpose Machine Gun*

Range Joint Base McGuire-Dix-Lakehurst (JB MDL) further specifies that the upstream portion of the headwater channels of Gaunts Brook is a pitch pine lowland wetland transitioning to an Atlantic white cedar swamp in the southern portion of the site (i.e., downstream reach). A small wet meadow is also present at the upstream end of a side channel that branches off to the east (JB MDL 2012b). A total of 5.38 acres of the wetlands were delineated by JB MDL contractors in September 2012 fall within the project study area of Alternative 1. An additional approximately 0.74 acre wetland area is present on the southwest corner of the Alternative 1 location. This area was not delineated by JB MDL contractors during the September 2012 wetland survey due to the potential presence of a significant quantity of UXO in that area.

JB MDL contractors performed additional wetland delineations along the southern existing access road of the Alternative 1 project study area in May 2014 to focus specifically on whether or not the south access road is situated in wetlands. Through the May 2014 wetland delineation, it was determined that the upstream portion of the headwater channels of Gaunts Brook passes through a culvert under the existing access road and that the access road itself is not a wetland. **Figure 3-8A** shows the wetlands within the Alternative 1 project study area.

The wetlands identified within the Alternative 2 project study area by the USFWS NWI map are located in the southwestern corner of the project study area. These wetlands have been classified as:

- PSS1/EM1B – Palustrine, scrub-shrub, broad-leaved deciduous, emergent, persistently saturated wetland;
- PSS4/1B – Palustrine, scrub-shrub, needle-leaved evergreen/broad-leaved deciduous, saturated wetland; and
- PSS1/4E – Palustrine, scrub-shrub, broad-leaved deciduous/needle-leaved evergreen, seasonally flooded/saturated.

Figure 3-8B depicts the locations of these identified wetland areas within the Alternative 2 project study area. Based on the NWI and the NJDEP wetland maps, there are approximately 23.70 acres of wetlands within the Alternative 2 project study area. These wetlands have not been field delineated.

3.7.2.2 Floodplains

Floodplains are generally areas of low level ground located on one or both sides of a stream channel that are subject to either regularly periodic or infrequent inundation by floodwaters. The FEMA regulates floodplains with standards outlined in 44 CFR 60.3.

Executive Orders (EOs) 11988 and 13690 provides guidance on floodplain management. These EOs require each Federal agency to amend existing regulations or procedures to ensure that the potential effects of any action the agency may take in a floodplain are evaluated and that the agency's planning programs and budget requests reflect consideration of flood hazards and floodplain management. Guidance for implementation of EOs 11988 and 13690 is provided in the Floodplain Management Guidelines of the U.S. Water Resources Council (40 CFR 6030). It is the intent behind these EOs that Federal agencies implement these requirements through existing procedures, such as those established to implement NEPA.

Based on available data obtained from FEMA, 61 acres of the Alternative 1 project study area are located within a 100-year floodplain. The floodplain is associated with Gaunts Brook which traverses the central portion of the project study area (see **Figure 3-9A**).

Based on available data obtained from FEMA, 32.83 acres of the Alternative 2 project study area are located within a 100-year floodplain. The floodplain is associated with Gaunts Brook immediately east of the project study area and the wetland areas on the southwestern portions of the project study area (see **Figure 3-9B**).

3.7.3 Groundwater Resources

Both the Alternative 1 and Alternative 2 project study areas sit on top of the Kirkwood-Cohansey Aquifer system. Groundwater is stored in and transmitted through pores between sand grains and is typically well connected to surface water bodies. Some ground water leaks from the upper unconfined groundwater aquifers to deeper confined aquifers can occur. According to the United States Geological Survey (USGS), water quality within the Kirkwood-Cohansey aquifer is satisfactory with the NJDEP water quality standards (N.J.A.C 7:9C) and contains high-capacity production for public water supply, yielding approximately 500 to 1,000-gallons per minute (USGS 2009).

Groundwater surveys have been conducted within the EOD range, located to the north, in an effort to determine any effects to groundwater due to the use of the area for the detonation/destruction of UXO. Approximately 17 groundwater sampling events have been conducted at the EOD range between 2002 and 2013. In the groundwater survey conducted in 2009, entitled *Environmental Assessment for Range Development Plan at Fort Dix, New Jersey*, indicated that heavy metals and explosives residue were present that exceed state action levels (USAR 2009). The most recent groundwater sampling event was conducted in April 2013, *Final Annual Groundwater Sampling Report Open Detonation Unit – Verdun Range*, concluding that concentrations of explosives and perchlorate are present within the shallow groundwater at the EOD range. Groundwater elevations measured during the 2013 groundwater survey at the EOD range indicates a southwesterly groundwater flow direction from the EOD range towards the Range Impact Area (JB MDL 2013c).

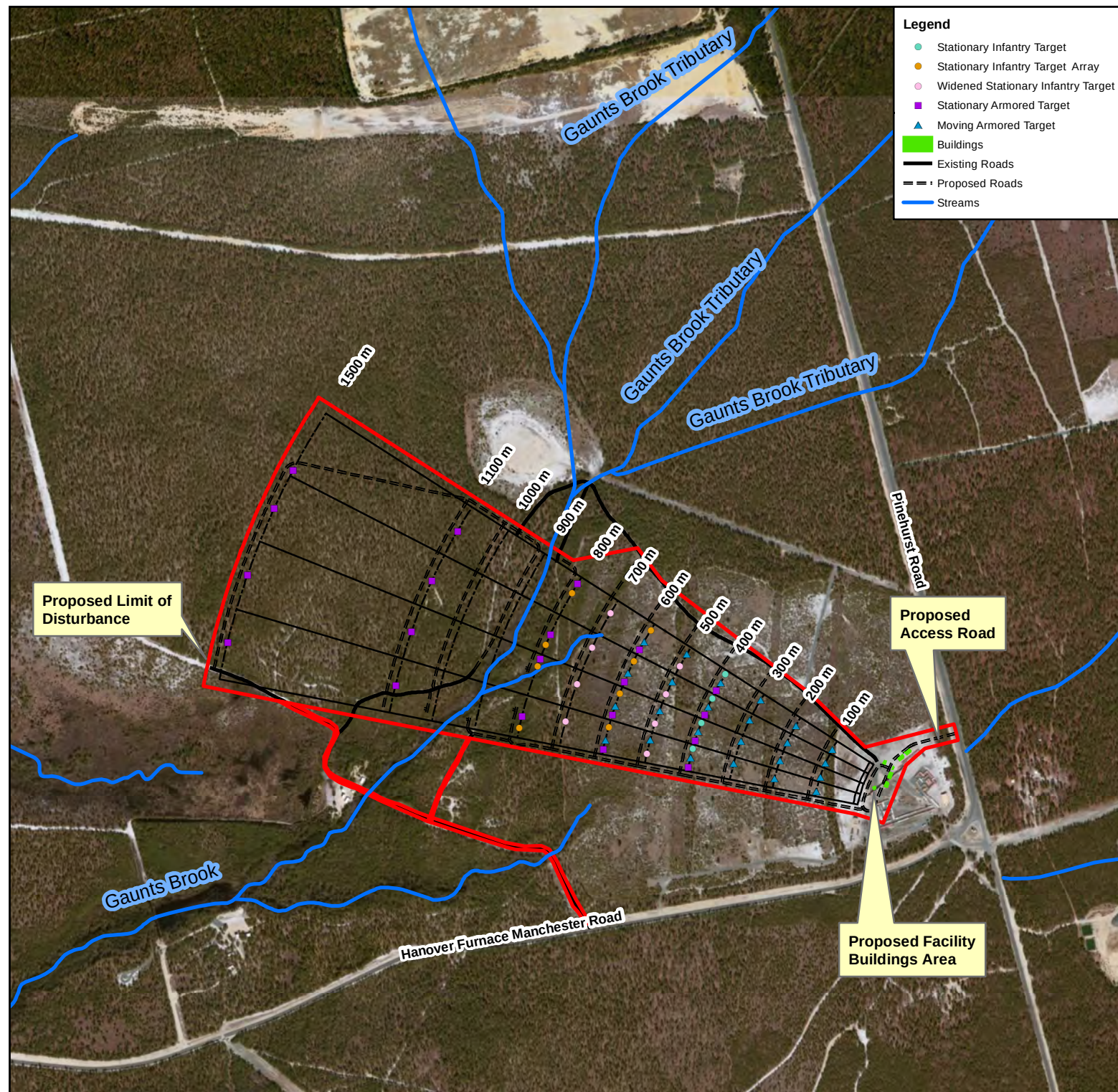
There are no groundwater monitoring wells within the specific project study area and groundwater sampling has not been conducted at the project study area.

3.7.4 Water Providers

Potable water is not currently provided to either the Alternative 1 or Alternative 2 project study areas. The “Times Square Well”, to the immediate southeast of both Alternative project study areas provides a source for potable water in the Dix Range Area. The “Times Square Well” is drilled to a depth of 111 feet and yields 50+ gallons per minute (NJDEP 2005). Testing of the “Times Square Well” well was conducted during the well installation in 2005. The groundwater was analyzed for the presence multiple parameters, including lead, mercury, and volatile organic compounds, in an effort to ensure that the groundwater was safe as potable water, in accordance with the NJDEP. According to the test results, none of the compounds noted were detected in the samples collected (VAL 2005).

3.7.5 Wild and Scenic Rivers

The Wild and Scenic Rivers Act of 1968 (16 USC 1271 et seq.) established a means of evaluating and protecting selected rivers that have particular scenic, recreational, geologic, fish and wildlife, historical, cultural, or other similar unique values. A river may be so designated by either the U.S. Congress or by a state legislature. There are currently no designated Scenic and Recreational Rivers within either the Alternative 1 or Alternative 2 the project study areas.



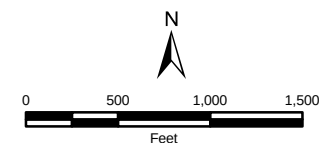
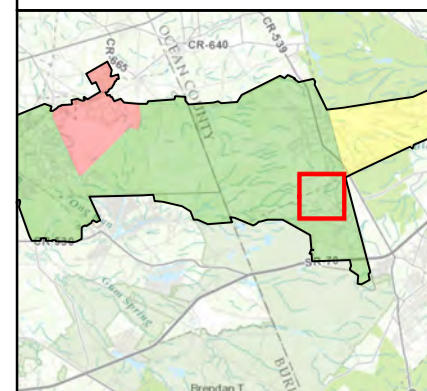
Alternative 1 Layout Surface Water Drainage Map

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL

Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



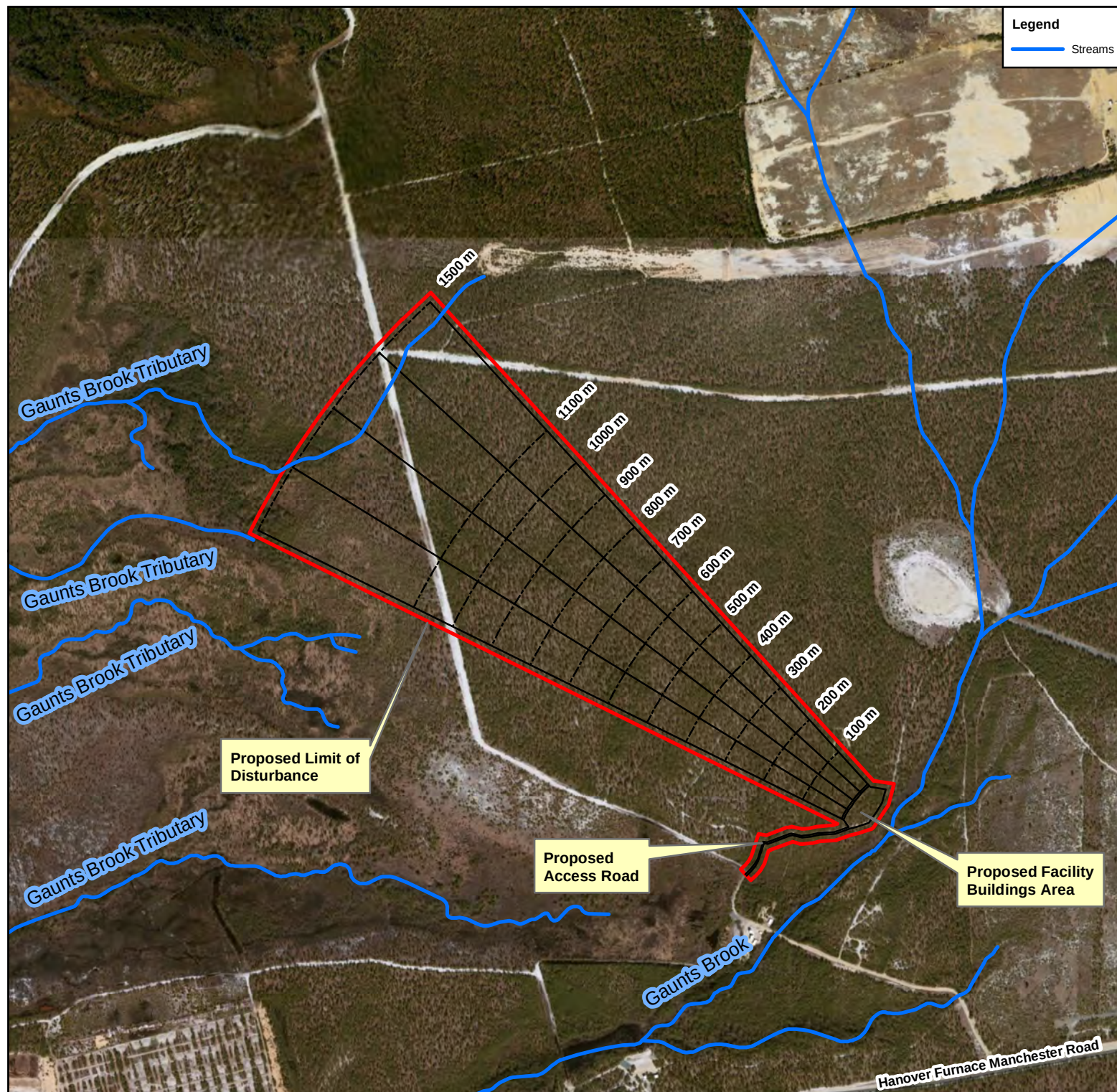
Map Ref. :

World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Streams from NJDEP
<http://www.nj.gov/dep/gis/stateshp.html>

Range Layout from pg. 12 of the 95% Submittal of the Multi-Purpose Machine Gun Range at JBMDL by the U.S. Army Corps of Engineers Louisville District

Figure 3-7a



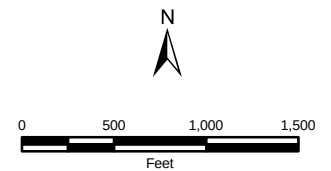
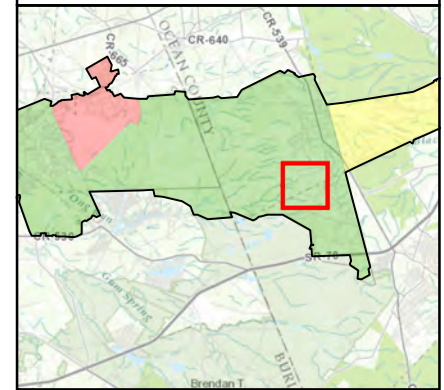
Alternative 2 Layout Surface Water Drainage Map

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL

Contract No. FA4484-07-D-0005
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Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



Map Ref. :

World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Streams from NJDEP
<http://www.nj.gov/dep/gis/stateshp.html>

Figure 3-7b

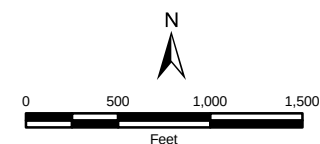
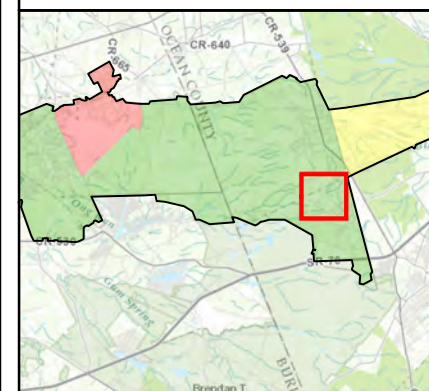
Alternative 1 Layout Wetlands Map

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL

Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



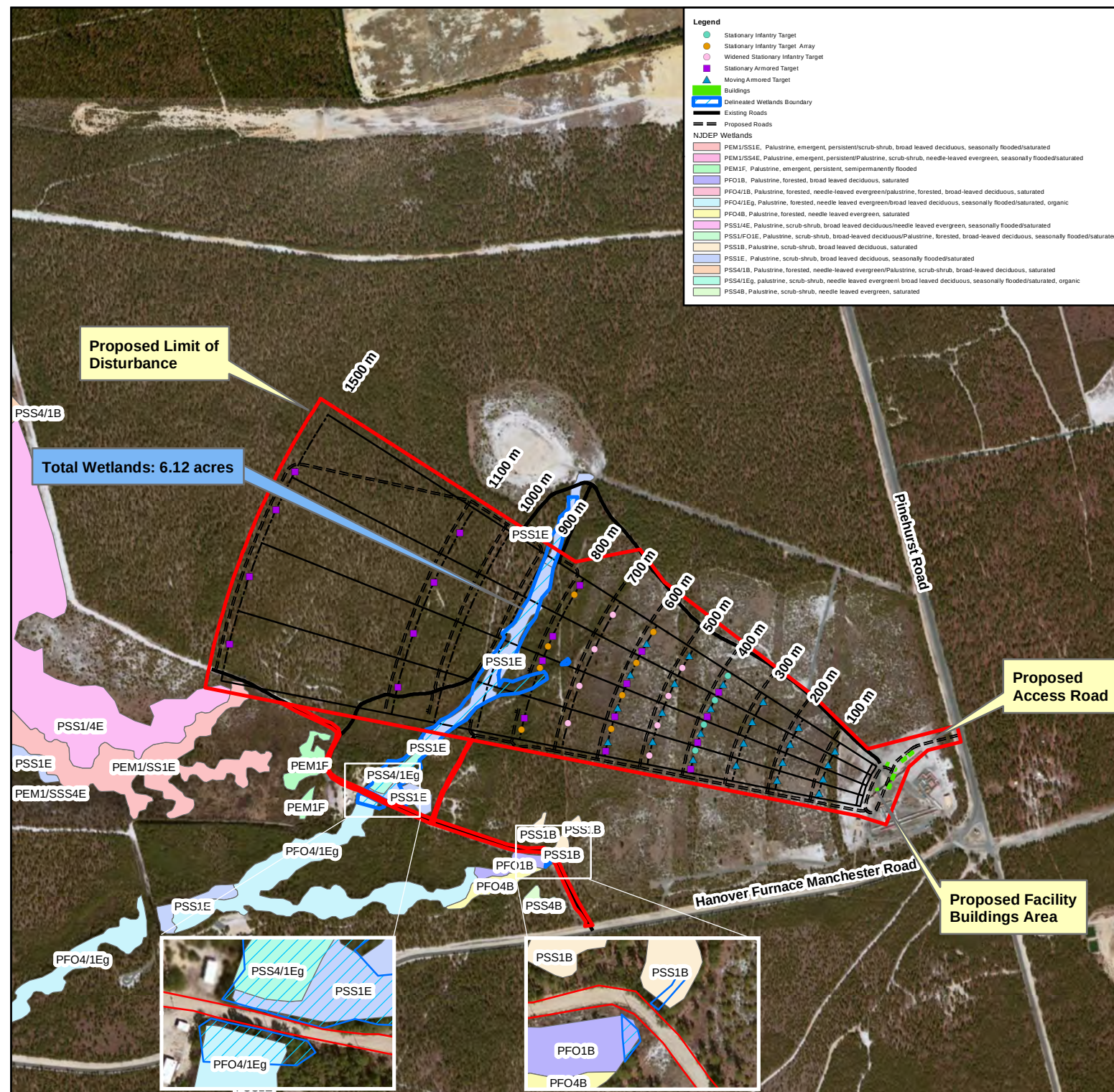
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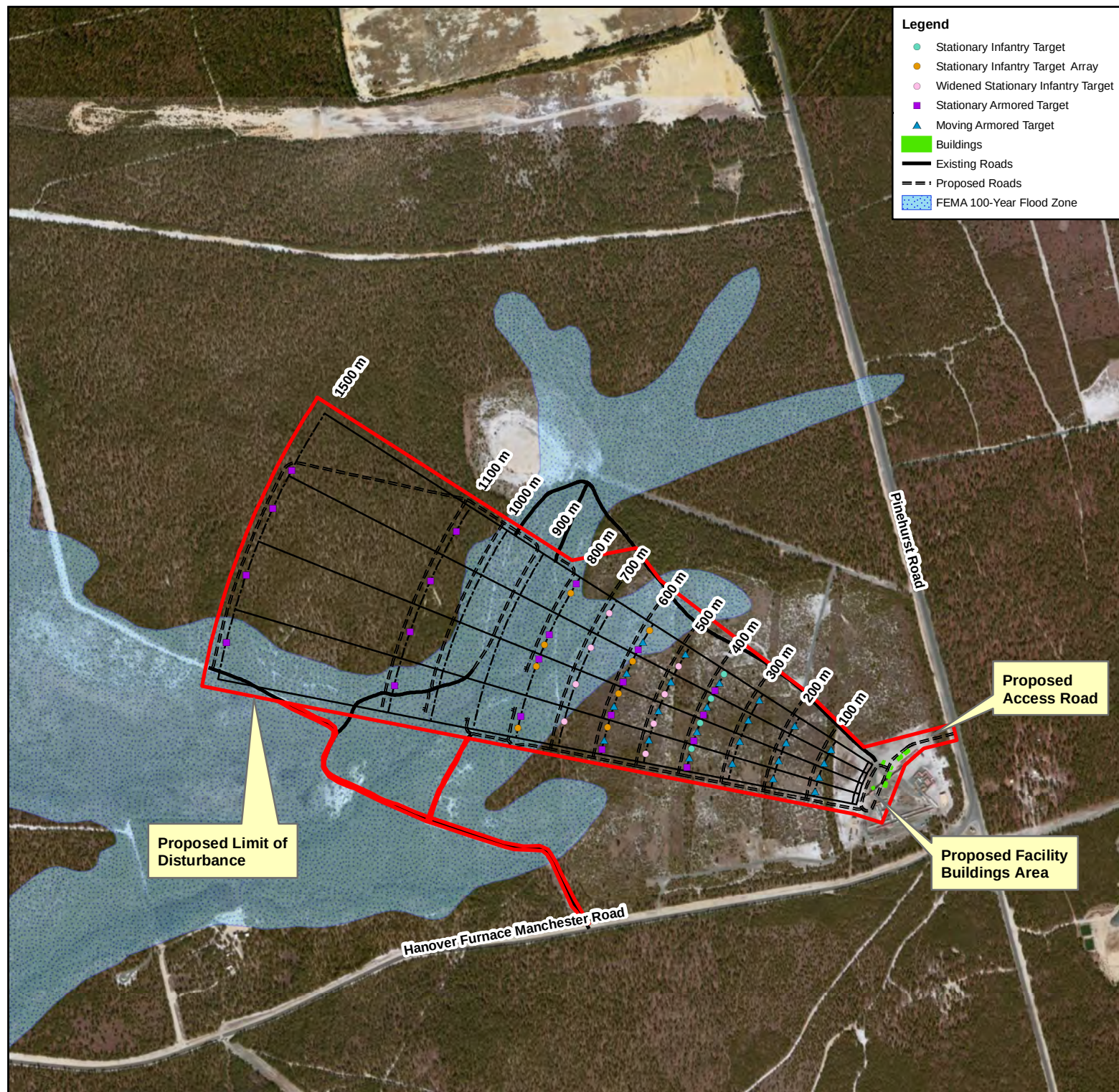
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Wetlands
http://www.state.nj.us/dep/gis/crossaccept.htm#wetlands_ca

Range Layout from pg. 9 of the 35% Submittal of the Multi-Purpose Machine Gun Range at JBMDL by the U.S. Army Corps of Engineers Louisville District

Figure 3-8a





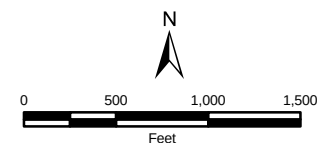
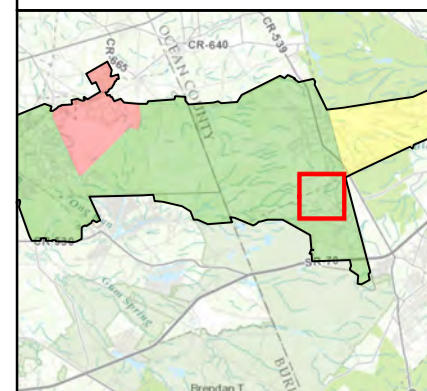
Alternative 1 Layout Floodplain Map

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL

Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



Map Ref. :

World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Flood Zone
<http://edd.msc.fema.gov/edd/>

Range Layout from pg. 12 of the 95% Submittal of the Multi-Purpose Machine Gun Range at JBMDL by the U.S. Army Corps of Engineers Louisville District

Figure 3-9a

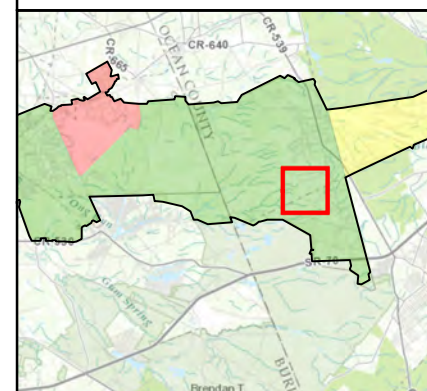


Alternative 2 Layout Floodplain Map

Environmental Assessment (EA)
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Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



Map Ref. :

World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Flood Zone
<http://edd.msc.fema.gov/edd/>

Figure 3-9b

3.8 Biological Resources

3.8.1 Regulatory Framework

Protection and management of biological resources is mandated by a number of laws, regulations, and guidance. The Endangered Species Act (ESA) of 1973 (16 USC 1531 *et. seq.*) regulates the protection of Federally-listed species. Section 7 of the ESA dictates that Federal actions should not jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species. The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-712) protects migratory birds, their eggs, feathers or nests, making it illegal to hunt, pursue, wound, kill, possess or transport any migratory bird, nest, egg, or part thereof (USFWS 2012). There are currently 836 bird species protected by the MBTA, two of which are also protected under the Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 USC 668-668c). The BGEPA provides for the protection of the bald eagle, the national emblem, and the golden eagle (*Aquila chrysaetos*) by prohibiting the taking, possession, and commerce of such birds.

In addition, protection and management of biological resources within the JB MDL are regulated by the New Jersey Division of Fish and Wildlife (NJDFW), and the NJ Endangered Species Act of 1973 (N.J.S.A. 23:2A-1-15).

3.8.2 Local Ecosystems and Communities

The original forests in this region were dominated by canopy tree species such as pitch pine (*Pinus rigida*), shortleaf pine (*Pinus echinata*), and several species of oaks (*Quercus* spp.). It is speculated that a larger percentage of hickories (*Carya* spp.) in the currently oak-dominated areas and a larger percentage of shortleaf pine in the pitch pine-dominated areas composed the communities before European settlers arrived. Subcanopy and understories were composed of shrubby oaks such as scrub (bear) oak (*Quercus ilicifolia*), dwarf chinaquapin oak (*Quercus prinoides*), and members of the heath family (Ericaceae) (JB MDL INRMP 2013).

Currently, the Alternative 1 project study area is composed of currently and/or previously disturbed areas used for military training operations. The majority of the site, particularly the western portions of the Alternative 1 site, is vegetated with a medium-stage, pitch pine-scrub oak forest, dominated by pitch pine in the canopy and sub-canopy and scrub oak and blackjack oak (*Quercus marilandica*) in the understory. The ground layer varies from small pockets of unvegetated sand, to sparsely-vegetated areas of upland grasses, to densely-vegetated areas with bracken fern (*Pteridium aquilinum*), scrub oak, blackjack oak, dwarf huckleberry (*Gaylussacia dumosa*), and black huckleberry (*Gaylussacia baccata*). The density of the understory generally increases farther northward in the study area.

A wetland associated with the Gaunts Brook headwater extends through the central portion of the Alternative 1 site. This wetland includes a small wet meadow which represents the farthest upgradient end of the Gaunts Brook headwater in the study area, the pitch pine lowland downgradient of the wet meadow, the Atlantic white cedar swamp downgradient of the pitch pine lowland, and the riparian zones associated with all of the above communities.

Approximately 44 acres of scrub-shrub upland is present on the eastern portion of the Alternative 1 site. This area had been cleared approximately 10 years ago and used for heavy equipment and engineer training, and is now experiencing re-growth of upland vegetation, primarily pitch pine, scrub oak, and blackjack oak. During the time of the September 2012 wetland delineation site visit, these species averaged 10 feet in height and were interspersed with either non-vegetated sand or a variety of upland grasses and forbs. The eastern 10 acres of the Alternative 1 project study area is heavily disturbed and routinely used for active training, including training at the Mobile MOUT site.

The majority of the Alternative 2 project study area is similarly vegetated with a pitch pine-scrub oak forest, dominated by pitch pine in the canopy and sub-canopy and scrub oak and blackjack oak in the understory. The ground layer also varies from small pockets of unvegetated sand, to sparsely-vegetated areas of upland grasses, to areas with bracken fern, scrub oak, blackjack oak, dwarf huckleberry, and black huckleberry. However this Alternative lacks the marked increase in understory density northward as noted for Alternative 1 but instead exhibits a marked increase in understory density along the western portion of the study area, across the sand road (i.e. into the wetland areas). An approximately 23.7-acre pitch pine and Atlantic white cedar wetland area is located in the western part of the Alternative 2 project study area.

Terrestrial wildlife typically found in the upland portions of these vegetation communities include northern fence lizard (*Sceloporus undulates hyacinthinus*), rough green snake (*Ophedrys aestivus*), opossum (*Didelphis virginiana*), eastern mole (*Scalopus aquaticus*), gray squirrel (*Sciurus carolinensis*) where oaks are relatively more abundant, red squirrel (*Tamiasciurus hudsonicus*), southern flying squirrel (*Glaucomys volans*), white-footed mouse (*Peromyscus leucopus*), and pine vole (*Pitymys pinetorum*).

Terrestrial wildlife that may be more typically found in the wetland, the slow-moving headwaters of Gaunts Brook, and other low-lying areas in the project study areas include northern red salamander (*Pseudotriton ruber*), southern leopard frog (*Rana utricularia*), green frog (*Rana clamitans*), Fowler's toad (*Bufo woodhousei fowleri*), northern spring peeper (*Hyla crucifer*), spotted turtle (*Clemmys guttata*), northern water snake (*Natrix sipedon*), red-backed vole (*Clethrionomys gapperi*), meadow vole (*Microtus pennsylvanicus*), and meadow jumping mouse (*Zapus hudsonias*).

Although there is often overlap in habitat use between upland and lowland areas by wildlife, terrestrial wildlife that may typically be found using both upland and wetland areas on a regular basis include red-backed salamander (*Plethodon cinereus*), eastern box turtle (*Terrapene carolina*), eastern cottontail (*Sylvilagus floridanus*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), and white-tailed deer (*Odocoileus virginianus*).

With regards to avian wildlife, likely year-round residents using the study areas include Red-Tailed Hawk (*Buteo jamaicensis*), Ruffed Grouse (*Bonasa umbellus*), Northern Bobwhite (*Colinus virginianus*), Blue Jay (*Cyanocitta cristata*), and Carolina Chickadee (*Parus carolinensis*), spring/fall migrants and summer residents include Pine Warbler (*Dendroica pinus*), Black-and-White Warbler (*Mniotilta varia*), and American Redstart (*Setophaga ruticilla*), and summer residents include Eastern Towhee (*Pipilo erythrophthalmus*), Prairie Warbler (*Dendroica discolor*), Ovenbird (*Seiurus aurocapillus*), Brown Thrasher (*Toxostoma rufum*), Gray Catbird (*Dumetella carolinensis*), Yellow Warbler (*Dendroica petechia*), Common Yellowthroat (*Geothlypis trichas*), and Field Sparrow (*Spizella pusilla*).

Avian wildlife often use the JB MDL as a stopover on their migration route along the Atlantic Flyway. On July 31, 2006, the DOD and the USFWS entered into a Memorandum of Understanding (MOU) to promote the Conservation of Migratory Birds, in accordance with Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds." This MOU describes specific actions that should be taken by JB MDL Natural Resources staff to advance migratory bird conservation; avoid or minimize the take of migratory birds; and ensure all DOD operations, other than military readiness activities, are consistent with the MBTA. It does not authorize the take of migratory birds.

3.8.3 Special Status Species and their Habitats

Because of its large land area and diversity of habitats, the JB MDL supports many rare, threatened, and endangered plant and animal species that are either federally-listed, state-listed, or both. The JB MDL INRMP reports forty state-threatened or endangered species to have been documented on the installation (JB MDL INRMP 2013). JB MDL periodically conducts surveys to gather occurrence data about threatened and endangered species that exist or have the potential to exist on the installation. These surveys are usually updated on a five to ten year rotation. There are also a number of ongoing monitoring programs on JB MDL to assist with project planning and NEPA compliance. Some of these programs that are applicable to this EA include:

- Diurnal raptor and Barred Owl surveys completed every 3 to 5 years;
- Random roadside survey checks for pine snake, corn snake, and timber rattlesnake from June to October.
- Random survey checks in appropriate habitat during the respective growing seasons for listed plants;
- Calling surveys for Pine Barrens treefrog on a 3 to 5 year rotation;
- Monitoring for arogoso skipper in the Dix Area savannahs during July and August; and
- Surveys for Kneiskern's beaked-rush, swamp pink, and three-awned grass (JB MDL INRMP 2013).

In order to assess the potential for special status species (i.e. endangered, threatened, rare, etc.) to occur within or near the Alternative 1 project study area, the following series of steps were taken to identify which species could be present and if their habitats existed. Although these steps were taken to evaluate the Alternative 1 project study area, much of this same information was used to extrapolate the potential for special status species to occur in the Alternative 2 project study area.

1. A preliminary desktop review of the Alternative 1 project study area was performed using the NJDEP GeoWeb online Geographical Information System (GIS) website;
2. A preliminary desktop review was performed of the Alternative 1 project study area using the USFWS Information, Planning, and Conservation System (IPAC) database;

3. Formal written requests and follow-up consultation were made to the USFWS and the NJDEP for information pertaining to the presence of special status species at the Alternative 1 project study area. (Copies of correspondences with these regulatory agencies are included in **Appendix A.**); and
4. A field habitat survey was performed by JB MDL contractors in order to ground-truth the presence or absence of special species habitats. This field survey was performed on 13-14 September 2012. An approximately 5-acre area in the eastern portion of the Alternative 2 study area overlaps the Alternative 1 study area, and thus the assessment of Alternative 1 includes this portion of Alternative 2.

Table 3-8 summarizes the results of this assessment.

Table 3-8 Special Status Species Potentially Occurring in the Alternative 1¹ Study Area based on a Preliminary Assessment			
Common Name	Scientific Name	State Status	Federal Status
Reptiles and Amphibians			
Northern pine snake	<i>Pituophis melanoleucus</i>	Threatened	Not listed
Timber rattlesnake	<i>Crotalus horridus</i>	Endangered	Not listed
Corn Snake	<i>Pantherophis guttatus</i>	Endangered	Not Listed
Bog turtle	<i>Clemmys muhlenbergii</i>	Endangered	Threatened
Pine Barrens treefrog	<i>Hyla andersonii</i>	Endangered	Not listed
Mammals			
Northern Long Eared Bat	<i>Myotis septentrionalis</i>	Not listed	Threatened
Birds			
Barred Owl	<i>Strix varia</i>	Threatened	Not listed
Butterflies			
Dotted skipper	<i>Hesperia attalus</i>	Special Concern	Not listed
Arogos skipper	<i>Atrytone arogos</i>	Endangered	Not listed
Georgia satyr	<i>Neonympha areolatus</i>	Special Concern	Not listed
Silver-bordered fritillary	<i>Bolaria selene myrina</i>	Threatened	Not listed
Plants			
New Jersey rush	<i>Juncus caesariensis</i>	Endangered	Not listed
Pine Barrens boneset	<i>Eupatorium resinosum</i>	Endangered	Not listed
Pale Beaked-rush	<i>Rhynchospora pallida</i>	Special Concern	Not Listed
Swamp pink	<i>Helonias bullata</i>	Endangered	Endangered
Sickle-leaf golden aster	<i>Pityopsis falcata</i>	Rare	Not Listed
American chaffseed	<i>Schwalbea americana</i>	Endangered	Endangered
Knieskern's beaked-rush	<i>Rhynchospora knieskernii</i>	Endangered	Endangered

According to the NJDEP, the Alternative 1 project study area contains suitable habitat for the State listed Barred Owl (*Strix varia*), and documented northern pine snake habitat, and may contain seven State listed plant species: New Jersey rush, Pine Barrens boneset, Pale beaked-rush, Swamp pink, Sickle-leaf golden aster, American chaffseed, and Knieskern's beaked-rush. The NJDEP also reports that the Federally-listed swamp pink has been documented in areas

¹ Although the field survey was performed in the Alternative 1 study area, these same species and their habitats have the potential to occur in the Alternative 2 study area.

downstream from the project study area (NJDEP 2012). The JB MDL INRP reports that a 2007 in-house habitat assessment followed up by owl call back surveys from 2007 to 2009 revealed the presence of 13 Barred Owls in the Dix Area, including four sets of owls calling as a breeding pair. Bird surveys conducted at JB MDL in 2007, 2010, 2011, and 2012 did not identify any Barred owl specimens in the vicinity of Alternative 1. The nearest Barred owl find was over 1 mile from the proposed MPMGR range in the 2012 survey. (JB MDL 2012, CEMML 2012)

Through the desktop reviews, discussion with JB MDL environmental staff, and field survey, three broad-based vegetative habitat community types were determined to be present within the Alternative 1 project study area with the potential for rare species to occur, as shown in **Figure 3-10A**. These community types include:

- Scrub-Shrub Upland – Occupying the majority of the eastern portion of the site, this community provides potential habitat for dotted skipper.
- Pitch Pine Forest (open understory and dense scrub oak understory) – Occupying the western and central portions of the site, this community provides potential habitat for northern pine snake and timber rattlesnake.
- Wetland Areas (Atlantic white cedar swamp, pitch pine lowland, and wet meadow) – Roughly coincident with the headwater channels of Gaunts Brook, as well as located in the southwestern corner of the site, this community provides habitat for Pine Barrens treefrog, timber rattlesnake, Barred Owl, New Jersey rush, Pine Barrens boneset, and swamp pink.

Through the desktop reviews, discussion with JB MDL environmental staff, and field survey, two broad-based vegetative habitat community types were determined to be present within the Alternative 2 project study area with the potential for rare species to occur, as shown in **Figure 3-10B**. These community types include:

- Pitch Pine Forest (open understory and dense scrub oak understory) – Occupying the western and central portions of the site, this community provides potential habitat for northern pine snake and timber rattlesnake.
- Wetland Areas (Atlantic white cedar swamp, pitch pine lowland, and wet meadow) – Roughly coincident with the wetland area located in the southwestern corner of the site, this community provides habitat for Pine Barrens treefrog, timber rattlesnake, Barred Owl, New Jersey rush, Pine Barrens boneset, and swamp pink.

Information regarding threatened and/or endangered species within the Alternative 1 project study area has been requested from the USFWS, the NJDEP, and the New Jersey Pinelands Commission. Copies of correspondences with these regulatory agencies are included in **Appendix A**.

The review of potential conflicts with Federally-listed species is performed through an online assessment using the USFWS' Information, Planning, and Conservation System (IPAC) database. In New Jersey, these reviews were previously performed through a formal written request to the NJ Field Office of the USFWS in Pleasantville, NJ. Through the online database, only those potential conflicts in which habitat may be present on the project site are carried through for further consultation with the USFWS. The online review for potential conflicts with

Alternatives 1 and 2 and subsequent correspondence with the USFWS reveal the following four species to be potentially affected by the project (see **Table 3-9**):

Table 3-9 Federally-Listed Species Potentially Affected by Alternatives 1 and 2			
Common Name	Scientific Name	State Status	Federal Status
Reptiles and Amphibians			
Bog turtle	<i>Clemmys muhlenbergii</i>	Endangered	Threatened
Plants			
Swamp pink	<i>Helonias bullata</i>	Endangered	Endangered
American chaffseed	<i>Schwalbea americana</i>	Endangered	Endangered
Knieskern's Beaked-rush	<i>Rhynchospora knieskernii</i>	Endangered	Threatened

Detailed information regarding the special status species identified by the NJDEP GeoWeb online GIS, and correspondence from NJDEP and USFWS, as well as their typical habitat requirements and current status, is presented in **Table 3-10**.

JB MDL conducted a survey along Gaunts Brook within and downstream of the Alternative 1 project area on April 2, 2014. Although suitable swamp pink habitat was observed, no occurrence of swamp pink was noted. Results of the survey were presented to the USFWS. The USFWS provided a response indicating their concurrence with the survey results that no populations of swamp pink would be affected by the proposed action. Documentation of this communication of the survey results and the USFWS's concurrence with the survey results is provided in **Appendix A**.

JB MDL initiated consultation pursuant to Section 7 of the Endangered Species Act with the USFWS in September 2014 concerning the determination of effect of the proposed action at Alternative 1 on the three additional federally-listed species; Bog turtle, American Chaffseed, and Knieskern's Beaked rush. JB MDL determined, based on lack of suitable habitat and no known observations or occurrences of the subject species, that there would be no effect to these species as a result of the proposed action. Pursuant to Section 7 of the ESA, because the determination is "no effect", the USFWS concurrence is not required. Documentation of this communication is provided in **Appendix A**.

Table 3-10 Summary of Potential Special Status Species in the Alternative 1 and Alternative 2 Project Study Areas And immediate Vicinity							
Species	Common Name	Status	Habitat	Species Observed in Alternative 1 Project Study Area¹	Potential to Occur in Alternative 1 Project Study Area Based on Habitat Requirements	Species Observed in Alternative 2 Project Study Area²	Potential to Occur in Alternative 2 Project Study Area Based on Habitat Requirements
Plants							
<i>Eupatorium resinosum</i>	Pine boneset	SE	Bogs, swamps, open wet areas, and edges of ponds.	No	Yes	NS	Yes
<i>Helonias bullata</i>	Swamp pink	FE/SE	Forested wetlands, preferentially in sandy, hummock wetlands with slow-moving surface water.	No	No	NS	Yes
<i>Juncus caesariensis</i>	New Jersey rush	SE	Sphagnum bogs and swamps.	No	Yes	NS	Yes
<i>Rhynchospora pallida</i>	Pale beaked-rush	SC	Boggy sites, openings in white cedar swamps and evergreen shrub bogs, depressions in pine savannahs.	No	Yes	NS	Yes
<i>Schwalbea americana</i>	American chaffseed	FE/SE	Sandy (sandy peat, sandy loam), acidic, seasonally-moist to dry soils, generally in early-successional areas described as open, moist pine woods, fire-maintained savannahs, wetland and xeric ecotones, bog borders, and other open-grass sedge systems.	No	No	NS	No
<i>Pityopsis falcata</i>	Sickle-leaf golden aster	SR	Sandy disturbed soils and road sides	No	Yes	NS	Yes
<i>Rhynchospora knieskernii</i>	Knieskern's beaked rush	FE/SE	Obligate wetland, early successional and human-disturbed wetlands. Intolerant of shade and competition, especially from woody species.	No	No	NS	No

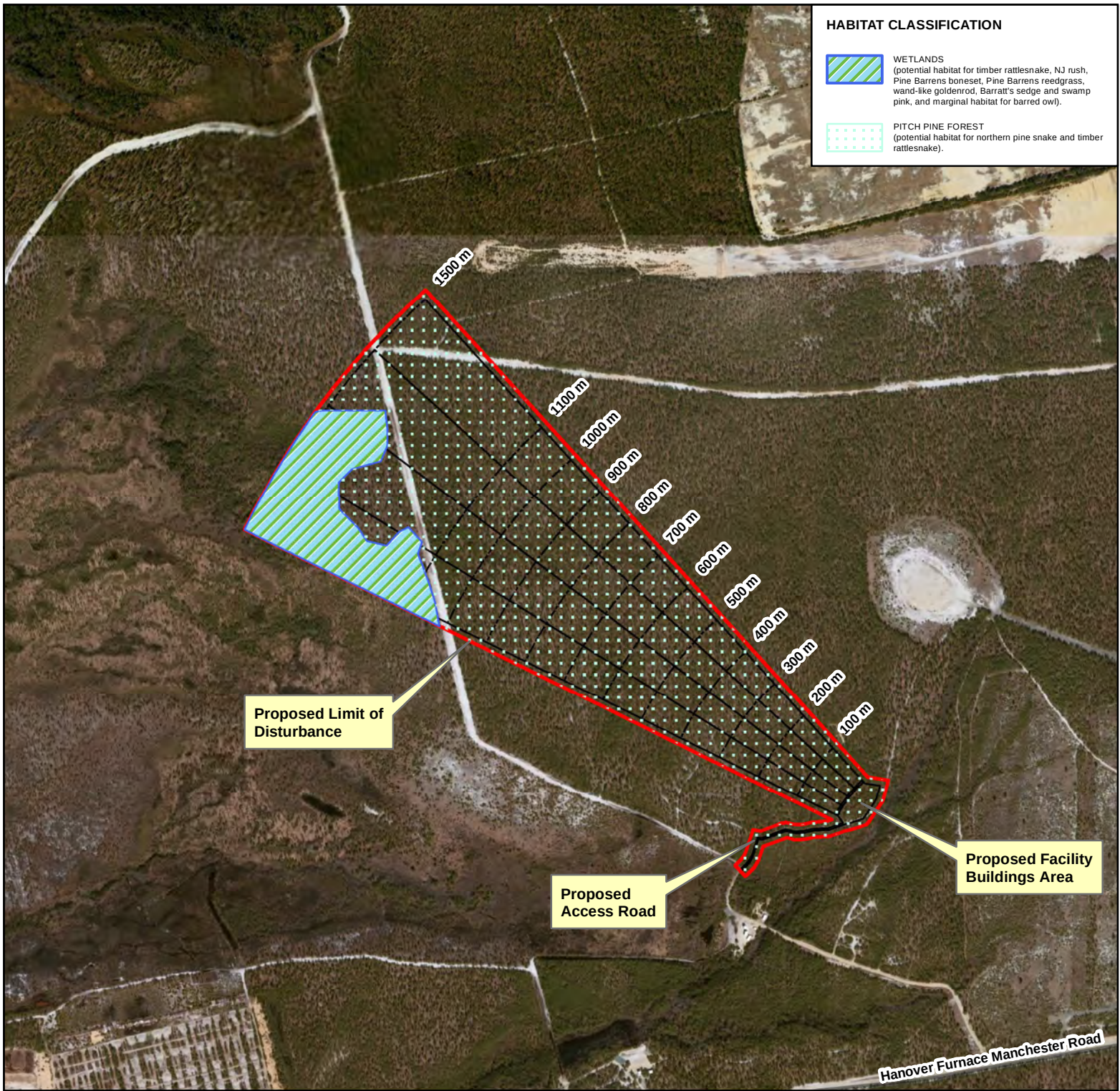
Table 3-10 Summary of Potential Special Status Species in the Alternative 1 and Alternative 2 Project Study Areas And immediate Vicinity							
Species	Common Name	Status	Habitat	Species Observed in Alternative 1 Project Study Area ¹	Potential to Occur in Alternative 1 Project Study Area Based on Habitat Requirements	Species Observed in Alternative 2 Project Study Area ²	Potential to Occur in Alternative 2 Project Study Area Based on Habitat Requirements
Amphibians							
<i>Hyla andersonii</i>	Pine Barrens treefrog	SE	Atlantic white cedar swamps and pitch pine lowlands that are carpeted with a dense layer of <i>Sphagnum</i> moss. Temporary woodland ponds, white cedar or cranberry bogs, and seepage areas along tributaries of rivers and streams serve as breeding ponds.	No	Yes	NS	Yes
Mammals							
<i>Myotis septentrionalis</i>	Northern long eared bat	FT	In summer roosts singly or in colonies underneath bark, in cavities or crevices in live and dead trees.	No	Yes	No	Yes
Birds							
<i>Strix varia</i>	Barred Owl	ST	Both deciduous wetland forest and Atlantic white cedar swamps.	No	Yes	No	Yes
Invertebrates							
<i>Atrytone arogos</i>	Arogos skipper	SE	Postburn wetland habitats dominated by Pine Barrens reed grass (<i>Calamovilfa brevipilis</i>), which serves as its host plant.	No	Yes	NS	Yes

Table 3-10 Summary of Potential Special Status Species in the Alternative 1 and Alternative 2 Project Study Areas And immediate Vicinity							
Species	Common Name	Status	Habitat	Species Observed in Alternative 1 Project Study Area¹	Potential to Occur in Alternative 1 Project Study Area Based on Habitat Requirements	Species Observed in Alternative 2 Project Study Area²	Potential to Occur in Alternative 2 Project Study Area Based on Habitat Requirements
<i>Bolaria selene myrina</i>	Silver-bordered fritillary	ST	Moist open areas such as sedge meadows, wet grasslands, and other wet areas with herbaceous growth.	No	Yes	NS	Yes
<i>Hesperia allalus</i>	Dotted skipper	SC	Wet and dry Pineland habitats.	No	Yes	NS	Yes
<i>Neonympha areaolatus</i>	Georgia satyr	SC	Mainly bogs, but also wet savannah.	No	Yes	NS	Yes
Reptiles							
<i>Crotalus horridus</i>	Timber rattlesnake	SE	Areas containing pitch pine, short-leaf pine, scrub oak, blackjack oak, and blueberry. Dens are found in cedar swamps and along stream banks.	No	Yes	NS	Yes
<i>Pantherophis guttatus</i>	Corn Snake	SE	Mature upland pine-oak forest with understory of low brush with uprooted trees, stumps, rotten logs. Open fields and forest edges for foraging.	No	Yes	NS	Yes
<i>Pituophis melanoleucus</i>	Northern pine snake	ST	Dry pine-oak forest growing on very infertile sandy soils such as Lakehurst or Lakewood sands with openings for nesting and	No	Yes	NS	Yes

Table 3-10 Summary of Potential Special Status Species in the Alternative 1 and Alternative 2 Project Study Areas And immediate Vicinity							
Species	Common Name	Status	Habitat	Species Observed in Alternative 1 Project Study Area¹	Potential to Occur in Alternative 1 Project Study Area Based on Habitat Requirements	Species Observed in Alternative 2 Project Study Area²	Potential to Occur in Alternative 2 Project Study Area Based on Habitat Requirements
			basking.				
<i>Clemmys muhlenbergii</i>	Bog turtle	FE	Marshes, wet meadows, and fens featuring very soft sediments, and sedges, rushes, mosses, skunk cabbage, cattail, jewelweed, and smartweed.	No	No	NS	No

Source: CWFNJ 2011, Godfrey 1997, JB MDL 2012b, NJDEP 2012.

Notes: ¹ Presence or absence of species based on the 13-14 September 2012 Field Survey
² Alternative 2 project study area was not subject to a Field Survey for special status species
 FE – Federally Endangered FT – Federally Threatened
 NJ Pinelands – Protected within the New Jersey Pinelands
 SC – State Concern SE – State Endangered
 ST – State Threatened SR – State Rare
 NS – Not surveyed



HABITAT CLASSIFICATION



WETLANDS
(potential habitat for timber rattlesnake, NJ rush, Pine Barrens boneset, Pine Barrens reedgrass, wand-like goldenrod, Barratt's sedge and swamp pink, and marginal habitat for barred owl).

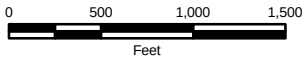
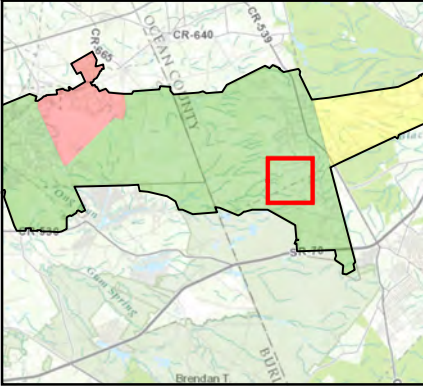


PITCH PINE FOREST
(potential habitat for northern pine snake and timber rattlesnake).

**Alternative 2 Layout
Special Status
Species Habitat**

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL
Contract No. FA4484-07-D-0005
Task Order No. 5013
Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



Map Ref. :
World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Figure 3-10b

3.9 Cultural Resources

Consideration of potential effects to important historic, cultural and natural aspects of national heritage must be determined in accordance with 42 USC 4321 et seq., 40 CFR 1500-1508, 36 CFR 800, and AFI 32-7065. Further, cultural resources are historic properties as defined by the NHPA, cultural items as defined by the NAGPRA, archaeological resources as defined by the ARPA, sacred sites as defined by EO 13007 to which access is afforded under the AIRFA, and collections and associated records as defined by 36 CFR 79. NEPA requires consideration of “important historic, cultural, and natural aspects of our natural heritage.” Consideration of cultural resources under NEPA includes the necessity to independently comply with the applicable procedures and requirements of other Federal and state laws, regulations, EOs, and presidential memoranda.

3.9.1 Historic Architectural and Archaeological Resources

The principal Federal law addressing cultural resources is the NHPA of 1966, as amended (16 USC Section 470), and its implementing regulations (36 CFR 800). The regulations, commonly referred to as the Section 106 process, describe the procedures for identifying and evaluating historic properties; assessing the effects of Federal actions on historic properties; and consulting to avoid, reduce, or minimize adverse effects. The term “historic properties” refers to cultural resources that meet specific criteria for eligibility for listing on the National Register of Historic Places (NRHP); historic properties need not be formally listed on the NRHP. Section 106 does not require preservation of historic properties, but ensures decisions of Federal agencies concerning treatment of these places result from meaningful considerations of cultural and historic values and of the options available to protect the properties. Interagency Coordination with the New Jersey Historic Preservation Office (NJ HPO) was initiated as part of this EA process (see **Appendix A**). Based on the preliminary response from the NJ HPO, JB MDL conducted Section 106 consultation for the identification, evaluation, and treatment of historic properties that may be within the project’s area of potential effects. In the Section 106 consultation package, JB MDL concluded that there are no historic architectural resources present within the project area or within ¼ mile of the project area and there would be no adverse effects on any archaeological resources. The NJ HPO replied with their concurrence regarding these conclusions on October 19, 2013. A copy of the Section 106 consultation documentation is included in **Appendix A**.

JB MDL operates in accordance with an Integrated Cultural Resources Management Plan (ICRMP), which meets the requirements set forth in DoDI 4715.3 – Environmental Conservation Program. The ICRMP provides guidance and procedures to enable JB MDL missions to meet its legal responsibilities for conservation of cultural resources while causing the least disturbance to the military mission. The ICRMP integrates legal requirements for cultural resources preservation into the everyday operation of the JB MDL mission activities (JB MDL 2011).

Cultural resource investigations conducted at JB MDL through the years have identified 60 prehistoric and 58 historic sites within the boundaries of JB MDL Dix Area. One property, the Hanover Bog Iron Furnace, is the only property listed on the NRHP. The Hanover Furnace site property is located on Gaunts Brook west of the project study area (NRHP 2012a). Two 19th century farmhouses and 148 pre-World War II brick Colonial Revival buildings (identified as

Scott Plaza Historic District) are located within the JB MDL Dix Area. A 1996 survey also recommended that the Fort Dix Filtration Plant be eligible for listing on the NRHP as well (Hunter 1996, USAR 2009). None of the prehistoric and/or historic sites are located within the immediate vicinity of the project study area. The nearest archaeological site, 28OC67, is a late archaic/early woodland surface artifact scatter with potential for intact subsurface deposits. This site is located in a similar topographic area on the west side of a ridge in proximity to wetlands.

There have been no archaeological surveys conducted within either the Alternative 1 or Alternative 2 project study areas to date, and only a small portion of JB MDL has been surveyed by professional archaeologists. However, with the use of predictive assessments and models in relation to environmental and geographic parameters, the probability level of archaeological sites in unsurveyed areas can be established (DOA 1998). Based on the use of predictive assessments and models, high sensitivity areas are often found in areas of increased soil drainage and in close proximity to permanent freshwater sources (Ranere and Hansell 1989). Thus, it can be determined that the areas immediately adjacent to Gaunts Brook are considered to be highly sensitive to the presence of archaeological sites. Approximately 18.31 acres of high archaeologically sensitive areas are present within the Alternative 1 project study area and approximately 12.67 acres of high archaeologically sensitive areas are present within the Alternative 2 project study area. The remaining areas of the both Alternative 1 and Alternative 2 sites contain areas of low archaeologically sensitive areas, based on archaeological predictive assessments and models.

3.9.2 Native American Consultation

The DoDI 4710.02 (*DoD Interactions with Federally Recognized Tribes*) provides guidance for interacting and working with Federally recognized American Indian and Alaska Native governments or tribes. The Instruction implements *Annotated DoD American Indian and Alaska Native Policy* (27 October 1999), which governs compliance with EO 13175 (Consultation and Coordination with Indian Tribal Governments) and Presidential Memoranda for *Heads of Executive Departments and Agencies on Government-to-Government Relations with Native American Tribal Governments* (29 April 1994). The DoD policy outlines DoD trust obligations, communication procedures with tribes on a government-to-government basis, consultation protocols, and actions to recognize and respect the significance that tribes ascribe to certain natural resources and properties of traditional cultural or religious importance. The policy requires consultation with Federally recognized tribes for proposed activities that could significantly affect tribal resources or interests.

No Native American Traditional Cultural Properties (TCPs), protected tribal resources, tribal rights, sacred tribal sites, or Indian lands are known to be present within the project study area; however the project study area has not been subject to archaeological study due to its location within the Impact Area at JB MDL (JB MDL 2011).

There are at least three Federally recognized Native American tribes that have an affiliation with New Jersey; The Delaware Tribe of Indians, Delaware Nation, and Stockbridge Munsee Community of Mohegan Indians. These three Native American tribes were invited to government-to-government consultation with JB MDL. Delaware Tribe and Delaware Nation both responded positively that they have an interest in the area of New Jersey where JB MDL is located.

In accordance with Section 101 (d)(6)(b) of the NHPA and DoDI 4710.02, JB MDL conducted initiated formal consultation with the following Federally-recognized Native American tribes concerning this proposal:

- Delaware Nation
- Delaware Tribe of Indians.

Copies of the letters sent to these Native American entities, and reciprocating correspondence are provided in **Appendix A**. JB MDL has received responses from both the Delaware Tribe of Indians and the Delaware Nation. The Delaware Tribe of Indians have responded that their review indicates there are no religious or culturally significant sites (to the Delaware Tribe of Indians) within the Alternative 1 project study area, and that they defer comments to the JB MDL Cultural Resources office and the NJ HPO (Delaware Tribe 2012).

Likewise, the Delaware Nation responded that the Lenape people occupied this area either prehistorically or historically. However, the location of the project does not endanger cultural or religious sites of interest to the Delaware Nation. The Delaware Nation further requested that, should this project inadvertently uncover an archaeological site or object(s), all construction and ground disturbance activities should be halted and that the Delaware Nation is contacted within 24 hours. (Delaware Nation 2014)

3.10 Socioeconomics

The following subsections identify and describe the socioeconomic environment in Ocean County, New Jersey and surrounding areas. The data presented provide an understanding of the socioeconomic factors that have developed the area. Socioeconomic areas of discussion include the local demographics of the area, regional economy, and local housing. Data used in preparing this section were collected from the 2010 Census of Population and Housing for the State of New Jersey, Ocean County, Manchester Township, Fort Dix Census-Designated Place (CDP), and McGuire CDP.

3.10.1 Demographics

Table 3-11 provides the regional population data for the Alternative 1 and Alternative 2 project study areas and immediate vicinity.

Table 3-11 Population Trends for Areas Peripheral to the Project Study Area					
Area	Total Population 2000	Total Population 2010	Percent Change 200-2010	Projected Population 2020	Projected Population 2030
State of New Jersey	8,414,350	8,791,894	4.3%	9,241,900	9,648,100
Ocean County	510,916	576,567	11.4%	654,200	677,100
Manchester Township	38,928	43,070	9.6%	N/A	N/A
Fort Dix CDP	N/A	7716	N/A	N/A	N/A
McGuire AFB CDP	N/A	3,710	N/A	N/A	N/A

Sources: Census 2012a, Census 2012b, Census 2012c, NJDLWD 2010a

Notes: N/A – Data not available

3.10.2 Regional Economy

Currently, JB MDL employs a combined workforce of over 44,000 military, civilian, and contractor personnel (JB MDL 2013a). These employees consist primarily of engineers, technicians, logisticians, acquisition experts and support specialists. JB MDL is the region's largest employer, and is ranked the number 2 employer in the state, after the State of New Jersey (NJDMVA 2008).

Table 3-12 displays employment statistics by industry for the State of New Jersey, Ocean County, Manchester Township, Fort Dix CDP, and McGuire CDP.

Table 3-12 Employment Statistics by Industry for Areas Peripheral to the Project Study Area					
Industry	State of New Jersey (%)	Ocean County (%)	Manchester Township (%)	Fort Dix CDP* (%)	McGuire AFB CDP* (%)
Armed Forces	0.1	0.1	0.4	9.3	38.5
Agriculture and Mining	0.3	0.3	0.3	3.8	0.0
Construction	5.7	7.6	6.7	2.5	9.1
Manufacturing	9.0	6.4	5.6	10.8	4.4
Trade	14.4	16.6	16.7	6.1	5.1
Transportation	5.6	5.4	5.8	2.7	1.9
Information	2.9	2.3	3.3	1.8	3.9
Finance, Insurance, Real Estate	7.4	6.3	5.7	4.5	2.0
Professional, Scientific, and Management Services	12.2	9.1	7.9	6.0	3.8
Educational, Health, and Social Services	23.3	25.5	26.9	31.4	24.5
Public Administration	4.7	5.8	7.3	17.7	32.2
Other	4.5	4.8	10.8	7.9	5.5
Unemployed	5.8	7.3	3.0	4.8	7.6

Source: Census 2012a, Census 2012b, Census 2012c.

Note: Total employment statistics for Fort Dix CDP and McGuire CDP reflect civilian population only and do not count Armed Forces Employment.

3.10.3 Schools

Public schools located within Manchester Township are managed under the Manchester School District. The Manchester School District carries an enrollment of approximately 3,200 students in grades pre-kindergarten through 12, with three elementary schools (grades pre-kindergarten-5), one middle school (grades 6-8), and one high school (grades 9-12). Only one of these schools is located within three miles of the Alternative 1 and Alternative 2 project study areas; Whiting Elementary School (Manchester Township 2012a). No private or post-secondary schools are located in Manchester Township.

3.10.4 Shops and Services

No shops or services are currently present within the Alternative 1 or Alternative 2 project study areas. Local commercial services, such as auto body services and pharmacies, are located outside the one-mile search radius and are found within Manchester Township and along State Route 70 (John Davidson Rockefeller Highway).

Numerous services are available for Military and Military dependent families at JB MDL, primarily in the JB MDL Dix Cantonment and the McGuire AFB Areas.

3.10.5 Protection of Children

Because children may suffer disproportionately from environmental health risks and safety risks, EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, was issued on 21 April 1997. EO 13045 was intended to (1) prioritize identification and assessment of environmental health risks and safety risks that may affect children and to (2) ensure Federal agency policies, programs, activities, and standards address environmental and safety risks to children. This section identifies the distribution of children within the communities in the immediate vicinity of the project study areas.

Table 3-13 examines the population under the age of 18 for Manchester Township and its surroundings.

As indicated in **Section 3.10.3**, there are five schools located within Manchester Township and the surrounding area and serving approximately 3,200 students. Only one of these schools is located within three miles of the Alternative 1 and Alternative 2 project study areas; Whiting Elementary School is located at 412 Manchester Boulevard, with students ranging from in grades from pre-kindergarten to 5th grade (Manchester Township 2012a).

No children are regularly present at either the Alternative 1 or Alternative 2 project study areas.

TABLE 3-13 Total Population Versus Population Under Age 18 for the Manchester Township, Ocean County, New Jersey			
Area	Total Population	Population Under 18	% Population Under 18
State of New Jersey	8,791,894	2,066,095	23.5
Ocean County	576,567	134,340	23.3
Manchester Township	43,070	4,443	10.3
Fort Dix CDP	7,716	933	12.1
McGuire AFB CDP	3,710	1,353	36.4

Source: Census 2012a, Census 2012b, Census 2012c.

3.11 Environmental Justice

3.11.1 Geographic Distribution of Minorities

Table 3-14 presents the ethnic characteristics of the region's population from the 2010 U.S. Census. The census data suggest that both Ocean County and Manchester Township have a significantly lower percentage of minority population in comparison to the State of New Jersey whereas both Fort Dix and McGuire CDPs have higher proportions of minority populations.

TABLE 3-14 Percentage of Regional Population by Race ¹ for Manchester Township, Ocean County, and the State of New Jersey									
Area	White	Hispanic or Latino ²	African American	American Indian and Alaska Native	Native Hawaiian or Pacific Islander	Asian	Other Race ³	Two or More Race ⁴	Percent Minority
State of New Jersey	6,029,248	1,555,144	1,204,826	29,026	3,043	725,726	556,722	240,303	25.9%
Ocean County	524,577	47,783	18,164	966	129	10,081	14,165	8485	6.8%
Manchester Township	39,623	2,062	1,654	38	10	768	479	498	7.9%
Fort Dix CDP	4,056	1,657	2,660	52	23	147	468	310	31.4%
McGuire AFB CDP	2,563	506	602	17	25	17	140	265	31.0%

Source: Census 2012a, Census 2012b, Census 2012c.

Notes:

1. The racial classifications used by the Census Bureau were issued by the Office of Management and Budget (OMB) on October 30, 1997. The OMB requires five minimum category of race, including White, African American, American Indian and Alaska Native, and Asian or Pacific Islander.
2. Although "Hispanic or Latino" is not a race, it is included in census counts as an ethnicity.
3. The "Other Race" category approved by OMB, includes all other responses not included in "White, African American, American Indian and Alaska Native, or Pacific Islander." This category also includes entries such as multiracial, mixed, interracial, or a Hispanic/Latino group.
4. For data purposes, this category refers to combinations of two or more of the first six categories.

3.11.2 Geographic Distribution of Low-Income Populations

Median household incomes and poverty levels from the 2010 U.S. Census are presented in Table 3-15.

TABLE 3-15 Income and Poverty Statistics of Regional Population for Manchester Township, Ocean County, New Jersey				
Area	Total Population (2010)	Median Household Income	Total Number of Persons At or Below Poverty Level (ABPL)	Total Percent ABPL
State of New Jersey	8,791,894	\$71,180	826,438	9.4%
Ocean County	576,567	\$60,712	54,197	9.5%
Manchester Township	43,070	\$37,719	3,359	7.8%
Fort Dix CDP	7,716	\$81,292	316	4.1%
McGuire AFB CDP	3,710	\$51,467	315	8.5%

Source: Census 2012a, Census 2012b, Census 2012c.

3.11.3 Consumption Patterns

Based on socioeconomic data consulted and referenced in the above sections, no identifiable populations or local groups in the vicinity of the Alternative 1 or Alternative 2 project study areas (i.e., within the defined Region of Influence [ROI]) currently rely solely on fish or wildlife for subsistence. Hunting and fishing do occur within JB MDL, the New Jersey Pinelands National Reserve and the Brendan T. Byrne State Forest to the south of the project study areas; however these activities are done for recreation, and are not known to support the primary subsistence of any population. Additionally, although fishing is a major recreational activity within the State of New Jersey, the NJDEP and the New Jersey Department of Health and Senior Services have advised against the consumption of all fish for children, ages 12 and under, nursing or pregnant women, and has advised the general public of one meal per week of ocean and freshwater fish, unless otherwise noted. No specific species or areas of further consumption advisories are within the vicinity of the Alternative 1 or Alternative 2 project study areas (NJDEP 2012a).

Hunting within the boundaries of JB MDL is permitted during the designated NJDFW hunting seasons. The Morale, Welfare and Recreation (MWR) office maintains the JB MDL training schedules at Range 14 where licensed hunters must sign-in and check for which areas within JB MDL are available that day. The Alternative 1 and Alternative 2 project study areas and the immediate vicinity within the impact area are not currently, or historically have been open to hunting (Hasemann 2012).

3.12 Infrastructure

3.12.1 Potable Water Supply

Potable water is not currently provided to either the Alternative 1 or Alternative 2 project study areas; however, one potable water well is located adjacent to the Alternative 1 project study area at the Times Square area (Fort Dix 2010).

3.12.2 Wastewater Treatment

There is currently no wastewater treatment associated with the Alternative 1 or Alternative 2 project study areas.

3.12.3 Solid Waste Disposal

No solid waste disposal is currently provided at either the Alternative 1 or Alternative 2 project study areas.

3.12.4 Energy Sources

3.12.4.1 Electricity

Currently, there is no electricity provided to the Alternative 1 or Alternative 2 project study areas. Existing electric lines are located along Range Road and Grand Concourse.

3.12.4.2 Fossil Fuels

Storage of fossil fuels is not currently conducted at either the Alternative 1 or Alternative 2 project study areas.

3.12.4.3 Natural Gas

No natural gas lines are located within either the Alternative 1 or Alternative 2 project study areas.

3.12.5 Telecommunications

Currently, there is no telecommunications service provided to either the Alternative 1 or Alternative 2 project study areas. Existing electric lines are located along Range Road and Grand Concourse.

3.12.6 Transportation

Local Roadways

Access to the Alternative 1 and Alternative 2 project study areas is limited. The entrance/egress to the Alternative 1 is along the Range Road and Grand Concourse intersection, known as

Times Square. The two roads are asphalt paved, and are located along the southern and eastern boundaries of the site. Vehicular sand trails bisect the project study area.

The entrance/egress to Alternative 2 is along an unimproved sand road that extends north to the project study area from Range 39A. Vehicular sand trails also bisect the project study area.

3.13 Hazardous and Toxic Waste/Materials

Hazardous and toxic materials or substances are generally defined as materials or substances that pose a risk (through either physical or chemical reactions) to human health or the environment. Regulated hazardous substances are identified through a number of Federal laws and regulations. The most comprehensive list is contained in 40 CFR 302, and identifies quantities of these substances that, when released to the environment, require notification to a Federal government agency. Hazardous wastes, defined in 40 CFR 261.3, are considered hazardous substances. Generally, hazardous wastes are discarded materials (solids or liquids) not otherwise excluded by 40 CFR 261.4 that exhibit a hazardous characteristic (i.e., ignitable, corrosive, reactive, or toxic), or are specifically identified within 40 CFR 261. Petroleum products are specifically exempted from 40 CFR 302, but some are also generally considered hazardous substances due to their physical characteristics (especially fuel products), and their ability to impair natural resources.

3.13.1 On-Site Storage Tanks

JB MDL contractors have observed no documentation of evidence indicating that petroleum storage tanks have currently or historically been located within either the Alternative 1 or Alternative 2 project study areas (JB MDL 2012c).

3.13.2 Past Spills and Leaks

JB MDL contractors are not aware of any spills or leaks that have occurred within either the Alternative 1 or Alternative 2 project study areas.

3.13.3 Spill Prevention, Control, and Countermeasures Plan

Hazardous and toxic materials storage information is contained in the JB MDL Dix Spill Prevention, Control, and Countermeasures (SPCC) Plan. The SPCC plan indicates all the locations of hazardous materials/waste storage area, fuel tank farms, the secondary containment areas, material loading and unloading areas, as well as the type of material stored at each area. The SPCC Plan is retained at 2402 Vandenberg Ave., JB MDL. In addition, a spill log is also kept by the Environmental Department in accordance with N.J.A.C. 7:26 – Solid & Hazardous Waste and 40 CFR 112 (JB MDL 2012c).

In addition to the SPCC Plan, JB MDL Dix also possesses a Discharge Prevention, Containment, Countermeasures and Discharge Cleanup Removal (DPCC) Plan, which defines procedures for inspecting, testing and maintenance of regulated containers at JB MDL Dix Area. Further, the Plan contains information regarding emergency response actions. The DPCC Plan also identifies the Spill Response Coordinator in the event that a spill occurs within the boundaries of the JB MDL Dix Area (JB MDL 2012a).

3.13.4 HTMW Concerns

There are no known hazardous and toxic materials or waste (HTMW) concerns at either the Alternative 1 or Alternative 2 project study areas. No HTMW are currently used, generated, handled, or stored within either the Alternative 1 or Alternative 2 project study area.

Both Alternative 1 and Alternative 2 are located adjacent to the EOD, Range 39A, and is within the JB MDL Dix Range Impact Area. All three of these areas may contain MEC and UXO. According to the 2009 *Environmental Assessment for Range Development Plan at Fort Dix, New Jersey*, groundwater sampling has been conducted within the EOD range. The results of the groundwater sampling indicated that heavy metals and explosives residue were present that exceeded state action levels. Based on groundwater elevation measurements, the groundwater flow direction from the EOD range is towards the southwest; not in the direction of the project study area which is situated south of the EOD range (USAR 2009). Groundwater sampling has not been conducted at the project study area.

3.13.5 Previous Site Investigations

JB MDL contractors are not aware of any site investigations that have occurred within either the Alternative 1 or Alternative 2 project study area boundaries.

As mentioned above, groundwater sampling has been conducted at the EOD range to the north of the Alternative 1 project study area. As described in **Section 3.7.3**, approximately 17 groundwater surveys have been conducted within the EOD range, located to the north, between 2002 and 2013 in an effort to determine any effects to groundwater due to the use of the area for the detonation/destruction of UXO. In the groundwater survey conducted in 2009, entitled *Environmental Assessment for Range Development Plan at Fort Dix, New Jersey*, indicated that heavy metals and explosives residue were present that exceeded state action levels (USAR 2009). The most recent groundwater sampling event was conducted in April 2013, *Final Annual Groundwater Sampling Report Open Detonation Unit – Verdun Range*, concluding that concentrations of explosives and perchlorate were present within the groundwater at the EOD range; however, the survey also indicated that the groundwater flow during the 2013 groundwater survey indicated a southwesterly direction heading to the north of the Alternative 1 project study area and potentially underneath the Alternative 2 project study area (JB MDL 2013c). Groundwater sampling has not been conducted at either the Alternative 1 or Alternative 2 project study areas.

3.14 Public Safety

3.14.1 Training Safety

Activities conducted at JB MDL are in accordance with established Federal/State occupational health and safety regulations and AFI 2091-301. As previously discussed in **Sections 2.3.1** and **3.2**, training operations are currently conducted within the project study area, primarily within the approximate 8-acre portion of the site in association with the Mobile MOUT. Infrequent training may occur on the remaining 152 acres primarily on the unimproved sand roads. At the present time there is no specific SDZ established for the Alternative 1 or Alternative 2 project study areas since no live fire activities or ranges are presently situated within these areas.

3.14.2 Explosives Materials Safety

No explosive materials are currently stored within either the Alternative 1 or Alternative 2 project study areas; however, the western areas of the Alternative 1 project study area (that area located outside the existing Mobile MOUT area) and the entirety of the Alternative 2 project study area are within the JB MDL Dix Range Impact Area and is highly likely to contain MEC and UXO. Further, areas adjacent to both Alternative sites include the EOD Range, Range 39A, and the Impact Area. These areas may also contain MECs and UXO (USAR 2009). The EOD range, in particular, is an area authorized to operate as a treatment process for the open detonation of waste explosives, and is classified as hazardous waste facility (JB MDL 2012d).

3.14.3 Police and Fire Protection

If an emergency requiring police protection occurs, JB MDL is connected to the 911 Emergency System. The DoD Police Force, located within JB MDL has primary law enforcement responsibility for JB MDL. The Dix Fire and Emergency services, located in the Dix Cantonment area, provides protection for the Dix range area. A new satellite fire house has been programmed for FY2015 near the Times Square area of the range to reduce response times to range emergencies.

3.14.4 Medical Facilities

If a medical emergency occurs, medical facilities that the military operates are available on JB MDL. Civilian medical facilities within close proximity to the project study area include the Community Medical Center located in Toms River, New Jersey, on State Route 37 off of the Garden State Parkway, approximately 15 miles to the east of the project study areas (Barnabas Health 2012).

4.0 Environmental Consequences

This section identifies potential direct and indirect effects of the identified alternatives on each issue area presented in **Section 3.0**, and compares and contrasts the potential effects of those alternatives. The potential environmental, cultural, and socioeconomic effects of implementing each identified alternative, as well as BMPs associated with each alternative, are also presented. **Appendix E** provides a discussion of commonly encountered NEPA concepts, terminology, and significance criteria.

4.1 Land Use and Cover

4.1.1 Effects of Alternative 1 (Preferred Alternative)

No significant long-term adverse construction-related land use and land cover effects would be anticipated as a result of the implementation of Alternative 1. Although the Proposed Action requires clearing and de-stumping the majority of the 178-acre Alternative 1 site (no stump removal would occur in the wetland areas), permanently changing the existing land cover, land use in the subject area is designated for military training use, the Proposed Action at both Alternatives 1 and 2 are consistent with permitted land use.

Pursuant to the coordination response received from the New Jersey Division of Land use Regulation (NJ DLUR), Alternative 1 also includes approximately 6.12 acres of wetlands and 61 acres within the 100-year floodplain (**Figure 4-1A**). The Proposed Action at Alternative 1 would require cutting of vegetation (but no stump removal) within the wetland areas. Although the area would remain as wetlands, the wetland type would be altered, creating a less than significant long term land use impact. Additional environmental effects to wetland areas within Alternative 1 are discussed in **Section 4.6.1** of this document.

No long-term significant land use and land cover effects would be anticipated due to the maintenance activities for the cleared areas of the proposed MPMGR. However, the cleared areas of the proposed MPMGR would require annual cutting activities to ensure that the training lanes are adequately maintained in an effort to meet the training requirements of the soldiers assigned to or routinely train on the installation. Application of herbicides to control vegetation is not proposed as part of this action.

4.1.2 Effects of Alternative 2 (Competing Build Alternative)

No significant long-term adverse construction-related land use and land cover effects would be anticipated as a result of the implementation of Alternative 2. Alternative 2 includes approximately 23.70 acres of wetlands and 32.83 acres within the 100-year floodplain (**Figure 4-1B**) that are regulated by the New Jersey Freshwater Wetlands Protection Act.

The Proposed Action at Alternative 2 would require cutting of vegetation (but no stump removal) within the wetland areas. Although the area would remain as wetlands, the wetland type would be altered, creating a less than significant long term land use impact. Additional environmental effects to wetland areas within Alternative 2 are discussed in **Section 4.6.2** of this document.

No long-term significant land use and land cover effects would be anticipated due to the maintenance activities for the cleared areas of the proposed MPMGR. However, the cleared areas of the proposed MPMGR would require annual cutting activities to ensure that the training lanes are adequately maintained in an effort to meet the training requirements of the soldiers assigned to or routinely train on the installation. Application of herbicides to control vegetation is not proposed as part of this action.

4.1.3 Effects of Alternative 3 (No Action Alternative)

No significant adverse land use effects would be anticipated due to implementation of Alternative 3. Operation of the current Machine Gun Range (Range 11) would continue, with no new construction or expansion planned for the foreseeable future.

The construction and operation of the ISBC at Range 61 and/or the MRF Range at Range 35 are not anticipated to result in negative any land use conflicts or effects at Range 61 or Range 35. Development would occur within the footprint of the existing ranges at those locations.

4.1.4 Mitigation Measures and Best Management Practices

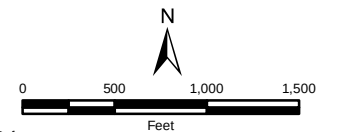
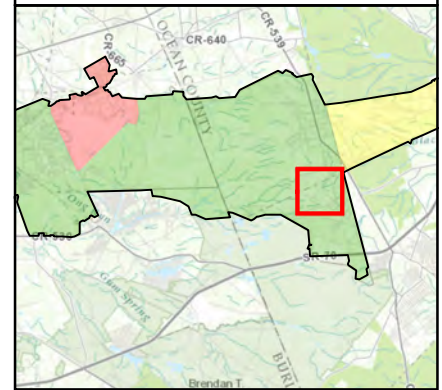
No significant land use impacts requiring mitigation were identified in association with either Alternative 1 or Alternative 2. Construction and operation of the MPMGR is consistent with the designated land use of the military installation. Construction would involve cutting of vegetation (but no stump removal) within the wetland areas. Although the area would remain as wetlands, the wetland type would be altered, creating an insignificant long term land use impact. Because these land use impacts are primarily directly related to the changing land use of wetlands please refer to "Water Resources" below and **Section 4.6.4** which details the wetland BMPs that would be implemented to further reduce the insignificant effects to land use.

No significant long-term land use effects related to the operation and maintenance of the MPMGR are anticipated from the implementation of either Alternative 1 or Alternative 2.

Alternative 1 Layout Wetlands & Flood Hazard/Riparian Zone Map

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL
Contract No. FA4484-07-D-0005
Task Order No. 5013
Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



Map Ref. :

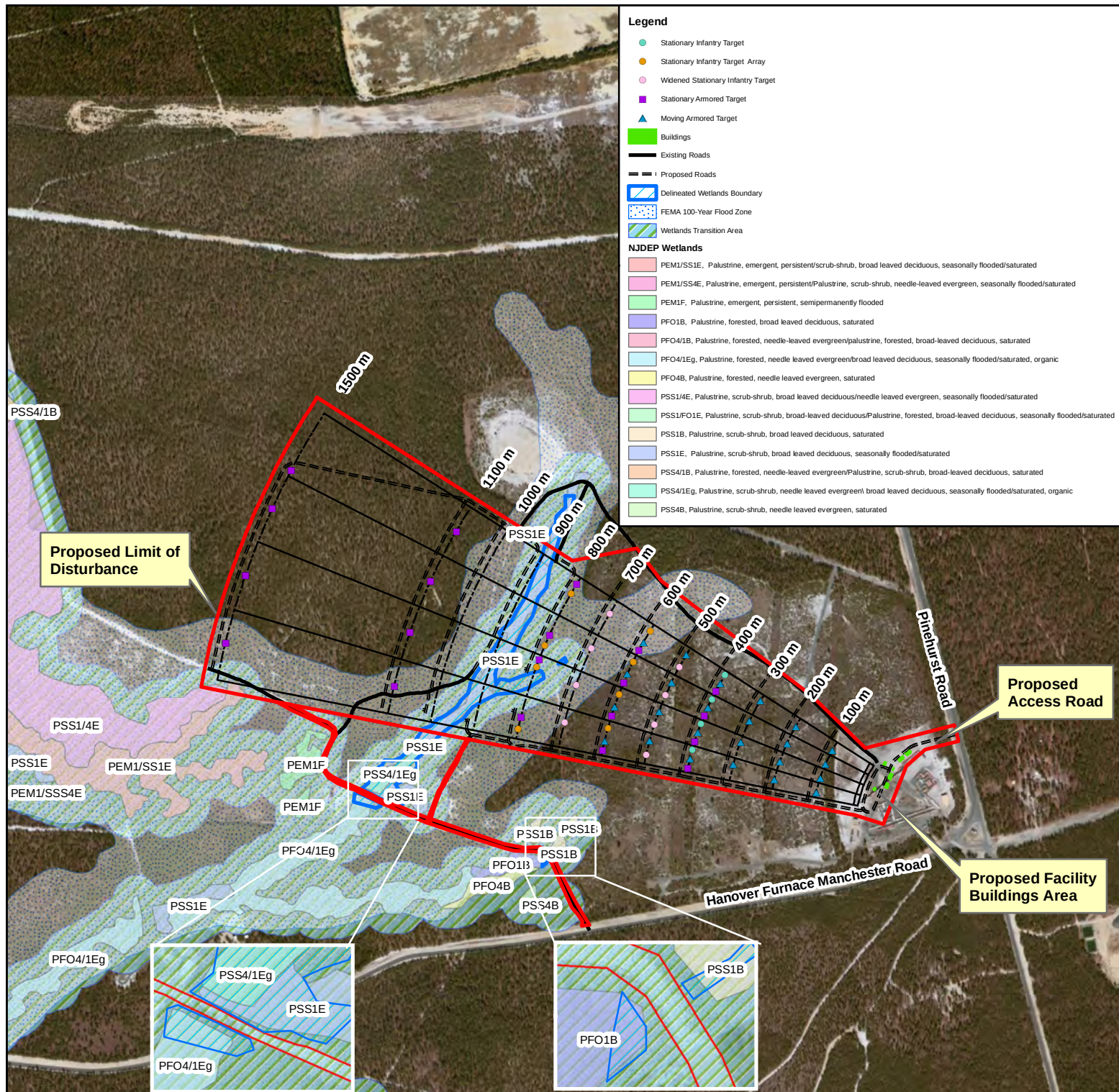
World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Wetlands
http://www.state.nj.us/dep/gis/crossaccept.htm#wetlands_ca

Flood Zone <http://edd.msc.fema.gov/edd/>

Range Layout from pg. 12 of the 95% Submittal of the Multi-Purpose Machine Gun Range at JBMDL by the U.S. Army Corps of Engineers Louisville District

Figure 4-1a



4.2 Air Space

4.2.1 Effects of Alternative 1 (Preferred Alternative)

No adverse air space effects would be anticipated to result from the implementation of Alternative 1. The construction and operation of the proposed MPMGR would not impede or alter the current air space or flight patterns at or in the vicinity of the JB MDL, as the air space above the JB MDL Dix Range Area is restricted.

4.2.2 Effects of Alternative 2 (Competing Build Alternative)

No adverse air space effects would be anticipated to result from the implementation of Alternative 2. The construction and operation of the proposed MPMGR would not impede or alter the current air space or flight patterns at or in the vicinity of the JB MDL.

4.2.3 Effects of Alternative 3 (No Action Alternative)

No adverse air space effects would be anticipated as a result from the implementation of Alternative 3, as continued operation of the current Machine Gun Range (Range 11) is located within the JB MDL Dix Range Area with restricted air space (as noted above in **Section 4.2.1**).

The construction and operation of the ISBC at Range 61 and/or the MRF Range at Range 35 are not anticipated to result in negative any air space use conflicts or effects at Range 61 or Range 35. Development would occur within the footprint of the existing range at that location.

4.2.4 Mitigation Measures and Best Management Practices

No mitigation measures are necessary.

Coordination of range training activities and air space management would continue to operate under existing guidelines.

4.3 Air Quality

4.3.1 Effects of Alternative 1 (Preferred Alternative)

No significant adverse air quality effects would be anticipated as a result of the implementation of Alternative 1. No permanent or long-term air emission sources affecting the current base-line air emissions as presented in **Section 3.4.4** would result from the implementation of Alternative 1. No new air emission sources would be introduced and no increases in air emissions would be generated as part of the Proposed Action. However, short-term effects to air quality would result from construction of the proposed MPMGR through a temporary increase in air emissions associated with proposed construction activities. The short-term temporary construction-related emissions from the proposed action are estimated to be 2.28 tons of VOCs and 16.25 tons of NO_x. These are below the *de minimus* threshold established at 40 CFR 51.853(b) of 50 tons per year (tpy) VOCs and 100 tpy NO_x, and the proposed action is not considered "regionally significant" under 40 CFR 51.853(i). A copy of the Conformity Rule Compliance Record of non-Applicability is included in **Appendix F**.

Direct short-term adverse air quality effects associated with fugitive dust from on-site construction activities and mobile source emissions from construction vehicles, equipment, and the motor vehicles of construction workers are expected. Project construction would involve earth movement, grading, and other typical construction activities.

No long-term, adverse air quality effects would be anticipated as a result of operation of the proposed MPMGR. There would be no increase in training-related vehicular traffic, no increase in munitions emissions, and no new air emission sources would be located at the proposed MPMGR. The current NJDEP Air Pollution Control Operating Permit is effective through 2016 as discussed in **Section 3.4.4**. The procedural requirements of the General Conformity Rule are not required for the Proposed Action as emission sources resulting from training would not be increasing, but would instead spread out the emissions between Range 11 and the proposed new MPMGR location at Alternative 1; both are within the JB MDL Dix Range Area (USEPA 2012b).

4.3.2 Effects of Alternative 2 (Competing Build Alternative)

Implementation of Alternative 2 would have the same short-term construction-related effects to air quality as Alternative 1.

4.3.3 Effects of Alternative 3 (No Action Alternative)

No effect to air quality would be anticipated due to the implementation of Alternative 3, as no construction-related activities would occur. No new construction or expansion of Range 11 is planned for the foreseeable future.

Short-term air quality effects related to the construction of the ISBC at Range 61 and/or the MRF Range at Range 35 would be expected, however these are not expected to be significant. No long-term adverse air quality effects associated with the operation of the ISBC at Range 61 and/or the MRF Range at Range 35 are anticipated.

4.3.4 Mitigation Measures and Best Management Practices

Implementation of either Alternatives 1, 2 or 3 would not result in any significant air quality effects requiring mitigation measures.

To control or to minimize construction-related air emissions, the following BMPs would be used during on-site construction:

- Use appropriate dust suppression methods during on-site construction activities. Recommended methods include: application of water, soil stabilizers, or vegetation; use of wind break enclosures; use of covers on soil piles and dump truck loads; use of silt fences; and suspension of earth-moving activities during high-wind conditions.
- Maintain a speed of less than 15 miles per hour (mph) with construction equipment on unpaved surfaces.
- Employ a construction management plan in order to minimize interference with regular motor vehicle traffic.

-
- Use electricity from the JB MDL Dix Range Area electrical distribution system instead of generators.
 - Repair and service construction equipment according to the regular maintenance schedule recommended for each equipment type.

4.4 Noise Environment

4.4.1 Effects of Alternative 1 (Preferred Alternative)

Implementation of Alternative 1 would result in short-term, non-significant effects to the noise environment due to construction of the proposed MPMGR. With multiple items of construction equipment operating concurrently, noise levels can be relatively high during daytime periods. However, locations more than 1,000 feet (the nearest sensitive receptor is located approximately 4,000 feet from the project study area) from construction sites seldom experience significant levels of construction noise, given the temporary nature of proposed construction activities and the limited time frame in which the construction equipment would generate noise, this effect is considered less than significant.

Noise modeling was performed by noise subject matter experts at the U.S. Air Force NEPA Center. The Small Arms Range Noise Assessment Model (SARNAM) model was used with final analysis approved for release by Army MEDCOM PHC, per the software users' agreement.

The noise modeling included data for the types of weapons and ammunition that would be used at the proposed MPMGR with the exception of the MK-19 inert round (40mm TP rounds). Neither the SARNAM or Blast Noise (BNOISE) modeling programs include programming to model the 40mm TP rounds which would be used at the proposed MPMGR. However, based on existing studies conducted on the 40mm TP round, noise levels associated with a moderate complaint risk would extend approximately 985 feet (300 meters) from the 40mm Grenade firing location; beyond 985 feet (300 meters) the risk of complaints would be low (U.S. Army 1994; U.S. Army 1999) Refer to **Appendix F**. The proposed Alternate 1 location is over 3,100 feet (950 meters) from the nearest installation boundary and, as such, the risk of complaints from off-base related to the use of 40mm TP rounds is low.

Figure 4-2A illustrates the PK15(met) noise contours that would be generated from the proposed MPMGR at the Alternative 1 location. Based on the noise modeling, 1,418 additional off-post acres would fall within the Noise Zone II as a result of training at the MPMGR. The majority of the additional Noise Zone II acreage falls within segments of the Bryndan T. Byrne State Forest as well as cranberry bog farm land. However, 8 new sensitive receptors (all residences) also would fall within the new Noise Zone II for the installation. These new sensitive receptors are located approximately 5 miles west northwest of Alternative 1 and are currently on the periphery of the existing installation Noise Zone II. In addition, a local, privately owned gun club, which operates skeet and small arms ranges is located in the immediate vicinity (less than ½ mile) of the identified new sensitive receptors to the proposed MPMGR

Noise effects associated with the operation of the MPMGR would result in long-term, non-significant adverse effects to the noise environment due to the increase in small arms noise within the project study area. It is likely that the incremental increase in noise caused by training at the proposed MPMGR at Alternative 1 would not be perceptible to the identified new

receptors since these residences are currently located less than ½ mile from an active, privately run gun club with operating firing and skeet ranges. No additional off-post acreage of Noise Zone III would be expected and, as such, the risk of complaints from off-base is low. Overall, implementation of Alternative 1 is not expected to have significant adverse noise impacts.

4.4.2 Effects of Alternative 2 (Competing Build Alternative)

Implementation of Alternative 2 would result in similar short-term and long-term, non-significant effects as Alternative 1 to the noise environment due to construction and operation of the proposed MPMGR.

Figure 4-2B illustrates the PK15(met) noise contours that would be generated from the proposed MPMGR at the Alternative 2 location. Based on the noise modeling, 135 additional off-post acres would fall within the Noise Zone II as a result of training at the MPMGR. The entirety of the additional Noise Zone II acreage falls within segments of the Bryndan T. Byrne State Forest as well as cranberry bog farm land. No new sensitive receptors (all residences) also would fall within the new Noise Zone II for the installation. Overall, implementation of Alternative 2 is not expected to have long-term significant adverse noise impacts.

4.4.3 Effects of Alternative 3 (No Action Alternative)

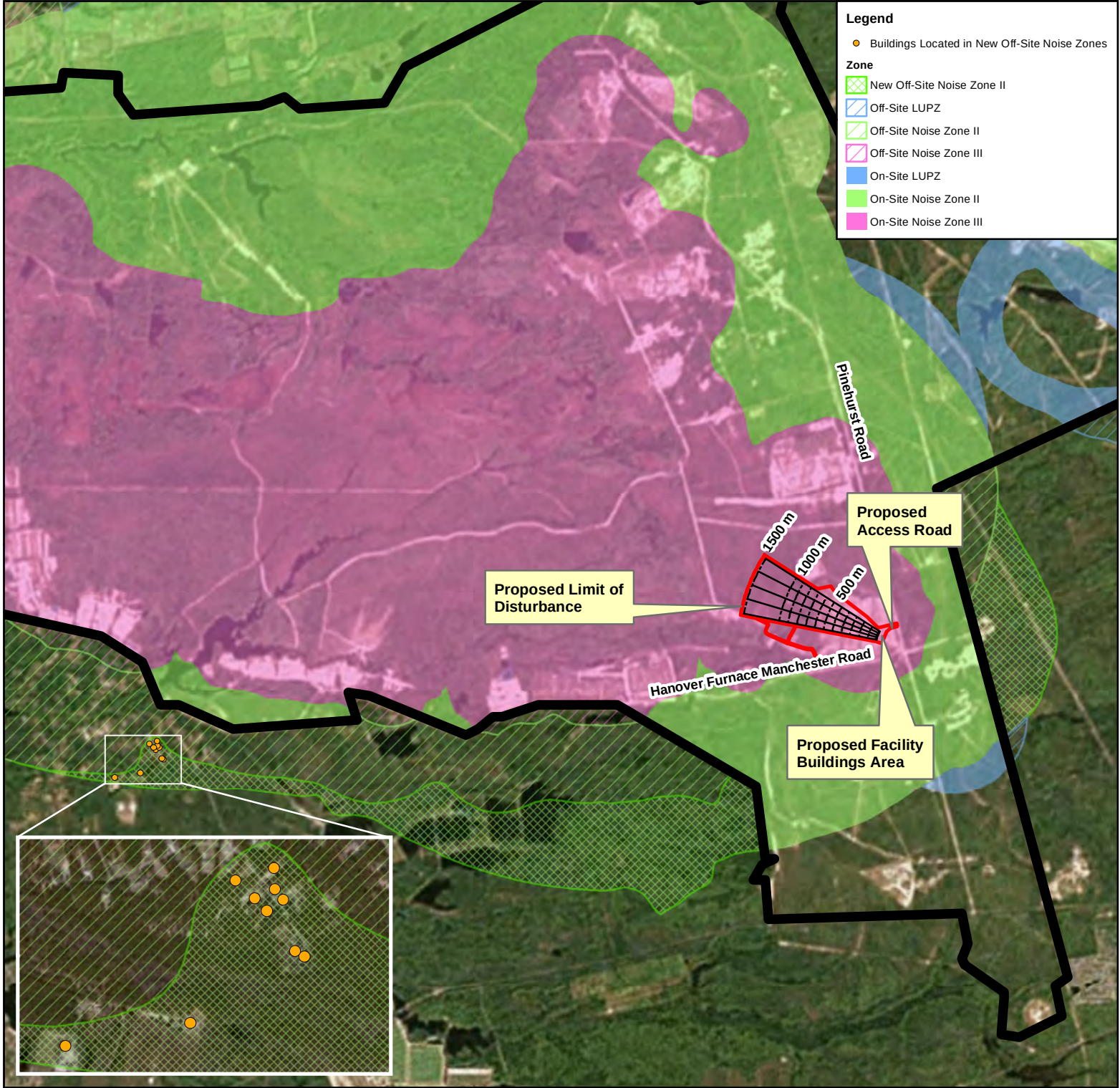
Adverse noise effects would not be anticipated due to implementation of Alternative 3, as the construction of the proposed MPMGR would not occur. Additionally, the operation of the adjacent ranges (EOD Range and Range 39A) for training would continue to generate noise in the area. No new construction or expansion of Range 11 is planned for the foreseeable future.

The construction and operation of the ISBC at Range 61 and/or the MRF Range at Range 35 are not anticipated to result in any noise-related use conflicts or effects. Development would occur within the footprint of the existing ranges at locations where large and small arms training noise are currently generated.

4.4.4 Mitigation Measures and Best Management Practices

No mitigation measures are necessary.

Noise modeling of the proposed MPMGR is recommended for inclusion within an updated AICUZ, should Alternative 1 or Alternative 2 be implemented.



Legend

- Buildings Located in New Off-Site Noise Zones

Zone

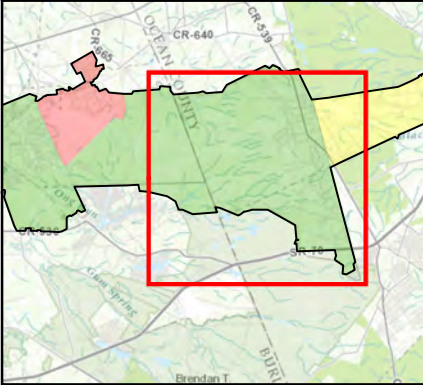
- ▨ New Off-Site Noise Zone II
- ▭ Off-Site LUPZ
- ▨ Off-Site Noise Zone II
- ▨ Off-Site Noise Zone III
- ▭ On-Site LUPZ
- ▨ On-Site Noise Zone II
- ▨ On-Site Noise Zone III

**Alternative 1 Layout
Predicted Composite
Noise Zone Contours**

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL
Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



N

0 0.5 1 1.5
Miles

Map Ref. :
World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Noise Zones from AICUZ (Air Installation Compatible Use Zone) program, July 3 2013

Range Layout from pg. 12 of the 95% Submittal of the Multi-Purpose Machine Gun Range at JBMDL by the U.S. Army Corps of Engineers Louisville District

Figure 4-2a

4.5 Geology, Topography, and Soils

4.5.1 Effects of Alternative 1 (Preferred Alternative)

No adverse effects to local geology or topography are anticipated from the implementation of Alternative 1. Some grading would be required to allow for line of sight from the firing points to the targets; however this grading is not expected to significantly alter the generally flat topography of the area.

Implementation of Alternative 1 would involve clearing of vegetation, stump removal, and grading (in upland areas only: no grading or stump removal would occur in wetland areas) in association with the construction of the proposed MPMGR resulting in direct potential short-term non-significant soil erosion and sedimentation effects. Implementation of standard construction management practices that would be implemented by the contractor to comply with permit requirements and BMPs during construction as described in **Section 4.5.4** would further reduce these potential effects non-significant effects.

Clearing of the existing vegetation in the riparian areas adjacent to the headwaters of Gaunts Brook would affect the rate of stormwater runoff and, subsequently could increase soil erosion over the long term. Proper engineering design of the MPMGR stormwater management and planting of native plant species that can best grow and stabilize the soils to prevent erosion would serve to reduce potential long-term soil erosion effects. As such significant effects are not expected.

No long-term significant operational-related effects to soils would be anticipated to result from the implementation of Alternative 1. In an effort to maintain visual of the range targets, annual cutting of vegetation would be necessary. Potential rutting and soil erosion could occur. However, such occurrences are expected to be limited and incidental, and therefore, would not be considered significant.

4.5.2 Effects of Alternative 2 (Competing Build Alternative)

The northernmost lane at the Alternative 2 location extends along the side of a ridge. Implementation of Alternative 2 would require an extensive amount of grading in order to achieve the necessary line of sight to the targets on the northern most firing lane. The additional grading required is not a significant impact to local or regional geology, topography, or soils; however the additional grading presents additional engineering complications (e.g. erosion, and slope stability) which would require consideration during the design of the range.

4.5.3 Effects of Alternative 3 (No Action Alternative)

No adverse effects to geology, topography, and soils would result from implementation of Alternative 3, as the construction and operation of the proposed MPMGR would not occur. No new construction or expansion of Range 11 is planned for the foreseeable future.

Construction of the ISBC at Range 61 and/or the MRF Range at Range 35 would result in similar potential soil erosion issues as Alternative 1 and Alternative 2. These potential soil erosion effects would be reduced to less-than-significant levels by developing and implementing site-specific Erosion and Sedimentation (E&S) Control Plans.

4.5.4 Mitigation Measures and Best Management Practices

Implementation of Alternative 1, 2, or 3 would not result in any significant geology, topography or soils effects requiring mitigation measures.

The following standard construction management practices and BMPs would be implemented prior to initiation of any on-site construction to prevent direct-construction-related and operation and maintenance-related soil erosion effects:

- Prepare a detailed, site-specific E&S Control Plan to address all earth-disturbance aspects of the Proposed Action, including all project components. The E&S Control Plan would involve measures, including specific guidelines and engineering controls, to mitigate anticipated erosion and resultant sedimentation effects from establishment of the proposed MPMGR. Measures may include the use of filter fences, sediment berms, interceptor ditches, and/or other sediment control structures, and seeding/re-vegetation of areas temporarily cleared of vegetation. Re-vegetation plans and requirements included in the E&S Control Plan should include planting during the optimum seeding season, whenever possible. Use of native grasses for re-vegetation of disturbed soils should be addressed in the E&S Control Plan. No plant materials should be used from species considered invasive as defined by EO 13112; regionally native plant species should be favored as required by EO 131148.
- Submit the site-specific E&S Control Plan to the Ocean County Soil Conservation District office for review and certification.
- Plant approved native grasses that are best suited to the specific soil types and growing conditions to stabilize soils and prevent soil erosion from increased stormwater flow.
- During routine maintenance activities (e.g. annual mowing) JB MDL should make note and observe any locations of rutting and/or soil erosion. These areas should be promptly stabilized and re-planted with native grasses.

4.6 Water Resources

4.6.1 Effects of Alternative 1 (Preferred Alternative)

No significant, long-term, adverse effects to surface water resources would be anticipated from implementation of Alternative 1. The Alternative 1 project study area includes some of the headwaters of Gaunts Brook. The wetland delineation indicates that approximately 6.12 acres of wetlands occurs within the Alternative 1 location, primarily across the 900-meter target line for all four training lanes and at the 1,500-meter target location for the southernmost training lane (**Figure 4-1A**). Approximately 61 acres of the Alternative 1 project study area is also within the 100-year floodplain. However, no permanent features other than service roads, underground utilities, and target placements would be placed in the floodplain under Alternative 1. The proposed support buildings and firing points would be located outside of the 100-year floodplain. Construction of the MPMGR at the Alternative 1 location would require clearing of existing vegetation within both upland and wetland areas, although stump removal, grading, and trenching would be limited to uplands. Correspondence received from the NJDEP Division of Land Use Regulation during the IICEP process (see **Appendix A**) states that a Freshwater

Wetland Permit is not required provided there is no soil disturbance (e.g. mechanized soil disturbance, rutting, surface grading, or leveling) in the wetland area and/or tree cutting in the wetland area occurs aboveground and does not involve stump removal.

Construction of the proposed MPMGR would involve clearing of existing vegetation and would also involve the construction of buildings, improvement of existing roads and construction of new roads to service the range targets. These activities and new features would result in the increased rate at which stormwater runoff flows across the site. Proper stormwater management design implemented to restrict, redirect, or alter the timing of the flow of storm water runoff leaving the site and would manage stormwater quality. Therefore no significant impact is expected.

Lead has historically been the biggest contaminant of concern from firing ranges, but there are other munitions-related contaminants to consider, particularly at military ranges. Other contaminants at typical small arms firing ranges may include antimony, copper, zinc, arsenic, and polycyclic aromatic hydrocarbons (PAHs) (ITRC 2003), whereas munitions-related contaminants at military ranges include a variety of chemical mixtures (Larson et al. 2007). While the majority of the published literature pertains to lead, the same principles governing contaminant fate and transport and their management can largely be applied to other munitions-related contaminants.

Munitions-related contaminants can be introduced from ranges in one or more of the following ways:

- Lead and other metals oxidize when exposed to air and dissolves when exposed to acidic water or soil.
- Munitions, munitions particles, or dissolved contaminants from munitions can be moved by stormwater runoff.
- Dissolved contaminants can migrate through soils to groundwater (USEPA 2005).

Acidic water and soil are conditions typically found in this portion of the State. When metals are exposed to acidic water or soil, it breaks down by weathering into hydroxides, sulfates, sulfides, carbonates, and phosphates (EA 1996). With each rainfall, these compounds may be dissolved, and move in solution in the storm runoff waters. Acidic rainwater may also dissolve weathered compounds and these may be transported in solution in groundwater beneath land surfaces. Groundwater may transport contaminants from higher topographic areas to lower areas where it is discharged and becomes part of the surface water flow. For the project study area, these discharge points could be Gaunts Brook.

If the water flowing underground passes through rocks containing calcium, magnesium, iron or other minerals that raise the pH of the water, then metals in solution may be replaced (i.e. removed) from the solution by these other minerals. However, if the soil is a clean silica sand and gravel, fractured granite, or similar type material as is found in the project study area, then metals may move long distances in solution (USEPA 2005). Larson et al. (2007) reports that many munitions contaminants on training ranges have slow dissolution rates and low partition coefficients with a high potential for long-term contamination of ground water and surface water.

Operation of the range will inevitably lead to deposition of bullets dispersed across a wide area throughout the Surface Danger Zone (SDZ) area of the range. Some of this area includes

wetland areas, including Gaunts Brook. The proposed action does not call for an overall increase of firing base wide; but, rather, a shift in firing location from the existing Range 11 to the proposed new range location. The great majority of bullets fired on the range would be focused on the target areas, all of which would be situated in upland areas. No targets are proposed within the Gaunts Brook stream corridor or in any wetland areas. Firing would tend to be focused on targets in upland areas in front of Gaunts Brook and/or on targets in upland areas further down range of Gaunts Brook. In the later instance, bullets would pass over Gaunts Brook. It is conceivable that some bullets could enter Gaunts Brook and its associated wetlands and/or in wetlands situated beyond the range but within the SDZ.

A Baseline Ecological Evaluation of Gaunts Brook between Range Road and the Lake Shore Bridge Drive was conducted in 2007. This location is downstream of the entire southern end of the JB MDL range complex. This location receives all the surface water flow from the ranges that have been in existence in one form or another since the early 1940's. The results of the study show that while there may be metals in the water column from the ranges, there is no ecological impact from the ranges. (AMEC 2007) There are no additional weapons or munitions being fired in the range area or in the Gaunts Brook watershed as part of this proposed action. The existing range will remain, with half of the training load moving to the new range. There are no expected adverse impacts on the water body from this range.

Furthermore, the Army is beginning to use the non-lead 5.56mm M855A1 (Performance Enhanced Round) for fiscal year 2015 training. The 7.62mm M80A1 round is still in development and is expected to become available for wider use in fiscal year 2017 (Nance 2014). As a result, no significant impacts related to lead dispersal across the range and specifically the wetland areas would be expected.

There is a concern that Alternative 1 may result in adverse effects to downstream receptors, particularly the federally-listed swamp pink. CEMML (2006) reports that no definitive evidence was found during their literature review that military activities are having either a negative or positive impact on swamp pink. However, they also report that it would stand to reason that any activities that increase siltation or destruction of wetlands within swamp pink range would have a negative impact on swamp pink populations.

It is also possible that oil or other materials could spill from vehicles and equipment used during the construction and operation of the proposed MPMGR. All equipment would be required to adhere to state construction vehicle standards, be in good condition, and to be properly maintained to avoid the potential for spills and leaks. The contractor would also be required to immediately report spills to the JB MDL spill hotline/Fire Department.

No adverse construction or operational effects to water supply or wastewater service would be anticipated from the implementation of Alternative 1. Potable water would not be provided to the project study area as part of this proposed action. Wastewater services would be provided through the use of portable, contractor-serviced toilets.

4.6.2 Effects of Alternative 2 (Competing Build Alternative)

Long-term effects to surface water resources would be similar to those described under Alternative 1. 23.70 acres of wetlands are present within the southwestern portion of the proposed Alternative 2 MPMGR site. In addition the headwaters of Gaunts Brook is located

immediately east of the proposed Alternative 2 MPMGR; although not within the boundaries of the project study area. The wetland line associated with Gaunts Brook was marked by JB MDL contractors during the 13-14 September 2012 survey of the nearby Times Square area; however the wetlands in the southwestern portion of the project study area have not been delineated (**Figure 4-1B**). Approximately 32.83 acres of the Alternative 2 project study area is also within the 100-year floodplain. Under Alternative 2, all of the support buildings and firing points, and some target placements and service roads would fall within the 100-year floodplain. Construction of the MPMGR at the Alternative 2 location would require clearing of existing vegetation within both upland and wetland areas, although stump removal, grading, and trenching would be limited to uplands. Alternative 2 would also involve the construction of buildings and new roads to service the range targets. These activities and new features would result in the increased rate at which stormwater runoff flows across the site. Increased stormwater runoff flow could result in long-term significant adverse effect to downstream off-site sensitive habitats, specifically potential downstream swamp pink habitat. Proper stormwater management design implemented to restrict, redirect, or alter the timing of the flow of stormwater runoff leaving the site would act to reduce effects from increased stormwater flow to less-than-significant levels, and help manage stormwater quality.

Implementation of Alternative 2 would result in similar potential effects associated with munitions-related contaminants as Alternative 1.

There is a concern that Alternative 2 may result in adverse effects to downstream receptors, particularly the federally-listed swamp pink. CEMML (2006) reports that no definitive evidence was found during their literature review that military activities are having either a negative or positive impact on swamp pink. However, they also report that it would stand to reason that any activities that increase siltation or destruction of wetlands within swamp pink range would have a negative impact on swamp pink populations.

It is also possible that oil or other materials could spill from vehicles and equipment used during the construction and operation of the proposed MPMGR. All equipment would be required to adhere to state construction vehicle standards, be in good condition and to be properly maintained to avoid the potential for spills and leaks. The contractor would also be required to immediately report spills to the JB MDL spill hotline/Fire Department.

No adverse construction or operational effects to water supply or wastewater service would be anticipated from the implementation of Alternative 2. Potable water would not be provided to the project study area as part of this proposed action. Wastewater services would be provided through the use of portable, contractor-serviced toilets.

4.6.3 Effects of Alternative 3 (No Action Alternative)

No adverse surface water, wetlands, groundwater, or water supply effects would be anticipated to result from the implementation of the No Action Alternative since the construction and operation of the proposed MPMGR would not occur. No new construction or expansion of Range 11 is planned for the foreseeable future.

Construction of the ISBC at Range 61 and/or the MRF Range at Range 35 would result in similar potential surface water sedimentation issues as Alternative 1 in association with soil erosion during construction. These potential surface water sedimentation effects from soil

erosion would be reduced to non-significant levels by developing and implementing the site-specific E&S Control Plan. The operation of the ISBC at Range 61 and/or the MRF Range at Range 35 are not anticipated to result in any water resource-related use conflicts or effects.

4.6.4 Mitigation Measures and Best Management Practices

No significant, long-term, adverse effects to surface water resources requiring mitigation would be anticipated from implementation of Alternative 1 or Alternative 2. Wetlands are present within both alternative locations (6.12 acres within Alternative 1 and 23.70 acres within Alternative 2). Construction of the MPMGR at the either alternative location would require clearing of existing vegetation within wetland areas; however no grading or stump removal would occur within the wetlands. The NJDEP has indicated that if no grading or stump removal occurs within the wetlands, then wetland permitting and mitigation would not be required. Stump removal, grading, and trenching across the remainder of the site may result in the increased rate at which stormwater runoff flows across the site which would be managed through the adherence to the following regulatory compliance standards, standard construction measures, and BMPs :

- Stump removal and grading would occur only in the uplands. Trees within the wetlands would be cut at three inches or below and their stumps and roots would remain in place in order to minimize ground disturbance and potential soil erosion. A New Jersey Department of Environmental protection (NJDEP) wetland permit is not required (NJDEP 2012c). Additionally, long-term maintenance of the range vegetation in the upland and wetland areas would only involve selective brush clearing and sapling cutting in order to maintain a line of sight.
- No range targets would be located within wetlands; range targets would be located only in uplands.
- Directional drilling would be conducted in areas where the proposed electrical line and fiber-optic line may encroach upon wetlands. The use of directional drilling beneath wetlands would minimize adverse effects to these regulated areas and avoid the need for obtaining NJDEP permits.
- The proposed paths for the electrical line and fiber-optic line would be as close to perpendicular to the wetlands as possible, thus minimizing encroachment into these areas.
- No new roads would be constructed in wetlands. Existing sand access roads that cross over wetland areas would be improved with crushed gravel and would not be paved with asphalt. Improvement to existing access roads would be limited to the current existing footprint of the road.
- To minimize adverse effects to surface water resources and wetlands to the extent practicable, while still maintaining the standards for range operation and meeting the training objectives; JB MDL would prepare a detailed, site-specific E&S Control Plan for submission to the Ocean County Soil Conservation District office for review and certification.

The physical characteristics of Alternatives 1 and 2 give an indication as to the likelihood of contaminant movement (lead) outside of the range area and into sensitive wetland areas. Large ranges such as the proposed MPMGR tend to have bullets dispersed over a wide area, making the management of the area more challenging than if the dispersal was over a smaller area. However, the proposed action does not call for an overall increase of firing base wide. The U.S Army is in the process of switching from the traditional lead-containing training round to non-lead training rounds. Furthermore, the Army is beginning to use the non-lead 5.56mm M855A1 (Performance Enhanced Round) for fiscal year 2015 training. The 7.62mm M80A1 round is still in development and is expected to become available for wider use in fiscal year 2017 (Nance 2014). As a result, no significant impacts related to lead dispersal across the range and specifically the wetland areas would be expected.

Water Resources and Wetland Permits

- Implementation of Alternative 1 and Alternative 2 would require an Ocean County Soil E&S Control Plan Certification (see **Section 4.5.4**) and corresponding electronic filing with the NJDEP in order to minimize the effects to surface water caused by storm water runoff. Storm water collection systems within the proposed MPMGR would be designed to account for the increase in storm water runoff and the implementation of a Soil E&S Control Plan would assist in reducing the short-term and long-term, minor, adverse effects to the associated surface water features to less than significant levels.
- Because the project study area for Alternative 2 has not been field delineated, a wetland delineation of the project area would need to be conducted by JB MDL. This initial step would be necessary prior to initiating the wetland permitting process that would be required for this project. Based on a desktop review of NWI and NJDEP wetland maps, wetlands are mapped to be present in the southwestern portion of the proposed MPMGR. In addition the headwater channels of Gaunts Brook are situated immediately east of the project study area, although not within the footprint of the project study area.

4.7 Biological Resources

4.7.1 Effects of Alternative 1 (Preferred Alternative)

The implementation of Alternative 1 would result in both direct and indirect impacts to biological resources within and around the project study area. Both direct and indirect impacts would occur primarily through the removal of largely forested vegetation in both the upland and wetland areas, and earth disturbances to the upland areas. This disturbance would represent less than 1 percent of the available forest habitat within the JB MDL Dix Range Area and would not be considered a significant impact. Additional direct and indirect impacts would occur from range operation and range maintenance, although the majority of impacts are associated with vegetation clearing and construction.

JB MDL initiated consultation pursuant to Section 7 of the Endangered Species Act with the USFWS in September 2014 concerning the determination of effect of the proposed action at Alternative 1 on the three additional federally-listed species; Bog turtle, American Chaffseed,

and Knieskern's Beaked rush. JB MDL determined, based on lack of suitable habitat and no known observations or occurrences of the subject species, that there would be no effect to these species as a result of the proposed action. Pursuant to Section 7 of the ESA, because the determination is "no effect", the USFWS concurrence is not required. Documentation of this communication is provided in **Appendix A**.

The clearing of vegetation has the potential to directly remove seven state-listed plant species that have been identified as having the potential to occur within the study area. Three of the state-listed species are also federally-listed; American chaffseed, Knieskern's beaked-rush, and Swamp Pink. Note that the USFWS has already concurred with the "Determination of Effect" to the subject federally-listed Swamp pink. JB MDL has made a determination of no effect for American chaffseed and Knieskern's beaked rush. These are as follows:

- New Jersey rush (state-endangered) – from the clearing of vegetation from wetlands
- American chaffseed (Federal and state-endangered) – from the clearing of vegetation from moist uplands and wetlands – (JB MDL determined No Effect)
- Knieskern's beaked-rush (Federal and state-endangered) – from the clearing of vegetation from open wetlands – (JB MDL determined No Effect)
- Pine barrens boneset (state-endangered) – from the clearing vegetation from of wetlands
- Swamp pink (Federal and state-endangered) – from the clearing of vegetation wetlands – (USFWS has concurred No Effect)
- Pale Beaked-rush (state-special concern) - from the clearing of vegetation wetlands
- Sickie leaf golden aster (state rare) – from disturbance during construction

In addition, construction activities have the potential to result in adverse effects to the following Federal and state-listed animal species: (Note that the USFWS has already concurred with the "Determination of Effect" to the subject federally-listed species):

- Bog Turtle – (Federal threatened and state-endangered) – (JB MDL determined No Effect)
- Timber rattlesnake (state-endangered) – from the clearing of vegetation from both uplands and wetlands
- Pine Barrens tree frog (state-endangered) – From clearing vegetation from wetlands.
- Northern pine snake (state-threatened) – from the clearing of vegetation from uplands
- Corn snake (state endangered) - from the clearing of vegetation from both uplands and wetlands
- Barred owl (state-threatened) –from the clearing of vegetation from both uplands and wetlands
- Arogos skipper (state-endangered) – from the clearing of vegetation from open uplands and open wetlands
- Silver-bordered fritillary (state-threatened) – from the clearing of vegetation from open wetlands
- Georgia satyr (state-special concern) – from the clearing of vegetation from open wetlands
- Dotted skipper (state-special concern) – from the clearing of vegetation from open uplands and wetlands

Of the above butterfly species, direct impacts are considered to be minimal because of a lack of open habitat. However, the construction and operation of the range may result in greater available habitat for these species since the vegetation communities will remain relatively open rather than forested.

Vegetation removal is anticipated to have a potential adverse effect to the timber rattlesnake, particularly taking into account the habitat preferences of southern New Jersey populations of this species. Whereas this species may exhibit a preference to open habitats in other portions of the state, the southern New Jersey populations, and particularly those occurring in the Pine Barrens seek denser vegetation as their preferred habitat. Vegetation removal may result in this species being displaced to other areas of the JB MDL.

Vegetation removal is not anticipated to have any potential adverse effect to the corn snake. Although potential habitat is present and vegetation removal may result in this species being displaced to other areas of the JB MDL, the presence of this species within the Alternative 1 location has not been verified. A 2010 survey by Herpetological Associates in the eastern portion of the former Ft. Dix property found one live specimen (July, 2010) and two road killed individuals (both in September, 2010) within 2 miles of the proposed range. An additional road kill Corn snake was found on Route 539 within 2 miles of the proposed range in September, 2009. (JB MDL 2012)

In contrast, the removal of vegetation may have an adverse effect, no effect, or positive effect to the northern pine snake with regards to habitat preference. With the exception of the breeding season where this species becomes reclusive, the increase in open areas may benefit this species as it would provide additional basking areas. If such a preference for cleared areas does occur, the confounding indirect effect would be their attraction to an active range, which would subsequently result in direct impacts if injured or killed by ordnance.

With regards to the Barred Owl, correspondence received from the NJDEP as part of the IICEP process expressed concern that the removal of mature vegetation across the project site and disruption of the existing wetland habitat found within the project study area would decrease habitat for the state-threatened Barred Owl. The Barred Owl requires mature forested areas in both wetlands and uplands and the Alternative 1 project study area possesses both of these habitats. Vegetation clearing in both upland and wetland areas would not only have an indirect impact to the Barred Owl, but also to the rare butterflies and moths listed above that require host plant species for egg-laying and feeding, migratory birds protected under the MBTA, and other wildlife that are not identified as rare. Bird surveys conducted at JB MDL in 2007, 2010, 2011, and 2012 did not identify any Barred owl specimens in the vicinity of Alternative 1. The nearest Barred owl find was over 1 mile from the proposed MPMGR range in the 2012 survey. (JB MDL 2012, CEMML 2012) Although potential habitat is present for this species, the species has not been identified as occupying the area. As a result no adverse impacts to the Barred owl would be expected.

JB MDL conducted a 2-week long bat survey in June 2015 to identify whether or not Northern long eared bats were present within the Alternative 1 location. No Northern long eared bats were observed. Although potential habitat is present for this species, the species has not been identified as occupying the area. As a result no adverse impacts to the Northern long eared bat would be expected

Vegetation removal will also directly impact plant species that do not have any special status, such as those currently composing the overall vegetation communities described in **Section 3.8.2**. These communities are the pitch pine forest, scrub-shrub upland, and wetland areas, comprising species such as pitch pine, scrub oak, blackjack oak, bracken fern, dwarf huckleberry, black huckleberry, and numerous grasses, sedges, rushes, and forbs, particularly in the wetland that exhibits a richer species composition in the ground layer than the uplands. The direct impacts to the overall vegetation community would in turn indirectly impact the resident wildlife community that includes species without any special status. These include the various terrestrial and avian wildlife species also listed in **Section 3.8.2**.

The implementation of Alternative 1 could result in effects to the water quantity and quality leaving the site and subsequently entering downstream wetland habitats without the implementation of stormwater management during construction and incorporation of stormwater management into the range design. The known presence of Pine Barrens treefrog downgradient of the study area suggests the potential for indirect impacts through alteration of stormwater quantity and quality. These effects would not be considered significant since management of stormwater would be incorporated during construction and incorporated into the range design (see **Section 4.6**). Implementation of the BMPs provided in **Section 4.7.4** would serve to further reduce these potential indirect effects.

Implementation of the BMPs provided in **Section 4.7.4** would serve to further reduce the biological resources effects to non-significant levels.

4.7.2 Effects of Alternative 2 (Competing Build Alternative)

Implementation of Alternative 2 would result in similar direct and indirect adverse effects to biological resources within and around the project study area as Alternative 1, although a greater acreage of currently forested and wetland habitats would be affected. Both direct and indirect impacts would occur primarily through the removal of vegetation in both the upland and wetland areas, and earth disturbances to the upland areas. Additional direct and indirect impacts would occur from range operation and range maintenance, although the majority of impacts are associated with vegetation clearing and construction. Implementation of the mitigation measures provided in **Section 4.7.4** would reduce the significant effects to non-significant levels.

4.7.3 Effects of Alternative 3 (No Action Alternative)

No adverse biological effects would be anticipated to result from the implementation of the No Action Alternative. Under Alternative 3, the construction and operation of the proposed MPMGR would not occur and no new construction or expansion of Range 11 is planned for the foreseeable future.

The construction and operation of the ISBC at Range 61 and/or the MRF Range at Range 35 are not anticipated to result in any adverse biological resources effects. Development would occur within the footprint of the existing range at that location where large and small arms training noise are currently generated. Potential habitat for state-listed species is present in the immediate vicinity of Range 61; however, the proposed ISBC would be situated within the existing, significantly disturbed areas of Range 61.

4.7.4 Mitigation Measures and Best Management Practices

No significant construction-related direct and indirect unavoidable effects to biological resources (vegetation and wildlife habitat) requiring mitigation are anticipated from implementation of either Alternative 1 or 2. However direct and indirect effects to biological resources associated with the disturbance of 152 acres of vegetation and 8 acres of sparsely vegetated land under Alternative 1, and the disturbance of 160 acres of vegetation under Alternative 2 would occur. Construction activities in these areas would involve clearing of existing vegetation, and stump removal and grading in the uplands, thus permanently changing the current habitat. The following project planning actions and BMPs would serve to further minimize adverse effects to biological resources to the extent practicable, without the need for mitigation, while still maintaining the standards for range operation and meeting the training objectives:

- As discussed in **Section 3.8.3**, the JB MDL performs a variety of periodic natural resource surveys for rare, threatened, and endangered species and their habitats. The timing of when these surveys can be performed would be coordinated with the pre-construction project planning aspect of the proposed Alternative. Thus, the JB MDL would focus its natural resource surveying efforts to those species with the potential to occur at the proposed Alternative project site. As the JB MDL INRMP states, “JB MDL will implement conservation agreements, management plans, and recovery plans for listed species in accordance with ESA Section 7 as required.”
- JB MDL would obtain an Ocean County Soil E&S Control Plan Certification (see **Section 4.5.4**) and corresponding electronic filing with the NJDEP in order to minimize the effects to surface water and downgradient habitats and biological resources caused by storm water runoff as a result of implementation of either Alternative 1 or Alternative 2. Storm water collection systems within the proposed MPMGR would be designed to account for the increase in storm water runoff, and the implementation of a Soil E&S Control Plan would assist in reducing the short-term and long-term, minor, adverse effects to downgradient resources.
- JB MDL would ensure that activities are in accordance with the 2006 MOU between the DOD and the USFWS with regards to the MBTA. At a minimum, mechanical tree trimming or removal of trees would not occur between 15 March and 31 July; however, non-mechanical tree trimming may be permitted once trees are checked for nesting activity.
- Per the NJDEP correspondence presented in **Appendix A**, if the construction of the range necessitates any in-water work within Gaunts Brook, JB MDL would not perform this work between April 1 and June 30 in order to protect warm-water fish nest building and spawning.
- JB MDL would fence the perimeter of the MPMGR site with appropriate gauge fencing during construction to discourage wildlife from entering the proposed MPMGR site.
- JB MDL would perform required annual site maintenance, such as the trimming or removal of trees, outside of the nesting and breeding seasons.
- JB MDL would plant grass to prevent soil erosion.

-
- JB MDL would educate contractors to identify rare species and develop a procedure for work stoppage and reporting of rare species sightings.
 - JB MDL would minimize, to the extent practicable, the use of heavy machinery in the wetland, by performing as much of the work as possible from outside of the wetland boundaries.
 - JB MDL would dispose of encountered debris or hazardous materials immediately from the project area in order to minimize the potential for release into the environment.

4.8 Cultural Resources

4.8.1 Effects of Alternative 1 (Preferred Alternative)

Although the 2011 ICRMP indicates that surveys have not been conducted specifically within the project study area due to the majority of the site lying within the JB MDL Dix Range Effect Area; as discussed in **Section 3.9.1**, the use of predictive models in relation to environmental and geographic parameters, it can be determined that portions of the Alternative 1 site (approximately 18.31 acres) within approximately 150 feet of Gaunts Brook would be considered highly sensitive for the potential presence of archaeological sites (**Figure 4-3A**). The remaining portions of the site contain areas of low archaeological sensitivity (DOA 1998, JB MDL 2011, Ranere and Hansell 1989). Interagency Coordination with the New Jersey Historic Preservation Office (NJ HPO) was initiated as part of this EA process (see **Appendix A**). Based on the preliminary response from the NJ HPO, JB MDL conducted Section 106 consultation for the identification, evaluation, and treatment of historic properties that may be within the project's area of potential effects. In the Section 106 consultation package, JB MDL concluded that there are no historic architectural resources present within the project area or within ¼ mile of the project area and that there would be no adverse effects on any archaeological resources. The NJ HPO replied with their concurrence regarding these conclusions on October 19, 2013. A copy of the Section 106 consultation documentation is included in **Appendix A**.

Both the Delaware Nation and the Delaware Tribe of Indians indicated through consultation that the proposed action would not endanger cultural or religious sites of interest to either Tribe. Both Tribes will be provided a copy of the Draft Environmental Assessment for Tribal review. Implementation of Alternative 1 is not expected to result in any adverse effects to any culturally-sensitive resources.

If Native American remains, protected tribal resources, tribal rights, sacred tribal sites, or other cultural objects are discovered at the proposed Alternative 1 project study area from normal operations or ground disturbing activities such as construction, and erosion by wind or water, the JB MDL would ensure compliance with the approved JB MDL ICRMP (JB MDL 2011).

4.8.1 Effects of Alternative 2 (Competing Build Alternative)

Although the 2011 ICRMP indicates that surveys have not been conducted specifically within the Alternative 2 project study area, due to the majority of the site lying within the JB MDL Dix

Range Effect Area; as discussed in **Section 3.9.1**, the use of predictive models in relation to environmental and geographic parameters, it can be determined that portions of the Alternative 2 site within approximately 150 feet of Gaunts Brook (approximately 12.67 acres) would be considered highly sensitive for the potential presence of archaeological sites (**Figure 4-3B**). The remaining portions of the site contain areas of low archaeological sensitivity (DOA 1998, JB MDL 2011, Ranere and Hansell 1989). JB MDL has not entered into Section 106 consultation with the NJ HPO in association with the Alternative 2 site, however, based on the close orientation of Alternative 2 to Alternative 1, implementation of Alternative 2 is not expected to result in any adverse effects to any culturally-sensitive resources.

If Native American remains, protected tribal resources, tribal rights, sacred tribal sites, or other cultural objects are discovered at the proposed Alternative 2 project study area from normal operations or ground disturbing activities such as construction, and erosion by wind or water, the JB MDL would ensure compliance with the approved JB MDL ICRMP (JB MDL 2011).

4.8.3 Effects of Alternative 3 (No Action Alternative)

No adverse cultural resource effects would be anticipated to result from the implementation of the No Action Alternative since the construction and operation of the proposed MPMGR would not occur. No new construction or expansion of Range 11 is planned for the foreseeable future.

The construction and operation of the ISBC at Range 61 and/or the MRF Range at Range 35 are not anticipated to result in any adverse effects to any known historic or pre-historic archaeological resources. Development would occur within the footprint of the existing range at that location which is significantly disturbed. JB MDL would be required to initiate Native American Consultation with the Delaware Nation and the Delaware Tribe of Indians. Until a Phase 1B survey is performed and Section 106 consultation is complete, the potential effects to cultural resources are unknown; however, implementation of Alternative 3 is not expected to result in any adverse effects to any culturally-sensitive resources.

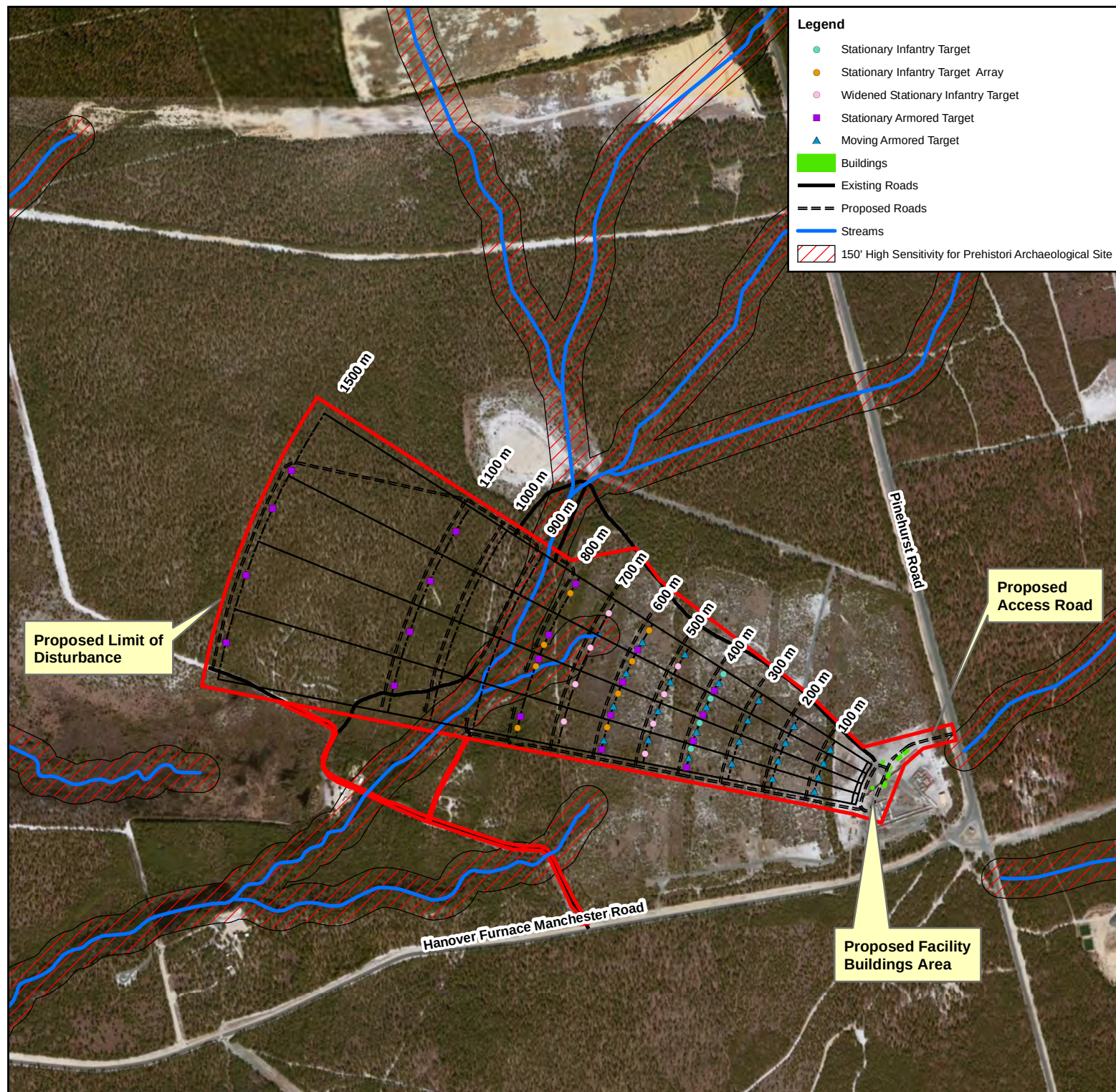
4.8.4 Mitigation Measures and Best Management Practices

Implementation of Alternative 1, 2 or 3 is not expected to have any significant impact to any known or suspected historic or archaeological resources, and no mitigation measures are required.

As a BMP, JB MDL would follow procedures outlined in the JB MDL ICRMP for construction monitoring and in the event of an inadvertent discovery of human remains or cultural items as defined by Native American Graves Protection and Repatriation Act (NAGPRA) during project construction:

- JB MDL will monitor construction activities using a qualified archaeologist in accordance with the standard operating procedures in Section 7.1.7 of the JB MDL ICRMP.
- In the event that archaeological deposits are encountered during any construction or excavation activities, the activity must stop and the JB MDL CRM must be notified. If bone is present within the deposit, the JB MDL CRM will ensure that a qualified professional accompanies him/her to the work site to assist in identification of the materials as human remains.

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- If human remains and associated objects have been determined to be Native American, the provisions of NAGPRA apply, and the regulations outlined in 43 CFR Part 10 must be followed. Immediately upon notification that Native American human remains and associated objects have been found on JB MDL, the cultural resources manager will ensure that police protection of the site will continue, and notify by phone, or in writing within one working day, HQ AMC/A7AN and the tribal councils of local Native American groups.



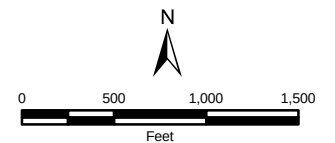
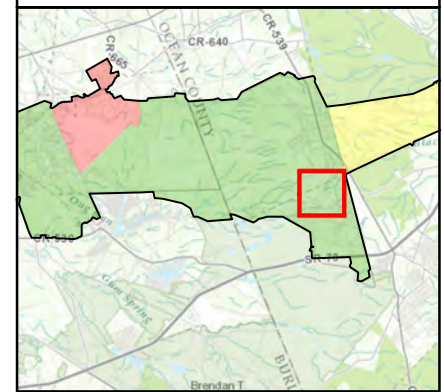
Alternative 1 Layout Potential High Sensitive Area for Prehistoric Archaeological Site

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL

Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



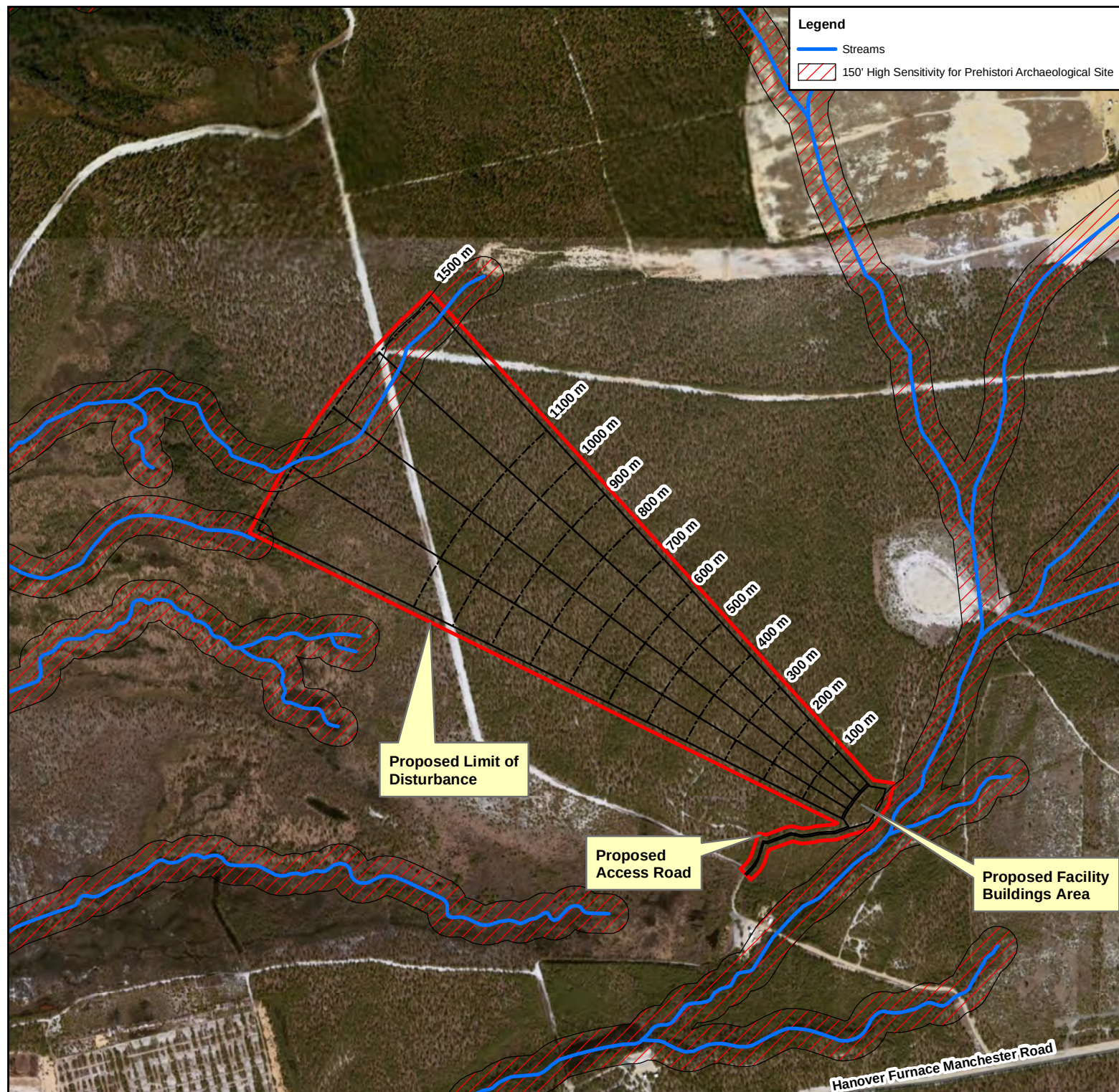
Map Ref. :

World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Streams from NJDEP
<http://www.nj.gov/dep/gis/stateshp.html>

Range Layout from pg. 12 of the 95% Submittal of the Multi-Purpose
Machine Gun Range at JBMDL by the U.S. Army Corps of
Engineers Louisville District

Figure 4-3a



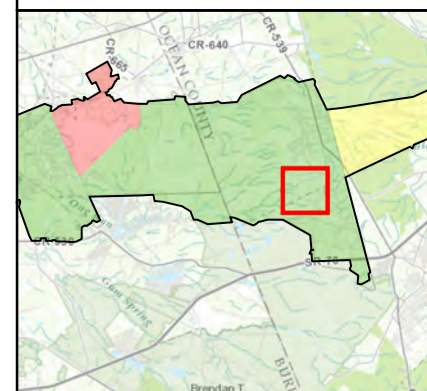
Alternative 2 Layout Potential High Sensitive Area for Prehistoric Archaeological Site

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL

Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
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Site Vicinity



Map Ref. :

World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Streams from NJDEP
<http://www.nj.gov/dep/gis/stateshp.html>

Figure 4-3b

4.9 Socioeconomic

4.9.1 Effects of Alternative 1 (Preferred Alternative)

No significant, adverse socioeconomic effects would be anticipated from the implementation of Alternative 1. The construction and operation of the proposed MPMGR would not significantly affect the regional population or economy. Implementation of Alternative 1 would have no disproportionate effects to any minority, low income, or socially-disadvantaged populations. Additionally, no direct adverse impacts to schools, children, housing or shops and services would be anticipated to occur.

No long-term new jobs are expected to be created as a result of the proposed MPMGR.

4.9.2 Effects of Alternative 2 (Competing Build Alternative)

No significant, adverse socioeconomic effects would be anticipated from the implementation of Alternative 2. The construction and operation of the proposed MPMGR would not significantly affect the regional population or economy. Implementation of Alternative 2 would have no disproportionate effects to any minority, low income, or socially-disadvantaged populations. Additionally, no direct adverse impacts to schools, children, housing or shops and services would be anticipated to occur.

No long-term new jobs are expected to be created as a result of the proposed MPMGR.

4.9.3 Effects of Alternative 3 (No Action Alternative)

No socioeconomic effects would result through the implementation of Alternative 3, as the construction and operation of the proposed MPMGR would not occur. Additionally, no new construction or expansion of Range 11 is planned for the foreseeable future.

The construction and operation of the ISBC at Range 61 and/or the MRF Range at Range 35 are not anticipated to result in any adverse socioeconomic effects to the region.

4.9.4 Mitigation Measures and Best Management Practices

No mitigation measures are required.

4.10 Environmental Justice

4.10.1 Effects of Alternative 1 (Preferred Alternative)

No disproportionate effects to minority populations, low-income populations, or Native American tribes would occur from the implementation of Alternative 1.

4.10.2 Effects of Alternative 2 (Competing Build Alternative)

No disproportionate effects to minority populations, low-income populations, or Native American tribes would occur due to the implementation of Alternative 2.

4.10.3 Effects of Alternative 3 (No Action Alternative)

No disproportionate effects to minority populations, low-income populations, or Native American tribes would occur from the implementation of Alternative 3, as the construction and operation of the proposed MPMGR would not occur. Additionally, no new construction or expansion of Range 11 is planned for the foreseeable future.

The construction and operation of the ISBC at Range 61 and/or the MRF Range at Range 35 are not anticipated to result in any adverse environmental justice effects to the regions minority of under-age populations.

4.10.4 Mitigation Measures

No mitigation measures would be required.

4.11 Infrastructure

4.11.1 Effects of Alternative 1 (Preferred Alternative)

4.11.1.1 Utility Infrastructure

No adverse construction or operational effects to electrical or data/communications infrastructure service would be anticipated from the implementation of Alternative 1. Construction of the proposed MPMGR components at the JB MDL Dix Range Area would require the connection/installation of electrical and communication services to the project study area. Construction of electrical lines would involve trenching along each firing lane in order install underground electric and communications lines to operate and obtain data from each target. Related effects to the site geology, topography, and soils as a result of the proposed utility installation were discussed in **Section 4.5.1**.

No adverse construction or operational effects to water supply or wastewater service would be anticipated due to the implementation of Alternative 1. The proximity and capacity of the nearby Times Square well is adequate to accommodate the water supply needs of Proposed Action. Wastewater services would be provided through the use of portable, contractor-serviced toilets.

4.11.1.2 Transportation Infrastructure

No construction-related effects to transportation infrastructure would be anticipated from the implementation of Alternative 1. The road network at JB MDL is adequate to handle the temporary increase in construction-related traffic that would occur during construction of the proposed MPMGR.

No adverse, operational-related effects to transportation infrastructure would be anticipated from the implementation of the Preferred Alternative, as the project study area and surrounding JB MDL Dix Range Area roadways are currently utilized for training purposes.

4.11.2 Effects of Alternative 2 (Competing Build Alternative)

4.11.2.1 Utility Infrastructure

No adverse construction or operational effects to electrical or data/communications infrastructure service would be anticipated from the implementation of Alternative 2. Construction of the proposed MPMGR components at the JB MDL Dix Range Area would require the connection/installation of electrical and communication services to the project study area. Construction of electrical lines would involve trenching along each firing lane in order to install underground electric and communications lines to operate and obtain data from each target. Related effects to the site geology, topography, and soils as a result of the proposed utility installation were discussed in **Section 4.5.1**.

No adverse construction or operational effects to water supply or wastewater service would be anticipated from the implementation of Alternative 2. The proximity and capacity of the nearby Times Square well is adequate to accommodate the water supply needs of Proposed Action. Wastewater services would be provided through the use of portable, contractor-serviced toilets.

4.11.2.2 Transportation Infrastructure

No construction-related effects to transportation infrastructure would be anticipated from the implementation of Alternative 2. The road network at JB MDL is adequate to handle the temporary increase in construction-related traffic that would occur during construction of the proposed MPMGR.

No adverse, operational-related effects to transportation infrastructure would be anticipated from the implementation of the Preferred Alternative, as the project study area and surrounding JB MDL Dix Range Area roadways are currently utilized for training purposes.

4.11.3 Effects of Alternative 3 (No Action Alternative)

4.11.2.3 Utility Infrastructure

No adverse effects to water, sewer, communications, and/or electrical service would be anticipated from the implementation of the No Action Alternative, as the construction and operation of the proposed MPMGR would not occur. No new construction or expansion of Range 11 is planned for the foreseeable future.

The construction and operation of the ISBC at Range 61 and/or the MRF Range at Range 35 are not anticipated to result in any adverse utility infrastructure effects.

4.11.2.2 Transportation Infrastructure

No adverse effects to transportation infrastructure would be anticipated due to implementation of Alternative 3, as the construction and operation of the proposed MPMGR would not occur. Additionally, the operation of adjacent training ranges within the JB MDL Dix Range Area would continue. Further, no new construction or expansion at Range 11 is planned for the foreseeable future.

The construction and operation of the ISBC at Range 61 and/or the MRF Range at Range 35 are not anticipated to result in any adverse transportation infrastructure effects.

4.11.4 Mitigation Measures

No adverse effects to either utility or transportation infrastructure requiring mitigation measures are anticipated through the implementation of either Alternative 1 or Alternative 2. JB MDL would implement the following measures to reduce any minor utility or transportation-related effects:

- As a BMP, and as required by law; prior to the performance of any activities involving digging, drilling, grading, or other subsurface disturbance activity, JB MDL would contact New Jersey One-Call. As an added measure, the JB MDL would review Range Area plans to identify any additional installation-owned underground utilities.

4.12 Hazardous and Toxic Materials/Wastes

4.12.1 Effects of Alternative 1 (Preferred Alternative)

The use of the range will result in the long-term deposition of bullets across the extent of the range, including Gaunts Brook. This is an unavoidable long-term less than significant effects. As was discussed for Water Resources, **Section 4.6**, the physical characteristics of Alternative 1 give an indication as to the likelihood of contaminant movement outside of the range area and into sensitive wetland areas. Large ranges such as the proposed tend to have contaminants dispersed over a wide area, making the management of the area more challenging than if the dispersal was over a smaller area. The soil characteristics of Alternative 1 indicate a high likelihood of contaminant movement out of the range. The acidic, porous, sandy soils in the project study area allow compounds to migrate easily into wetlands. However, the proposed action does not call for an overall increase of firing base wide. The U.S Army is in the process of switching from the traditional lead-containing training round to non-lead training rounds. The Army is beginning to use the non-lead 5.56mm M855A1 (Performance Enhanced Round) for fiscal year 2015 training. The 7.62mm M80A1 round is still in development and expected to become available for wider use in fiscal year 2017 (Nance 2014).

It is possible that inadvertent spills or leaks of fuel or other potentially hazardous materials that could adversely affect the environment could occur during construction activities. The contractor would also be required to immediately report spills to the JB MDL spill hotline/Fire Department. The potential for spills and or leaks would be minimized provided that the BMPs described in **Section 4.12.4** are implemented.

4.12.2 Effects of Alternative 2 (Competing Build Alternative)

Implementation of Alternative 2 would have similar long term less than significant hazardous and toxic materials/wastes effects as Alternative 1. The same BMPs as discussed in section 4.12.4 would be applicable for Alternative 2.

4.12.3 Effects of Alternative 3 (No Action Alternative)

Hazardous and toxic materials/wastes effects are not anticipated from the implementation of Alternative 3, as the construction and operation of the proposed MPMGR would not occur.

Additionally, the operation of adjacent training ranges within the JB MDL Dix Range Area would continue. Further, no new construction or expansion at Range 11 is planned for the foreseeable future.

4.12.4 Mitigation Measures and Best Management Practices

No hazardous and toxic materials/wastes effects requiring mitigation measures are anticipated.

JB MDL will initiate the following BMP to reduce the potential effects of lead distribution across the range area to less than significant levels:

- JB MDL would switch to using non-lead containing training ammunition when it becomes available and approved for widespread training use. It is expected that non-lead training round options will be available for the 5.56mm and 7.62mm rounds by the time the proposed MPMGR would be constructed. Additional non-lead-containing rounds would be phased in for use at the proposed MPMGR as they become available and approved by the U.S. Army for training use

BMPs shall be employed to prevent the effects of spilled materials:

- The JB MDL Dix Area operates under an SPCC Plan. This plan requires that the contractor and/or the JB MDL maintain equipment to prevent spills or leaks of fuel or other potentially hazardous materials that could adversely affect the environment. Vehicles and equipment would be properly maintained to prevent these leaks of hazardous materials in accordance with the JB MDL Dix Area SPCC Plan, and/or an SPCC Plan developed by the USAF and specifically designed for the proposed MPMGR.
- In the event of a spill during construction activities, the contractor and/or JB MDL personnel would immediately contact the local fire department. JB MDL personnel would contact state and local agencies as required for spills.

4.13 Public Safety

4.13.1 Effects of Alternative 1 (Preferred Alternative)

JB MDL conducted a Risk acceptance study of the proposed MPMGR at the Alternative 1 location to determine whether a “batwing” SDZ or a “cone” SDZ would be considered for the design and operation of the MPMGR. Based on that study, analysis of the “batwing” SDZ indicated that there was a minimal potential for ricochets leaving the installation boundary, however the overall risk was evaluated as “Low”. Based on that analysis, JB MDL has accepted the use of the “cone” SDZ and the risk level associated with the range at the Alternative 1 location. The implementation of Alternative 1 would not result in direct, long-term adverse effects to public health and safety as the proposed MPMGR and associated SDZ are located wholly within the boundaries of the JB MDL Dix Range Area, as shown on **Figure 4-4A**. The SDZ extends from the southeast portion of the proposed MPMGR in the Times Square area to the north and west and into the Range Impact Area down range of Ranges 28 through 85. Operation of the proposed MPMGR would involve both day and night-time firing approximately 3-4 days per week, and use of Range Road and Pinehurst Road and Ranges 39 and 39A would

require coordination with Range Control while the MPMGR is active to ensure safety within the SDZ.

The presence of UXO and/or MEC is a high probability within the Alternative 1 project study area. However, a very low potential for impacts to public health would be expected because a pre-construction UXO sweep would be performed as is standard DoD practice in such locations. JB MDL policy requires a UXO sweep prior to any digging in areas of high potential for UXO to be present (Fort Dix 2010).

4.13.2 Effects of Alternative 2 (Competing Build Alternative)

The implementation of Alternative 2 would not result in any direct, long-term adverse effects to public health and safety as the proposed MPMGR and associated SDZ are located wholly within the boundaries of the JB MDL Dix Range Area, as shown on **Figure 4-4B**. The SDZ extends from the southeast portion of the proposed MPMGR to the north and west into the Range Impact Area down range of Ranges 25 through 85. The SDZ under Alternative 2 encompasses the downrange target areas of Range 59A through Range 85. Operation of the proposed MPMGR would involve both day and night time firing approximately 3-4 days per week, and use of other ranges would require coordination with Range Control while the MPMGR is active to ensure safety within the SDZ.

The presence of UXO and/or MEC is a high probability within the Alternative 2 project study area. However, a very low potential for impacts to public health would be expected because a pre-construction UXO sweep would be performed as is standard DoD practice in such locations. JB MDL policy requires a UXO sweep prior to any digging in areas of high potential for UXO to be present (Fort Dix 2010).

4.13.2 Effects of Alternative 3 (No Action Alternative)

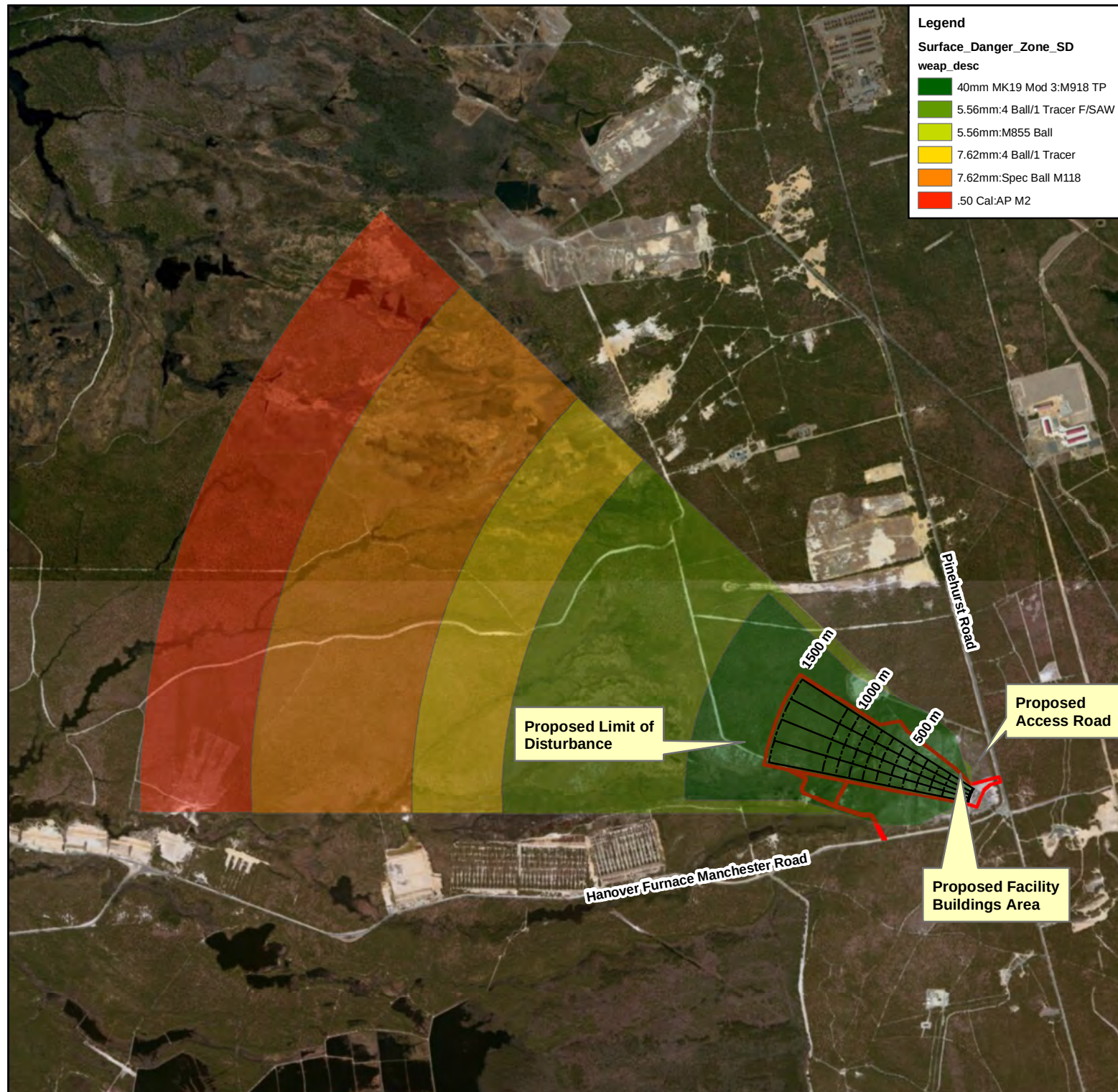
Implementation of Alternative 3; the No Action Alternative, would result in no public safety-related effects.

4.13.4 Mitigation Measures and Best Management Practices

Implementation of Alternative 1 or Alternative 2 would not result in any significant long-term adverse effects requiring specific mitigation measures. Although the presence of UXO and/or MEC is a high probability within both the Alternative 1 and Alternative 2 project study areas, a very low potential for impacts to public health would be expected because a pre-construction UXO sweep would be performed as is standard DoD practice in such locations. JB MDL policy requires a UXO sweep prior to any digging in areas of high potential for UXO to be present. The SDZ for both the Alternative 1 and Alternative 2 locations encompasses Ranges 39 and 39A and the downrange portions of Ranges 59A through 85. Use of these ranges would require scheduling and coordination with JB MDL Range Control while the MPMGR is in use. JB MDL would implement the following BMPs to reduce the potential safety danger associated with construction and encountering UXO or MECs and SDZ concerns:

- JB MDL policy requires a UXO sweep prior to any digging in areas of high potential for UXO to be present. As a mitigating measure to prevent the long-term adverse effects of UXO and/or MEC a MEC/UXO survey/sweep would be conducted.

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- Pursuant to the Air Land Sea Application Center 2001 document, Multiservice Procedures for Unexploded Explosive Ordnance Operations, the JB MDL shall execute UXO support activities.
 - UXO support activities during construction activities may require only UXO safety support or a complete UXO subsurface clearance response, depending on an assessment of the probability of encountering UXO and the level of confidence associated with the determination. The level of effort for construction support is site/task specific and would be determined by the project team in coordination with JB MDL.
 - A UXO sweep of the project study area is suggested prior to any disturbance of the ground surface or soils.
 - All users of the range facilities at JB MDL would schedule usage of Ranges 39 and 39A as well as the downrange portions of Ranges 47A through 85 with JB MDL Range Control Officer to ascertain whether or not the MPMGR is in operation and whether or not use of these ranges is safe.



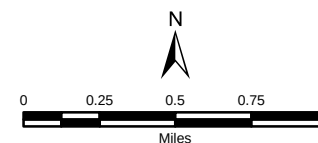
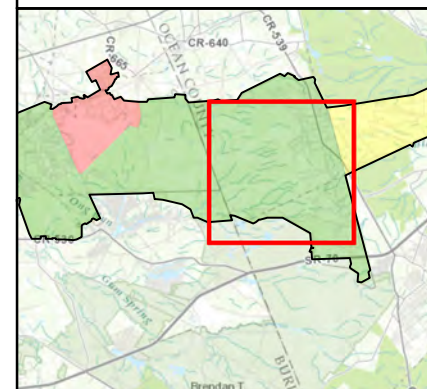
Alternative 1 Layout Proposed MPMGR Cone Surface Danger Zone

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL

Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



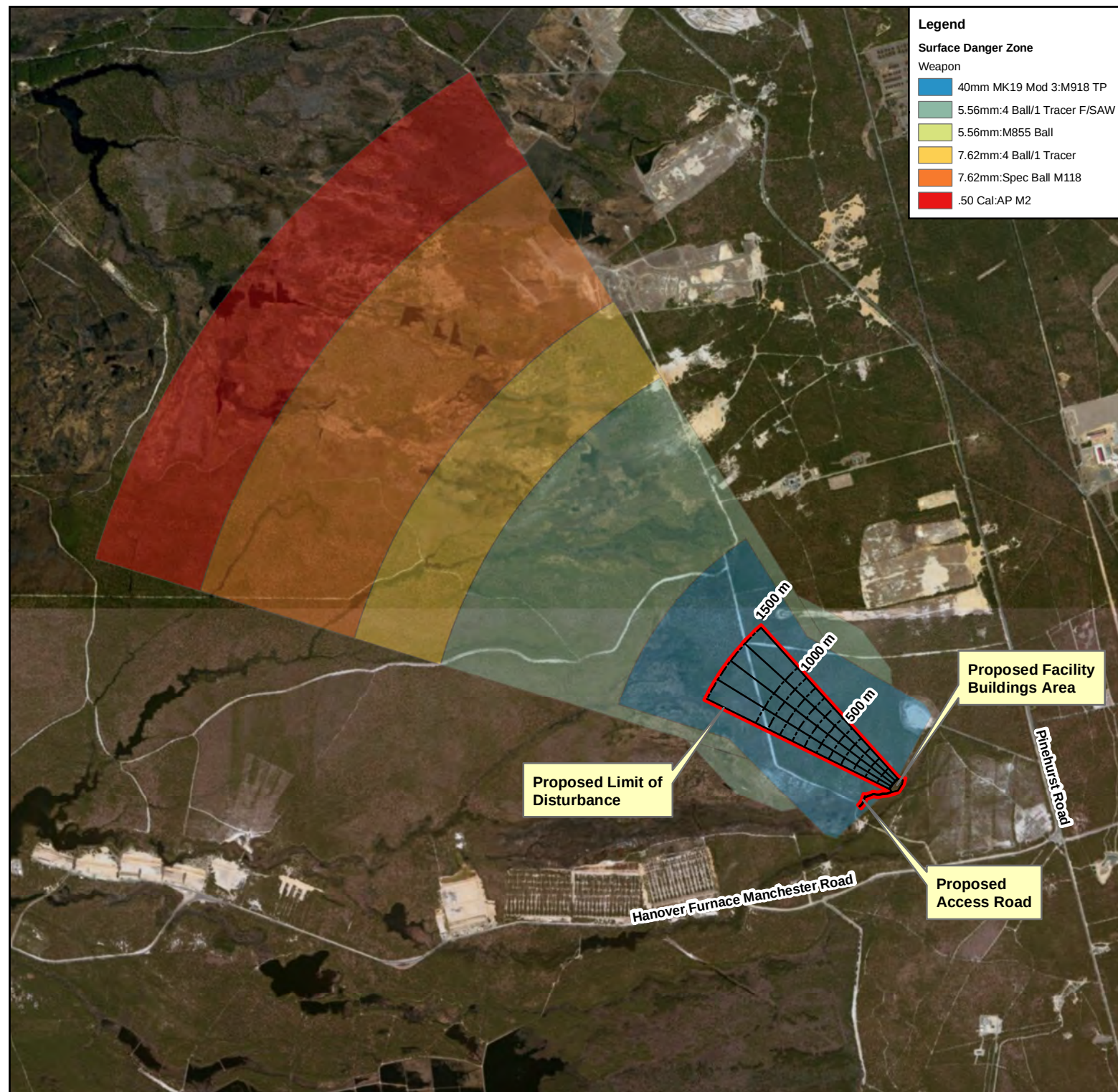
Map Ref. :

World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Cone Surface Danger Zones from DA PAM 385-63

Range Layout from pg. 12 of the 95% Submittal of the Multi-Purpose Machine Gun Range at JBMDL by the U.S. Army Corps of Engineers Louisville District

Figure 4-4a



Legend

Surface Danger Zone

Weapon

- 40mm MK19 Mod 3:M918 TP
- 5.56mm:4 Ball/1 Tracer F/SAW
- 5.56mm:M855 Ball
- 7.62mm:4 Ball/1 Tracer
- 7.62mm:Spec Ball M118
- .50 Cal:AP M2

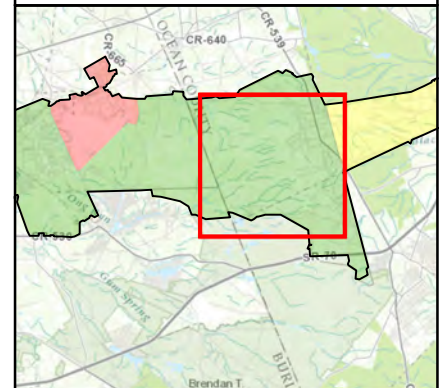
Alternative 2 Layout Proposed MPMGR Cone Surface Danger Zone

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Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



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Miles

Map Ref. :
World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>
Cone Surface Danger Zones from DA PAM 385-63

Figure 4-4b

4.14 Cumulative Effects

This section addresses the cumulative effects of the Preferred Alternative. Cumulative effects are defined by the CEQ in 40 CFR 1508.7 as:

“Impacts on the environment which result 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 undertakes such other actions.”

CEQ regulations also state that addressing cumulative effects should not be limited to those from actual proposals, but must include effects from actions being contemplated or that are reasonably foreseeable.

Adverse effects likely to result from the implementation of the Proposed Action under Alternative 1, as identified in **Sections 4.1** through **4.13**, include short-term air quality, noise, soil erosion effects, and HTMW, in addition to long-term surface water, biological, and cultural resources effects. However, these effects can be reduced to less than significant levels provided the mitigation measures described throughout **Section 4.0** are implemented.

The net positive effects likely to result from implementation of the Proposed Action under Alternative 1, as identified in **Sections 4.1** through **4.13**, include positive effects to the regional economy.

4.14.1 Projects in the Vicinity of the Project Study Area

At the present time, the following potential future project(s) in the immediate vicinity (within 1 mile) of the proposed MPMGR have been identified:

- Construction of an ISBC at Range 61
- Construction of a Multiple Record Fire (MRF) Range at Range 35
- Construction of a new fire station in the Times Square area

Construction of the ISBC at Range 61 would involve removal of existing targetry at Range 61 and re-configuration of the range and targetry into an ISBC. Construction would occur within the existing foot-print of Range 61.

Construction of the MRF at Range 35 would involve removal of existing targetry at Range 35 and re-configuration of the range and targetry into an MRF. Construction would occur within the existing foot-print of Range 35.

Construction of the new fire station in the Times Square area would involve the clearing of existing vegetation, construction of the facility, utilities, and appurtenances. Placement of a new fire station in the range area would provide faster, more reliable fire fighting readiness for the range area.

According to the Manchester Township Planning Board, only one project is currently underway within the vicinity of the project study area. A former Exxon service station, located at the State Route 70 Lakehurst traffic circle, is currently being taken down and reconstructed into another

commercial property containing an STS Tire Center® and a Dunkin' Donuts®. The current development is located approximately 5.5 miles east of the proposed MPMGR, at 1200 State Route 70 (Manchester Township 2013).

No further development projects are approved or proposed within the vicinity of the project study area (Manchester Township 2013).

The proposed commercial development would contribute to adverse traffic and air quality effects. Vehicular traffic would increase in the area during construction activities, resulting in short-term transportation effects. In addition, an increase in mobile source emissions would be anticipated to result in a short-term increase due to the proposed development.

4.14.3 Cumulative Effects Associated with the Proposed MPMGR at JB MDL Dix Range Area

4.14.3.1 Alternative 1 (Preferred Build Alternative)

Land use

Implementation of Alternative 1 would result in the alteration of approximately 178 acres of currently forested land that includes 6.12 acres of wetlands 61 acres of 100-year floodplain, and potential habitat for 19 state-listed species. Although construction of the MPMGR at Alternative 1 is consistent with the training activities conducted at JB MDL, the NJDEP has expressed concern regarding the proposed land use changes as it would affect wetlands, stormwater flow into Gaunts Brook, and special status species habitats. Implementation of Alternative 1 would result in the incremental conversion of existing forested and wetland areas to active range use.

Construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square involves construction and training operations solely within the footprint of the existing operations range operators and are consistent with the land use designation of the installation.

Although the construction and operation of a MPMGR at Alternative 1 is within the land use designation of the installation; implementation of Alternative 1 would contribute to an incremental conversion of approximately 178 acres of forested land to an open-maintained range area.

Air Space

No cumulative adverse air space effects are anticipated as a result of the construction or operation of the MPMGR at the Alternative 1 location, the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square.

Air Quality

Implementation of Alternative 1 would result in direct, short-term, non-significant adverse effects associated with fugitive dust emissions caused by construction activities. Application of BMPs and dust control measures during construction activities would serve to further reduce these

effects and would not contribute to cumulative effects. No long-term effects to air quality are anticipated from the operation of the MPMGR.

Construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square would result in direct, short-term, adverse effects associated with fugitive dust emissions caused by construction activities. These effects would not be regarded as significant.

Overall, no adverse cumulative air quality impacts would be anticipated through implementation of Alternative 1.

Noise

No significant short-term or long-term adverse cumulative noise effects would be anticipated as a result of the operation of the MPMGR at the Alternative 1 location. Although 1,418 acres additional off-post acres would fall within Noise Zone II and includes 8 new sensitive receptors, the noise effects would not be considered significant. These sensitive receptors are currently located on the periphery of the current installation Noise Zone II and are currently exposed to noise levels very close to Noise Zone II levels from existing training activities at JB MDL and are exposed to noise generated at a nearby privately operated gun club with existing skeet and small arms firing ranges. The incremental increase in noise is not expected to generate any additional noise complaints.

Operation of the ISBC at Range 61 and/or the construction and operation of the MRF Range at Range 35 are not anticipated to contribute to cumulative noise effects as Range 61 and Range 35 are currently used for both small arms and large arms training and have existing noise contour signatures. Construction and operation of the new fire station at Times Square would not result in any significant noise generating activities.

Overall, implementation of Alternative 1 would result in an incremental increase in training noise that is generated in the off-post areas immediately to the south and southeastern part of the Dix Range Area.

Geology, Topography, Soils

Construction of the MPMGR at the Alternative 1 location would require clearing of existing vegetation, removal of stumps, and grading across the 179-acre site. These activities have the potential to create soil erosion during construction and during maintenance of the range (e.g. potential rutting and erosion during mowing activities). Implementation of erosion and sedimentation control measures during construction would reduce the construction-related soil erosion effects during construction. Planting of native vegetation and proper maintenance techniques should also reduce potential post-construction erosion issues. Overall, construction and operation of the MPMGR at the Alternative 1 location is not expected to result in any cumulative soil, geologic, or topographic effects.

Construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not expected to have significant short-term construction-related soil erosion issues. Implementation of erosion and sedimentation control measures during construction would reduce the construction-related soil erosion effects during construction. Planting of native

vegetation and proper maintenance techniques should also reduce potential post-construction erosion issues. Construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not expected to result in any cumulative soil, geologic, or topographic effects.

Through the implementation of BMPs to reduce construction and operation-related soil erosion, Alternative 1 is not expected to result in any adverse cumulative impacts to regional geology, topography, or soils.

Water Resources

Construction of the MPMGR at the Alternative 1 location would affect 6.12 acres of wetlands. Correspondence received from the NJDEP Division of Land Use Regulation during the IICEP process states that a Freshwater Wetland permit is not required provided there is no soil disturbance (e.g. mechanized soil disturbance, rutting, surface grading, or leveling) in the wetland area and/or tree cutting in the wetland area occurs aboveground and does not involve stump removal. No cumulative wetland effects would be anticipated due to implementation of Alternative 1 provided prescribed BMPs are followed.

Construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not expected to affect any wetland areas, thus would not contribute to any adverse cumulative effects to wetland resources.

Construction of the MPMGR at the Alternative 1 location would involve construction within 61 acres of floodplain; however no permanent features other than service roads, underground utilities, and target placements would be placed in the floodplain. BMPs to reduce effects associated with construction in a flood plain (e.g. increased stormwater runoff, increased potential for sedimentation) would be established to further reduce effects. With proper stormwater management, no cumulative flood plain or surface water effects would be anticipated from the implementation of Alternative 1.

Construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not expected to affect any flood plain areas or contribute to increased surface water sedimentation and would not contribute to cumulative effects to these resources.

Overall, Implementation of Alternative 1 would result in the incremental change in wetland type present, as the current forested wetland would be converted to a partially-maintained open field wetland.

Biological Resources

Effects to Federal and State-listed threatened and endangered species would be managed to non-significant levels through consultation with the USFWS and the NJDEP to develop a mutually acceptable plan to minimize effects to these species. However, the incremental removal of potential habitat for special-status species may be viewed as contributing to the overall loss of pinelands habitat, and may contribute to cumulative effects to state-listed species.

No adverse, cumulative, biological resource effects would be anticipated as a result of the construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square area since these projects would involve construction and training in already significantly disturbed areas.

Cultural Resources

Construction of the MPMGR at the Alternative 1 location is not expected to result in any adverse effects to any culturally-sensitive resources. 18.31 acres of the Alternative 1 site contains areas that are potentially high sensitive areas for prehistoric archaeological resources based on predictive assessments and models, the overall likelihood of the presence of such resources is considered low. Through Section 106 consultation, the NJ HPO has concurred that implementation of Alternative 1 would not result in any impact to known archaeological or historically-significant resources. As such, no cumulative impacts to cultural resources are expected from the implementation of Alternative 1.

Construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not expected to result in any impact to historic or pre-historic archaeological resources. No adverse cumulative effects to cultural resources are expected.

Socioeconomics

Implementation of Alternative 1 would not result in any positive or adverse effects to the regional economy. Any incremental cumulative effects to the local economy would not be significant and would not necessarily provide any noticeable impact to the regional economy from a cumulative perspective.

Construction of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square would not provide any noticeable impact to the regional economy from a cumulative perspective.

Environmental Justice

Implementation of Alternative 1 would not necessarily provide any noticeable impact to the regional minority or low income populations from a cumulative perspective.

Construction of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square would not provide any noticeable impact to the regional minority or low income populations from a cumulative perspective.

Infrastructure

Implementation of Alternative 1 would not result in any cumulative effects to infrastructure. A minor incremental increase in vehicular traffic on Range Road may be realized, but this increase could be easily handled by the existing road capacity.

Construction of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square may result in less than significant effects and no cumulative effects to infrastructure. A minor increase in vehicular traffic on Range Road may be realized, but these increases could be easily handled by the existing road capacity.

Hazardous and Toxic Materials

No cumulative effects related to HTRW are anticipated as a result of the implementation of Alternative 1.

Construction of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not expected to contribute to any cumulative HTRW effects.

Public Safety

No cumulative effects related to public safety are anticipated as a result of the implementation of Alternative 1.

Construction of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 are not expected to contribute to any cumulative public safety effects.

Construction of the new fire station in the Times Square area would result in positive cumulative public safety impacts by providing more reliable firefighting capabilities in the currently underserved, remote portions of the installation.

4.14.3.2 Alternative 2 (Competing Build Alternative)

Land use

Implementation of Alternative 2 would result in the alteration of approximately 160 acres of currently forested land that includes 23.70 acres of wetlands 32.83 acres of 100-year floodplain, and potential habitat for 19 state-listed species. Although construction of the MPMGR at Alternative 1 is consistent with the training activities conducted at JB MDL, the NJDEP has expressed concern regarding the proposed land use changes as it would affect wetlands, stormwater flow into Gaunts Brook, and special status species habitats. Implementation of Alternative 2 would result in the incremental conversion of existing forested and wetland areas to active range use.

Construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square involves construction and training operations solely within the footprint of the existing operations range operators and are consistent with the land use designation of the installation.

Although the construction and operation of a MPMGR at Alternative 2 is within the land use designation of the installation; implementation of Alternative 2 would contribute to an incremental conversion of approximately 178 acres of forested land to an open-maintained range area.

Air Space

No cumulative adverse air space effects are anticipated as a result of the construction or operation of the MPMGR at the Alternative 2 location, the Construction of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square.

Air Quality

Implementation of Alternative 2 in would result in direct, short-term, non-significant adverse effects associated with fugitive dust emissions caused by construction activities. These effects would be further reduced through the application of BMPs and dust control measures during construction activities and would not contribute to cumulative effects.

Construction of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square would result in direct, short-term, non-significant adverse effects associated with fugitive dust emissions caused by construction activities. These effects would be further reduced through the application of BMPs and dust control measures during construction activities and would not contribute to cumulative effects.

Overall, no adverse cumulative air quality impacts would be anticipated through implementation of Alternative 2.

Noise

No significant short-term or long-term adverse cumulative noise effects would be anticipated as a result of the operation of the MPMGR at the Alternative 2 location.

Operation of the ISBC at Range 61 and/or the construction and operation of the MRF Range at Range 35 are not anticipated to contribute to cumulative noise effects as Range 61 and Range 35 are currently used for both small arms and large arms training and have existing noise contour signatures.

Overall, implementation of Alternative 2 would result in an incremental increase in training noise that is generated in the southeastern part of the Dix Range Area.

Geology, Topography, Soils

Construction of the MPMGR at the Alternative 2 location would require clearing of existing vegetation, removal of stumps, and grading across the 160-acre site. These activities have the potential to create soil erosion during construction and during maintenance of the range (e.g. potential rutting and erosion during mowing activities). Implementation of erosion and sedimentation control measures during construction would reduce the construction-related soil erosion effects during construction. Planting of native vegetation and proper maintenance techniques should also reduce potential post-construction erosion issues. Overall, construction and operation of the MPMGR at the Alternative 2 location is not expected to result in any cumulative soil, geologic, or topographic effects.

Construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are expected to have no significant short-term construction-related soil erosion issues. Implementation of erosion and sedimentation control measures during construction would reduce the construction-related soil erosion effects during construction. Planting of native vegetation and proper maintenance techniques should also reduce potential post-construction erosion issues. Construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not expected to result in any cumulative soil, geologic, or topographic effects.

Through the implementation of BMPs to reduce construction and operation-related soil erosion, Alternative 2 is not expected to result in any adverse cumulative impacts to regional geology, topography, or soils.

Water Resources

Construction of the MPMGR at the Alternative 2 location would affect 23.70 acres of wetlands. Correspondence received from the NJDEP Division of Land Use Regulation during the ILCEP process states that a Freshwater Wetland permit is not required provided there is no soil disturbance (e.g. mechanized soil disturbance, rutting, surface grading, or leveling) in the wetland area and/or tree cutting in the wetland area occurs aboveground and does not involve stump removal. No cumulative wetland effects would be anticipated due to implementation of Alternative 2 provided prescribed BMPs are followed.

Construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not expected to affect any wetland areas, thus would not contribute to any adverse cumulative effects to wetland resources.

Construction of the MPMGR at the Alternative 2 location would involve construction within 32.83 acres of floodplain. BMPs to reduce effects associated with construction in a flood plain (e.g. increased stormwater runoff, increased potential for sedimentation) would be established to reduce effects to less than significant levels. No cumulative floodplain or surface water effects would be anticipated due to implementation of Alternative 2.

Construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not expected to affect any flood plain areas or contribute to increased surface water sedimentation and would not contribute to cumulative effects to these resources.

Overall, Implementation of Alternative 1 would result in the incremental change in wetland type present, as the current forested wetland would be converted to a partially-maintained open field wetland.

Biological Resources

Effects to Federal and State-listed threatened and endangered species would be managed to non-significant levels through consultation with the USFWS and the NJDEP to develop a mutually acceptable plan to minimize effects to these species. However, the incremental

removal of potential habitat for special-status species may be viewed as contributing to the overall loss of pinelands habitat, and may contribute to cumulative effects to state-listed species.

No adverse, cumulative, biological resource effects would be anticipated as a result of the construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are since these projects would involve construction and training in already significantly disturbed areas.

Cultural Resources

Construction of the MPMGR at the Alternative 2 location is not expected to result in any impact to historic or prehistoric archaeological resources. 12.67 acres of the Alternative 2 site contains areas that are potentially high sensitive areas for prehistoric archaeological resources based on predictive assessments and models, the overall likelihood of the presence of such resources is considered low. Through Section 106 consultation, the NJ HPO has concurred that implementation of Alternative 1 would not result in any impact to known archaeological or historically-significant resources. As such, no cumulative impacts to cultural resources are expected from the implementation of Alternative 2.

Construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not expected to result in any impact to historic or pre-historic archaeological resources. No adverse cumulative effects to cultural resources are expected.

Socioeconomics

Implementation of Alternative 2 would not result in any positive or adverse effects to the regional economy. Any incremental cumulative effects to the local economy would not be significant and would not necessarily provide any noticeable impact to the regional economy from a cumulative perspective.

Construction of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square would not provide any noticeable impact to the regional economy from a cumulative perspective.

Environmental Justice

Implementation of Alternative 2 would not necessarily provide any noticeable impact to the regional minority or low income populations from a cumulative perspective.

Construction of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square would not provide any noticeable impact to the regional minority or low income populations from a cumulative perspective.

Infrastructure

Implementation of Alternative 2 would not result in any cumulative effects to infrastructure. A minor increase in vehicular traffic on Range Road may be realized, but this increase could be easily handled by the existing road capacity.

Construction of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square may result in less than significant effects and no cumulative effects to infrastructure. A minor increase in vehicular traffic on Range Road may be realized, but these increases could be easily handled by the existing road capacity.

Hazardous and Toxic Materials

No cumulative effects related to HTRW are anticipated as a result of the implementation of Alternative 2.

Construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not expected to contribute to any cumulative HTRW effects.

Public Safety

No cumulative effects related to public safety are anticipated as a result of the implementation of Alternative 2.

Construction of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 are not expected to contribute to any cumulative public safety effects.

Construction of the new fire station in the Times Square area would result in positive cumulative public safety impacts by providing more reliable firefighting capabilities in the currently underserved, remote portions of the installation.

4.14.3.3 Alternative 3 (No Action Alternative)

Under the No-Action Alternative, training would continue as under current conditions within the project study area and at the existing MPMGR at Range 11. In addition, JB MDL would still plan to develop the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and the construction and operation of the fire station at Times Square.

No cumulative environmental, cultural, or socioeconomic effects would occur as it relates to the current training at Range 11; therefore, no cumulative effects would occur related to the use of Range 11 under the No Action Alternative.

Certain cumulative effects would be expected from the construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square as detailed below.

Land use

ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and the construction and operation of the fire station at Times Square would involve construction and training operations solely within the footprint of the existing operations at Range 61 and Range 35 and would not contribute to any adverse cumulative land use effects.

Air Space

No cumulative adverse air space effects are anticipated as a result of the construction or operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square.

Air Quality

Construction of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square would result in direct, short-term, adverse effects associated with fugitive dust emissions caused by construction activities. These effects would be mitigated to less than significant levels through the application of BMPs and dust control measures during construction activities and would not contribute to cumulative effects.

Noise

Operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not anticipated to contribute to cumulative noise effects as Range 61 and Range 35 are currently used for both small arms and large arms training and has an existing noise contour signature.

Geology, Topography, Soils

Construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not expected to have significant short-term construction-related soil erosion issues. Implementation of erosion and sedimentation control measures during construction would reduce the construction-related soil erosion effects during construction. Planting of native vegetation and proper maintenance techniques should also reduce potential post-construction erosion issues. Overall, construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not expected to result in any cumulative soil, geologic, or topographic effects.

Water Resources

Construction of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not expected to affect any wetland areas, thus would not contribute to any adverse cumulative effects to wetland resources.

Construction of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not expected to affect any floodplain areas or contribute to increased surface water sedimentation and would not contribute to cumulative effects to these resources.

Biological Resources

No adverse, cumulative, biological resource effects would be anticipated as a result of the construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are since these projects would involve construction and training in already significantly disturbed areas.

Cultural Resources

Although construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not expected to result in any impact to historic or prehistoric archaeological resources; until a Phase 1B survey is performed and Section 106 consultation is complete, the potential effects to cultural resources are unknown. No adverse cumulative effects to cultural resources are expected.

Socioeconomics

Construction of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square would not provide any noticeable impact to the regional economy from a cumulative perspective.

Environmental Justice

Construction of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square would not provide any noticeable impact to the regional minority or low income populations from a cumulative perspective.

Infrastructure

Construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square may result in less than significant effects and no cumulative effects to infrastructure. A minor increase in vehicular traffic on Range Road may be realized, but these increases could be easily handled by the existing road capacity.

Hazardous and Toxic Materials

Construction and operation of the ISBC at Range 61, the construction and operation of the MRF Range at Range 35 and/or the construction and operation of the fire station at Times Square are not expected to contribute to any cumulative HTRW effects.

Public Safety

Construction and operation of the ISBC at Range 61 and/or the construction and operation of the MRF Range at Range 35 are not expected to contribute to any cumulative public safety effects.

Construction of the new fire station in the Times Square area would result in positive cumulative public safety impacts by providing more reliable firefighting capabilities in the currently underserved, remote portions of the installation.

5.0 Comparison of Alternatives and Conclusions

Implementation of Alternative 1 (Preferred Alternative) would result in the following anticipated effects:

- No significant long term land use effects.
- No positive or adverse effects on air space use.
- Short-term non-significant adverse air quality effects from increased mobile emissions and fugitive dust during construction.
- Non- significant, short-term adverse noise effects from construction-related activities and associated equipment.
- Non-significant, long-term adverse noise effects from the increase in small arms noise associated with the operation of the proposed MPMGR.
- Non-significant, short-term adverse effects to geology, topography, and soils from potential soil erosion during construction.
- Non- significant, long-term adverse operational effects to geology, topography, and soils from the loss of vegetation and potential increased soil erosion during training and maintenance.
- Non-significant, long-term adverse effect to water resources associated with clearing and development within 6.12 acres of wetland and construction with 61 acres of 100-year floodplain which increases the potential effects of runoff and sedimentation to Gaunts Brook and associated wetlands. These effects would be further reduced to through implementation of BMPs.
- Non-significant, short-term and long-term adverse effects to biological resources and State-listed species from loss of habitat, and the displacement of wildlife.
- Potential minor, short-term adverse effects to cultural resources related to development within an area highly-sensitive to the presence of archaeological sites.
- No positive or adverse socioeconomic effects associated with the construction and operation of the proposed MPMGR.
- No positive or adverse environmental justice effects associated with the construction and operation of the proposed MPMGR.
- Long-term deposition of bullets across the extent of the range and into sensitive wetland areas could result in long-term HTRW impact. However, introduction and use of lead-bullet alternatives is planned, as such no significant HTRW effects are expected..
- Short-term HTRW effects from potential spills and leaks of petroleum, oils and/or lubricants from construction equipment. These effects would not be regarded as significant and would be further reduced through implementation of BMPs.
- Potential non-significant short-term adverse effects to public safety from potential exposure to lead in soils, as well as UXO and MEC during construction activities. These effects would be further reduced through implementation of BMPs.
- No adverse effect to public safety associated with the MPMGR Surface Danger Zone.

Implementation of Alternative 2 (Competing Build Alternative) would result in the following anticipated effects:

- No significant long term land use effects.
- No positive or adverse effects on air space use.
- Short-term non-significant adverse air quality effects from increased mobile emissions and fugitive dust during construction.
- Non- significant, short-term adverse noise effects from construction-related activities and associated equipment.
- Non-significant, long-term adverse noise effects from the increase in small arms noise associated with the operation of the proposed MPMGR.
- Non-significant, short-term adverse effects to geology, topography, and soils from potential soil erosion during construction.
- Non- significant, long-term adverse operational effects to geology, topography, and soils from the loss of vegetation and potential increased soil erosion during training and maintenance.
- Non-significant, long-term adverse effect to water resources associated with clearing and development within 23.70 acres of wetland and construction with 32.83 acres of 100-year floodplain which increases the potential effects of runoff and sedimentation to Gaunts Brook and associated wetlands. These effects would be further reduced through implementation of BMPs.
- Non-significant, short-term and long-term adverse effects to biological resources and State-listed species from loss of habitat, and the displacement of wildlife.
- Potential minor, short-term adverse effects to cultural resources related to development within an area highly-sensitive to the presence of archaeological sites.
- No positive or adverse socioeconomic effects associated with the construction and operation of the proposed MPMGR.
- No positive or adverse environmental justice effects associated with the construction and operation of the proposed MPMGR.
- Long-term deposition of bullets across the extent of the range and into sensitive wetland areas could result in long-term HTRW impact. However, introduction and use of lead-bullet alternatives is planned, as such no significant HTRW effects are expected..
- Short-term HTRW effects from potential spills and leaks of petroleum, oils and/or lubricants from construction equipment. These effects would not be regarded as significant and would be further reduced through implementation of BMPs.
- Potential non-significant short-term adverse effects to public safety from potential exposure to lead in soils, as well as UXO and MEC during construction activities. These effects would be further reduced through implementation of BMPs.
- No adverse effect to public safety associated with the MPMGR Surface Danger Zone.

Implementation of Alternative 3 (No Action Alternative) would not result in any positive or adverse effects.

Based on the analysis presented in this EA, Alternative 1 is the Preferred Alternative for the Proposed Action. Alternative 1 was found to satisfy the purpose and need for the Proposed Action. The No Action Alternative was found to not satisfy the purpose and need for the Proposed Action. The implementation of Alternative 2 would negatively affect the training of live-fire, marksmanship skills with machine guns and readiness of units training for future global combat operations within the JB MDL, and does not meet the requirements set by the ARRM.

The evaluation performed within the EA concludes that no significant effect to the physical environment; water quality; groundwater; air quality; biological resources, including vegetation, wildlife, wildlife habitat, plant communities, protected species, and wetlands; land use, socioeconomic environment; noise; HTMW; cultural resources; infrastructure; and human health and safety, including environmental justice and children's health and safety risks would be anticipated as a result of the implementation of the Preferred Alternative, provided that BMPs discussed in **Section 4.0** are implemented (see **Table 5-1**).

This analysis determines that an Environmental Impact Statement (EIS) is not necessary for the implementation of Alternative 1 and that a FONSI is appropriate. Because the project would involve construction in wetland areas a FONPA is also required.

TABLE 5-1
Summary Descriptions of Effects
Associated with Alternatives 1, 2 and 3 at the Project Study Areas

Resource Area	Alternative 1 Preferred Alternative		Alternative 2 Competing Build Alternative		Alternative 3 No Action Alternative	
	Const.	Op.	Const.	Op.	Const.	Op.
Land Use	●	●	●	●	□	○
Air Space	□	○	□	○	□	○
Air Quality	■	○	■	○	□	○
Noise	■	●	■	●	□	○
Topography, Geology, and Soils	■	●	●	●	□	○
Water Resources	■	●	■	●	□	○
Biological Resources	●	●	●	●	□	○
Cultural Resources	■	○	■	○	□	○
Socioeconomics	□	○	□	○	□	○
Environmental Justice	□	○	□	○	□	○
Infrastructure	--	--	--	--	--	--
Utilities Infrastructure	□	○	□	○	--	--
Transportation Infrastructure	□	○	□	○	--	--
Hazardous and Toxic Materials/Wastes (HTMW)	■	●	■	●	□	○
Public Safety	■	●	■	●	□	○

Key to Table 5-1 Symbols

Significant Adverse Effect	Non- Significant Adverse Effect	No Effect	Non- Significant Positive Effect	Significant Positive Effect
Short-Term Effect				
■	■	□	■	△
Long-Term Effect				
●	●	○	●	▲

6.0 References

16 USC 470	Title 16 United States Code (USC) Part 470, <i>et. seq.</i> National Historic Preservation Act of 1969.
16 USC 470aa	Title 16 United States Code (USC) Part 470aa, <i>et. seq.</i> Archaeological Resources Protection Act of 1979.
16 USC 668-668c	Title 16 United States Code (USC) Chapter 5A – <i>Bald and Golden Eagle Protection Act of 1940.</i>
16 USC 703-712	Title 16 United States Code (USC) Chapter 7 – <i>Migratory Bird and Treaty Act of 1918, as amended.</i>
16 USC 1271 et seq.	Title 16 United States Code (USC) Chapter 28 – <i>Wild and Scenic River.</i>
16 USC 1531 et seq.	Title 16 United States Code (USC) Chapter 33 – <i>Endangered Species.</i>
32 CFR 989	Title 32 Code of Federal Regulations (CFR) Part 989 - National Defense, Chapter T – Department of the Air Force, <i>Environmental Impact Analysis Process.</i>
40 CFR 50-87	Title 40 Code of Federal Regulations (CFR) Parts 50-87 – President's Council on Environmental Quality – <i>Environmental Protection Agency.</i>
40 CFR 1500-1508	Title 40 Code of Federal Regulations (CFR) Sections 1500-1508. Council on Environmental Quality - <i>Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act.</i>
42 USC 1996	Title 42 United States Code (USC) Parts 196 and 1996a, American Indian Religious Freedom Act. 11 August 1978.
42 USC 4321-4347	Title 42 United States Code (USC) Sections 4321-4347. National Environmental Policy Act of 1969.
42 USC 7401	Title 42 United States Code (USC) Chapter 85 – <i>Congressional Findings and Declaration of Purpose.</i>

AEF 2011	American Eagle Foundation (AEF). 2011. Eagle Survival – Habitat or Environment. Prepared by the American Bald Eagle: Recovery From Near Extinction, a resource unit originally developed by The Learning Technology Center of Vanderbilt University. Revised by Bob Hatcher of the AEF. http://www.eagles.org/vu-study/survival/habitat-or-environment.php . 2011.
AFI 32-1021	Air Force Instruction 32-1021 – Planning and Programming Military Construction (MILCON) Projects) – United States Air Force 24 January 2003.
AFI 32-7061	Air Force Instruction 32-7061 – 32 CFR Part 989 – Environmental Impact Analysis Process. 6 June 2007.
ALSA Center 2001	Air Land Sea Application (ALSA) Center. 2001. <i>Multiservice Procedures for Unexploded Explosive Ordnance Operations</i> . Prepared for the U.S. Army Training and Doctrine Command, the U.S. Marine Corps Combat Development Command, the U.S. Navy Warfare Development Command, and the Headquarters Air Force Doctrine Command. Prepared by the ALSA Center. August 2001.
AMEC 2007	AMEC Earth & Environmental, Inc. 2007. <i>Baseline Ecological Evaluation, Gaunt's Brook Between Range Road and Lake Shore Drive Bridge</i> . December 2007.
AMW 2010	305 th & 514 th Air Mobility Wings (AMW). 2010. <i>Midair Collision Avoidance Guide for Central New Jersey</i> . Prepared by the AMW of JB MDL. Updated November 2010.
AR 200-1	Army Regulation 200-1, <i>Environmental Protection and Enhancement</i> , effective 27 December 2007.
Barnabas Health 2012	Barnabas Health. 2012. Welcome to Community Medical Center – Barnabas Health. http://www.barnabashealth.org/hospitals/community_medical/index.html . Obtained on 7 November 2012.
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CEMML 2012	Center for Environmental management of Military Lands, Colorado State University. 2012. <i>Avian Surveys Joint base McGuire-Dix-Lakehurst, Dix Training Area, New Jersey</i> . December 2012

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7.0 Glossary

A-Weighted Decibels (dBA) – An expression of the relative loudness of sound in air detected by the human ear.

Adverse – A harmful or undesired effect.

Aesthetics – Defined as the theory of beauty, or the philosophy of art, explaining concepts of sublime, representation, aesthetic value and expression.

Ambient – The environment as it exists around people, plants, and structures.

Ambient Air Quality Standards – Those standards established according to the CAA to protect health and welfare.

Aquifer – An underground geological formation containing usable amounts of groundwater that can supply wells and springs.

Attainment Area – A region that meets the National Ambient Air Quality Standard (NAAQS) for a criterion pollutant under the CAA.

Bedrock – The native consolidated rock underlying the Earth's surface.

Best Management Practices (BMP) – Management or structural practices used to reduce the quantities of pollutants produced by an action.

Carbon Monoxide (CO) – An odorless, colorless gas produced as a result of the incomplete burning of carbon or carbonaceous materials such as fossil fuels from automobiles, buses, trucks, small engines, boilers and from certain industrial processes.

Contaminants - Any physical, chemical, biological, or radiological substances that have an adverse affect on air, water, or soil.

Council on Environmental Quality (CEQ) – An Executive Office of the President composed of three members that the President appoints, subject to Senate approval. Each member shall be exceptionally qualified to analyze and interpret environmental trends, and to appraise programs and activities of the Federal government. Members are to be conscious of, and responsive to, the scientific, economic, social, esthetic, and cultural needs of the Nation, and formulate and recommend national policies to promote quality improvement of the environment.

Criteria Pollutants – The CAA required the USEPA to set air quality standards for common and widespread pollutants in order to protect human health and welfare. The six "criteria pollutants" are: ozone (O₃), carbon monoxide (CO), sulfur dioxide (SO₂), lead (Pb), nitrogen oxides (NO_x), and particulate matter of than 2.5 micrometers in diameter (PM_{2.5}) or less than 10 micrometers in diameter (PM₁₀).

Cultural Resources – The physical evidence of our Nation's heritage, including archaeological sites; historic buildings, structures, and districts; and localities with social significance to the human community.

Cumulative Impact – An environmental impact that results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other

actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

Day-Night Level (L_{dn}) – A-weighted equivalent sound level for a 24-hour period.

Delaware Nation – A Native American tribe of people descending from the Lenni-Lenape, formerly inhabiting New Jersey.

Delaware Tribe of Indians – A Native American tribe of people descending from the Lenni-Lenape, formerly inhabiting eastern New Jersey.

De Minimis Threshold Limits – The concentration limit of something that is of minimum importance; something that is so small it doesn't matter.

Demographics – Characteristics of human populations and population segments.

Direct Effects – Effects that an action causes, and that occur at the same time and same place (40 CFR 1508.8 (a)).

Ecosystem – A complex set of relationships of living organisms working together in relation with the physical environment to form a community, known as an ecosystem.

Elevation – Used in referencing a geographic location through its height above a fixed reference point, often mean sea level.

Emission – A release of a pollutant.

Environmental Assessment (EA) – An environmental analysis prepared pursuant to National Environmental Policy Act (NEPA) to determine whether a federal action would significantly affect the environment and thus require a more detailed environmental impact statement. An EA is a concise public document that determines whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

Environmental Baseline Survey (EBS) – A survey conducted to characterize the existing the environmental conditions on and around a certain area or property.

Environmental Impact Statement (EIS) – A document required of Federal agencies by the National Environmental Policy Act for major projects or legislative proposals significantly affecting the environment. A tool for decision making, it describes the positive and negative effects of the undertaking and cites alternative actions. An EIS documents the information required to evaluate the environmental impact of a project. It informs decision makers and the public of the reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the environment.

Environmental Justice – The fair treatment and involvement of all people, regardless of race, ethnicity, income and education, in environmental decision making.

Erosion – The wearing away of land surface by wind and water.

Farmland – Cropland, pastures, meadows, and planted woodland.

Feasibility Study – The mechanism for the development, screening and detailed evaluation of alternative remedial actions.

Federal Emergency Management Agency (FEMA) – An agency within the United States government, established to coordinate the response to a disaster that has occurred within the United States.

Finding of No Significant Impact (FONSI) – A document prepared pursuant to the National Environmental Policy Act (NEPA), preceded by an Environmental Assessment (EA), that supports that a proposed action would not have a significant impact on the environment and thus would not require preparation of an Environmental Impact Statement (EIS). A Finding of No Significant Impact (FONSI) is based on the results of the EA.

Floodplain – Nearly flat plain along the course of a stream that is naturally subject to flooding.

Fossil Fuels – Buried combustible geologic deposits of organic matter.

Fugitive Dust – Particles that are light enough to be suspended in air and that are not caught in a capture or filtering system. For this document, “fugitive dust” refers to particles occurring in the air from moving vehicles and air movement over disturbed soils at construction sites.

Geographic Information System (GIS) – A computer system that allows environmental analysts to compile, analyze, and model information relevant to proposals that require environmental analysis. It is also a tool that assists decision making by providing a visual depiction of complex data, customized for the situation and circumstances associated with that decision.

Geology – Science that deals with the physical history of the earth, the rocks of which the Earth is composed, and the physical changes in the earth.

Hazardous Substances – A substance as defined by section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA):

- a. For the purpose of this regulation, a hazardous substance is any one of the following: 1) Any substance designated pursuant to section 311(b) (2) (A) of the Clean Water Act of 1977 (CWA). 2) Any element, compound, mixture, solution, or substance designated pursuant to Section 102 of CERCLA. 3) Any hazardous waste having the characteristics identified under the Resource Conservation and Recovery Act (RCRA). 4) Any toxic pollutant listed under TSCA. 5) Any hazardous air pollutant listed under Section 112 of CAA. 6) Any imminently hazardous chemical substance or mixture with respect to which the EPA Administrator has taken action pursuant to fraction subsection 7 of TSCA.
- b. The term does not include: 1) Petroleum, including crude oil or any thereof, which is not otherwise specifically listed or designated as a hazardous substance in paragraph “a” above. 2) Natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas).
- c. A list of hazardous substances is found in 40 CFR 302.4.

Hazardous Waste – A solid waste that, when improperly treated, stored, transported, or disposed, poses a substantial hazard to human health or the environment. Hazardous wastes are identified in 40 CFR section 261.3 or applicable foreign law, rule, or regulation.

Hazardous Waste Storage – As defined in 40 CFR 260. 10, “. . . the holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed, or stored elsewhere”.

Hydric Soils – Hydric soils are soils which are sufficiently wet in the upper part of the soil during the growing season in order to develop anaerobic conditions.

Indirect Effects – Effects that are caused by the action and that occur later in time or farther removed in distance but that are still reasonably foreseeable. Indirect effects may include

growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate; and related effects on air, water, and other natural systems, including ecosystems (40 CFR 1508.8 (b)).

Infrastructure – A set of interconnected structural elements.

Lead (Pb) – An odorless, gray heavy metal found in the atmosphere as a result of man-made processes such as the extraction and processing of metallic ores, incineration of solid waste, and fuel combustion.

Less than significant – Being too small to signify importance.

Long-term – Involving or lasting for a relatively long period of time.

Meteorological – A scientific study on the atmosphere that focuses on weather processes and forecasting.

Mitigation/Management – Measures taken to reduce adverse effects on the environment.

Mobile Sources – Vehicles, aircraft, watercraft, construction equipment, and other equipment that use internal combustion engines for energy sources.

Moderate – Being within reasonable limits; not excessive.

Monitoring – The assessment of emissions and ambient air quality conditions. Monitoring techniques used are emission estimates, visible emission readings, diffusion or dispersion estimates, sampling, or measurement with analytical instruments.

National Ambient Air Quality Standards (NAAQS) – Nationwide standards developed up by the United States Environmental Protection Agency (USEPA) for widespread air pollutants, as required by Section 109 of the Clean Air Act (CAA). Six pollutants are currently regulated by primary and secondary NAAQS: carbon monoxide (CO), lead, (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀), and sulfur dioxide (SO₂). These standards must be attained and maintained in order to protect human and environmental health. NAAQS exist for particulate matter, ozone, sulfur dioxide, nitrogen dioxide, carbon dioxide, and lead.

New Jersey Department of Environmental Protection (NJDEP) – A State agency established to protect human health and the environment within the borders of the State of New Jersey.

New Jersey One-Call – A hotline call center designated to inform and protect public safety regarding excavations near underground facilities.

New Jersey Pinelands Commission – An organization established to preserve, protect, and enhance the natural and cultural resources of the Pinelands National Reserve in cooperation with local, state, and Federal governments.

New Jersey State Historic Preservation Office (SHPO) – Responsible for the identification, registration, and protection of the state's cultural resources. The SHPO administers a variety of programs which include, survey and inventory, listing on the State and National Registers of Historic Places, environmental review, restoration tax credits, grants-in-aid, and technical assistance. A staff of archaeology, history, and architecture professionals at the State Historic Preservation Office works with other state agencies, nonprofit organizations, local officials, and private citizens in administering these programs.

Nitrogen Dioxide (NO₂) – A yellowish-brown gas found in high concentrations of ground-level ozone, formed as a result of high temperature combustions such as power plants and automobile engines.

Non-Attainment Area – An area that has been designated by the USEPA or by the appropriate State air quality agency, as exceeding one or more national or state ambient air quality standards.

Ozone (O₃) – A colorless gas that attributes to the majority of unhealthy air quality. Ozone forms in the atmosphere from the release of other pollutants; including volatile organic compounds and nitrogen oxides.

Particulates/Particulate Matter (PM) – Fine liquid or solid particles, such as dust, smoke, mist, fumes, or smog found in air.

Physiographic – One of eight regions within the United States, each of which are composed of smaller physiographic subdivisions or sections.

Plant Community – A vegetative complex unique in its combination of plants that occurs in particular locations under particular conditions.

Pollutant – A substance introduced into the environment that adversely affects the usefulness of a resource.

Potable Water – Water that is suitable for drinking.

Precipitation – Any type of product of condensation from atmospheric water vapor that is deposited on the earth's surface.

Prime and Unique Farmlands – Land that has the best combination of physical and chemical characteristics for producing crops.

Remedial Investigation – The mechanism for collecting data to: characterize site conditions; determine the nature of the waste; assess risk to human health and the environment; and conduct treatability testing to evaluate the potential performance and cost of the treatment technologies that are being considered.

Remediation – A long-term action that reduces or eliminates a threat to the environment.

Riparian Areas – Areas adjacent to rivers and streams that have a high density, diversity, and productivity of plant and animal species relative to nearby uplands.

Sensitive Receptors – Specific types or features within an area that may be negatively impacted by air pollutants (i.e. schools, nursing homes, child care centers, churches, private residences).

Short-term – Involving or lasting for a relatively brief period of time.

Significant Impact – According to 40 CFR 1508.27, "Significantly" as used in NEPA requires consideration of both context and intensity:

- a. *Context* - The significance of an action must be analyzed in several contexts, such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the Proposed Action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

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- b. *Intensity* - Refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action.

Socioeconomics – Economic and social structure of communities, tax rates, and characteristic types of development.

Soil – The mixture of altered mineral and organic material at the Earth's surface that supports plant life.

Solid Waste – Any discarded material that is not excluded by section 261.4(a) or that is not excluded by variance granted under sections 260.30 and 260.31 (40 CFR 261.2).

Special Status Species – Include any species that are listed, or proposed to be listed, on the Threatened or Endangered Species list (see *Endangered Species Act of 1973*).

Substrate – A surface on which an organism grows or is attached.

Sulfur Dioxide (SO₂) – An odorless, colorless gas at low concentrations with a very pungent odor in very high concentrations. Sulfur dioxide is produced as a result of the burning of fuels that contain sulfur, such as oil and coal.

Till – Unsorted glacial sediment.

Title V Air Permit – Operating permits, issued by State authorities, issued to air pollution sources after the polluting source has begun to operate.

Topography – Relief features or surface configuration of an area.

Toxic Substance – A harmful substance that includes elements, compounds, mixtures, and materials of complex composition.

United States Census Bureau – A Federal agency that collects, processes, analyzes, disseminates statistical data on the American public.

United States Department of Housing and Urban Development (HUD) – A Federal agency established to develop and execute policy on housing and cities.

United States Environmental Protection Agency (USEPA) – A Federal agency established to protect human health and the environment within the borders and territories of the United States.

Wastewater – Water that has been negatively affected by human influence.

Wetlands – Areas that are regularly saturated by surface or groundwater and are therefore characterized by a prevalence of vegetation that is adapted for life in saturated soil conditions. Some examples are swamps, bogs, fens, marshes, and estuaries.

Wildlife Habitat – The set of living communities in which a wildlife population lives.

8.0 List of Preparers

JB MDL Contributors:

Joseph J. Schwartz
Joseph Rhyner
Douglas Hasemann
Ellis R. Tozour

AMEC Environment & Infrastructures, Inc. Contributors:

Mr. Brian P. Sariano, Senior Project Manager. Mr. Sariano holds a B.A in Geo-environmental Science, with over 25 years of experience in environmental consulting and NEPA document preparation. His primary technical areas include air quality, water resources, socioeconomics, and HTMW. Mr. Sariano's primary responsibilities for this EA include internal and external coordination, as well as ensuring overall project performance. Mr. Sariano is responsible for the overall supervision of the project effort and assignment of key staff to successfully complete the required work.

Ms. Laura Garrett, NEPA Practitioner. Ms. Garrett holds a B.S. in Environmental Studies, with over 7 years of experience. Ms. Garrett's responsibilities include: development of the project management plan, preparation of the affected environment, evaluation of environmental consequences, guidance with the environmental impact analysis process, and identification of cumulative effects.

Madison Kramer, Geologist. Mr. Kramer has 1 year of experience and holds a B.S. in Environmental Science. Mr. Kramer's responsibilities for this EA included collecting data and performance of the environmental impact analysis process.

Mohamed Agnaou, Civil Engineering Professional. Mr. Agnaou holds a B.S. in Civil and Environmental Engineering, with over 10 years of experience in CAD and civil engineering design specializing in site development, stormwater management, stream restoration, urban drainage, dams, Levees design, and flood Control. Mr. Agnaou is proficient with a variety of Civil and land development related softwares including Autodesk Civil 3D, Land Desktop, AutoCAD and Map3D. He also has a working knowledge of a variety of water resources engineering softwares such as HEC-RAS, GeoRAS, HEC-HMS GeoHMS, HydroCAD, SWMM, AFG, SITES/WinDAM as well as applying ArcGIS to a variety of hydrologic and hydraulic analysis, water resources design, and civil design projects. Mr. Agnaou's primary responsibilities for this EA include the development of the project CAD drawings and designs.

Alex Carroll, EIT, Water Resources Engineering Professional. Mr. Carroll holds a B.E. in Environmental Engineering. With 1 year of experience, he specializes in water resources engineering, including hydrologic and hydraulic modeling, and flood risk studies for nuclear generation facilities. Mr. Carroll is proficient with or has a working knowledge of a variety of water resources related software including ArcGIS, HydroCAD, PCSWMM, FLO-2D, HEC-RAS/HEC-GeoRAS, and HEC-HMS/HEC-GeoHMS. Mr. Carroll's primary responsibility for this EA included the development of the project GIS drawings and acreage calculations.

Phil Perhamus, Senior Biologist. Mr. Perhamus is a biologist with over 23 years of experience in ecology, natural resources, and the environmental sciences. He specializes in wetland studies, ecological reclamation, environmental assessments, and natural resource surveys. His specific capabilities include wetland delineation, permitting, reclamation/restoration, and monitoring; the development of Environmental Assessments (EA) and Environmental Impact Statements (EIS); habitat restoration through invasive plant species management and native species revegetation; aquatic and terrestrial wildlife surveys including threatened and endangered (T&E) species surveys; environmental contaminants sampling and investigation; and stream assessment and stabilization. He is a Professional Wetland Scientist (P.W.S.) as certified by the Society of Wetland Scientists (SWS). Mr. Perhamus' responsibilities for this EA included performance of the wetland and T&E species surveys, and development of the water resources and biological resources affected environment and impacts assessment sections of the document.

Christi Benes, Project Biologist. Mrs. Benes holds a B.S. and has over 11 years of scientific experience. Mrs. Benes specializes in conducting ecological evaluations (EEs), receptor evaluations (REs), and drafting small scale empirical-based Ecological Risk Assessments (ERAs) at State-lead sites. Her current role also includes preparation of various coastal and freshwater wetlands permitting applications. She has also been involved with larger scale Ecological and Human Health Risk Assessments (HHRAs) at Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) properties, Resource Conservation and Recovery Act (RCRA) properties, and other sites nationwide that have incorporated a multitude of techniques, including extent and magnitude of contamination studies, biological assessments and surveys, biological tissue collection, and toxicity testing. Ms. Benes assisted in the performance of the wetland and T&E species surveys, and development of the water resources and biological resources affected environment and impacts assessment sections of the document.

9.0 Agencies and Individuals Consulted

Resource agencies were invited to participate in the EA process during the development of this EA. Copies of correspondence can be found in **Appendix A**.

9.1 Federal Resource Agencies

The following Federal Agencies were consulted as part of this EA process:

United States Environmental Protection Agency

Region 2
290 Broadway
New York, New York 10007-1866
Attn: Ms. Grace Musumeci
Chief Environmental Review

United States Fish & Wildlife Service

New Jersey Field Office, ecological services
927 N. Main Street, Building D
Pleasantville, New Jersey 08232
Attn: ESA Consultation

9.2 State Resource Agencies

The following State of New Jersey Agencies was consulted as part of this EA process:

**New Jersey Department of Environmental Protection
Office of Permit Coordination and Environmental Review**

401 East State Street
Mail Code 401-073
P.O. Box 420
Trenton, New Jersey 08626
Attn: Mr. Scott Brubaker, Director

**New Jersey Department of Environmental Protection
Division of Parks and Forestry**

Mail Code 501-04
P.O. Box 420
Trenton, NJ 08625-0420

**New Jersey Department of Environmental Protection
Historic Preservation Office**

Mail Code 501-04B
P.O. Box 420
Trenton, NJ 08625-0420
Attn: Mr. David Saunders

New Jersey Historical Commission

225 West State Street
P.O. Box 305
Trenton, NJ 08625
Attn: Ms. Sara Cureton, Acting Executive Director

**New Jersey Department of Environmental Protection
Division of Parks and Forestry, Office of Natural Lands Management**

The NJ Natural Heritage Program
Mail Code 501-04
P.O. Box 420
Trenton, NJ 08625-0420
Attn: Mr. Roman Senyk

**New Jersey Department of Environmental Protection
Division of Land Use Regulation**

501 East State Street
P.O. Box 439
Trenton, NJ 08625-0439
Attn: Mr. Robert Piel, Assistant Commissioner

**New Jersey Division of Fish and Wildlife
Endangered and Nongame Species Program**

Mail Code 501-03
P.O. Box 400
Trenton, NJ 08625-0400
Attn: Mr. David Jenkins

9.4 Local Resource Agencies

The following local Agencies were consulted as part of this EA process:

Manchester Township

Environmental Commission
1 Colonial Drive
Manchester, NJ 08759
Attn: Mr. Robert Runyan, Chairperson

New Jersey Pinelands Commission

PO Box 359
15 Springfield Road
New Lisbon, NJ 08064

Ocean County Department of Planning

129 Hooper Avenue
P.O. Box 2161
Toms River, NJ 08754-2191
Attn: Mr. David McKean, Planning Director

Ocean County Soil Conservation District
714 Lacey Road
Forked River, NJ 08731
Attn: Md. David Friedman

Plumstead Township
121 Evergreen Road
New Egypt, NJ 08533
Attn: Township Committee

9.5 Native American Groups

The following Native American Tribes were consulted as part of this EA process:

Delaware Tribe of Indians
Delaware Tribe Historic Preservation Office
1420 C of E St., Suite 190
Emporia, KS 66801
Attn: Dr. Brice Obermeyer

Delaware Nation
NAGPRA/Cultural Preservation
P.O. Box 825
Anadarko, OK 73005
Attn: Ms. Tamara Francis

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APPENDIX A
Interagency and Intergovernmental Coordination
For Environmental Planning

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**Interagency and Intergovernmental Coordination
For Environmental Planning Contact List**

Federal Resource Agencies

United States Environmental Protection Agency

Region 2
290 Broadway
New York, New York 10007-1866
Attn: Ms. Grace Musumeci
Chief Environmental Review

United States Fish & Wildlife Service

New Jersey Field Office, ecological services
927 N. Main Street, Building D
Pleasantville, New Jersey 08232
Attn: ESA Consultation

State Resource Agencies

**New Jersey Department of Environmental Protection
Office of Permit Coordination and Environmental Review**

401 East State Street
Mail Code 401-073
P.O. Box 420
Trenton, New Jersey 08626
Attn: Mr. Scott Brubaker, Director

**New Jersey Department of Environmental Protection
Division of Parks and Forestry**

Mail Code 501-04
P.O. Box 420
Trenton, NJ 08625-0420

**New Jersey Department of Environmental Protection
Historic Preservation Office**

Mail Code 501-04B
P.O. Box 420
Trenton, NJ 08625-0420
Attn: Mr. David Saunders

New Jersey Historical Commission

225 West State Street
P.O. Box 305
Trenton, NJ 08625
Attn: Ms. Sara Cureton, Acting Executive Director

**New Jersey Department of Environmental Protection
Division of Parks and Forestry, Office of Natural Lands Management**
The NJ Natural Heritage Program
Mail Code 501-04
P.O. Box 420
Trenton, NJ 08625-0420
Attn: Mr. Roman Senyk

**New Jersey Department of Environmental Protection
Division of Land Use Regulation**
501 East State Street
P.O. Box 439
Trenton, NJ 08625-0439
Attn: Mr. Robert Piel, Assistant Commissioner

**New Jersey Division of Fish and Wildlife
Endangered and Nongame Species Program**
Mail Code 501-03
P.O. Box 400
Trenton, NJ 08625-0400
Attn: Mr. David Jenkins

Local Resource Agencies

Manchester Township
Environmental Commission
1 Colonial Drive
Manchester, NJ 08759
Attn: Mr. Robert Runyan, Chairperson

New Jersey Pinelands Commission
PO Box 359
15 Springfield Road
New Lisbon, NJ 08064

Ocean County Department of Planning
129 Hooper Avenue
P.O. Box 2161
Toms River, NJ 08754-2191
Attn: Mr. David McKean, Planning Director

Ocean County Soil Conservation District
714 Lacey Road
Forked River, NJ 08731
Attn: Md. David Friedman

Plumstead Township
121 Evergreen Road
New Egypt, NJ 08533
Attn: Township Committee

Native American Groups

Delaware Tribe of Indians
Delaware Tribe Historic Preservation Office
1420 C of E St., Suite 190
Emporia, KS 66801
Attn: Dr. Brice Obermeyer

Delaware Nation
NAGPRA/Cultural Preservation
P.O. Box 825
Anadarko, OK 73005
Attn: Ms. Tamara Francis

Summary of Agency Correspondence Received

Date	Agency	Description
27 November 2012	State of New Jersey, The Pinelands Commission	The Pinelands Comprehensive Management Plan contains environmental standards involving development within the Pinelands Protection Area District (i.e. wetlands, endangered plants and animals, and stormwater management). The completion of an application with the Pinelands Commission is required for the proposed development.
28 November 2012	NJDEP, Office of Permit Coordination and Environmental Review	The NJDEP notes that there are several environmental concerns in relation to the proposed project; namely potential impacts associated with cultural resources, wetlands and riparian zone, flood hazard areas, threatened and endangered species, Gaunts Brook and tributaries, tree trimming and earth movement/grading
4 December 2012	USEPA, Region 2	No environmental concerns noted with the proposed project. The USEPA suggests green construction and enclosed a document entitled "U.S. EPA Region 2, Green Recommendations."
11 December 2012	Delaware Tribe of Indians	The Delaware Tribe of Indians defers comment to the NJ SHPO and/or the State Archaeologist.
29 October 2013	New Jersey Historic Preservation Office	Returned the JB MDL Section 106 consultation request dated 9 October 2013 with their concurrence stamp confirming that the proposed action would not result in any impact to known archaeological or architectural resources.
02 January 2014	United States Fish and Wildlife Service	The USFWS acknowledged the historical occurrence of Federally-listed Swamp Pink downstream of the project area and recommends a survey of the proposed action area and areas downstream that could be indirectly affected. The USFWS did not identify any other potential federally-listed species. The USFWS also recommended seasonal restriction on tree cutting between 15 March and 31 July to avoid potential impact to nesting bird protected under the MBTA.
03 April 2014	United States Fish and Wildlife Service	The USFWS provided its concurrence with the no effect determination in association with Swamp pink.

24 September 2014	United States Fish and Wildlife Service	The USFWS provided its concurrence with the no effect determination in association with Bog turtle, American chaffseed, and Knieskern's beaked-rush.
02 October 2014	Delaware Nation	The Delaware Nation notes that the location of the project does not endanger cultural or religious sites of interest to the Delaware Nation.

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**6 NOVEMBER 2012 INTERAGENCY
IICEP SENT**

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND
JOINT BASE MCGUIRE-DIX-LAKEHURST

6 November 2012

MEMORANDUM FOR: SEE DISTRIBUTION

FROM: Department of the Air Force
87th Air Base Wing (Air Mobility Command)
Asset Management Flight
87 CES/CEA
2401 Vandenberg Avenue
Joint Base McGuire-Dix-Lakehurst NJ 08641

SUBJECT: Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) for the Environmental Assessment (EA) for the Proposed Multi-Purpose Machine Gun Range (MPMGR) at Joint Base McGuire-Dix-Lakehurst, New Jersey

Joint Base McGuire-Dix-Lakehurst (JB MDL) is preparing an Environmental Assessment (EA) for the proposed construction and operation of a new MPMGR at JB MDL. Pursuant to the National Environmental Policy Act (NEPA) of 1969 [42 USC 4321 et seq.], Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508, and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (EIAP) (32 CFR Part 989), JB MDL will prepare an EA that considers the potential consequences to human health and the natural environment. This EA will examine the effects of the proposed construction and operation of the proposed MPMGR at JB MDL.

The Intergovernmental Coordination Act and Executive Order (EO) 12372, Intergovernmental Review of Federal Programs, require Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. Air Force Instruction (AFI) 32-7060 requires HQ AMC to implement the IICEP process. In accordance with EO 12372 and AFI 32-7060, we invite your agency to review the attached Description of Proposed Action and Alternatives (DOPAA) and to provide comments on the Proposed Action. Please provide your comments relative to specific issues or geographic areas of concern your office may have, based on your expertise or regulatory jurisdiction. Provide any technical information, mitigation or permitting requirements that may be necessary for project implementation. Any preliminary data your office can provide will be evaluated and incorporated into the EA.

The purpose of the proposed action is to construct and operate a MPMGR to meet the training and qualification objectives using a standard Army range and seven (7) required weapons systems. This range would provide a year-round, comprehensive and realistic training and range facility for the training of soldiers in basic machine gun marksmanship skills. The U.S. Army has determined the current machine gun range does not meet the basic training requirements of a standard Army range as codified in Training Circular (TC) 25-8 – Training Ranges (DA 2010).

The proposed new MPMGR range would meet critical live-fire individual marksmanship training needs for both active and reserve component units that train on the installation.

JBMDL looks forward to your participation in this NEPA process. Please provide written comments within 15 days from the date of this letter. Your response on or before 27 November 2012 will enable us to complete this phase of the project within the scheduled time frame. Please direct your correspondence to: Mr. Joseph Schwartz, Environmental Protection Specialist, Department of the Air Force, 87 CES/CEAN, 5317 Snyder Lane, Joint Base McGuire-Dix-Lakehurst, NJ 08640-5501 or via e-mail at joseph.schwartz.5@us.af.mil. If you need further information please contact Mr. Schwartz at 609-562-2216.

A handwritten signature in dark ink, appearing to read "Richard P. Sample", is positioned above the typed name.

Richard P. Sample, GS-13, DAF
Asset Management Flight Chief
87th Civil Engineer Squadron

Attachments:

- 1) Final Description of Proposed Action and Alternatives
- 2) Distribution List

Interagency and Intergovernmental Coordination for Environmental Planning List

Federal Resource Agencies

The following Federal Agencies were consulted as part of this EA process:

United States Environmental Protection Agency
Region 2
290 Broadway
New York, NY 10007-1866
Attn: Ms. Grace Musumeci, Chief Environmental Review

United States Fish & Wildlife Service
New Jersey Field Office, Ecological Services
927 N. Main Street, Building D
Pleasantville, NJ 08232
Attn: ESA Consultation

State Resource Agencies

The following State of New Jersey Agencies were consulted as part of this EA process:

**New Jersey Department of Environmental Protection
Office of Permit Coordination and Environmental Review**
401 East State Street
Mail Code 401-073
P.O. Box 420
Trenton, NJ 08626
Attn: Mr Scott Brubaker, Director

**New Jersey Department of Environmental Protection
Division of Parks and Forestry**
Mail Code 501-04
P.O. Box 420
Trenton, NJ 08625-0420

**New Jersey Department of Environmental Protection
Historic Preservation Office**
Mail Code 501-04B
P.O. Box 420
Trenton, NJ 08625-0420
Attn: Mr. David Saunders

New Jersey Historical Commission
225 West State Street
P.O. Box 305
Trenton, NJ 08625
Attn: Ms. Sara Cureton, Acting Executive Director

New Jersey Department of Environmental Protection
Division of Parks and Forestry, Office of Natural Lands Management
The NJ Natural Heritage Program
Mail Code 501-04
P.O. Box 420
Trenton, NJ 08625-0420
Attn: Mr. Roman Senyk

New Jersey Department of Environmental Protection
Division of Land Use Regulation
501 East State Street
P.O. Box 439
Trenton, NJ 08625-0439
Attn: Mr. Robert Piel, Assistant Commissioner

New Jersey Division of Fish and Wildlife
Endangered and Nongame Species Program
Mail Code 501-03
P.O. Box 400
Trenton, NJ 08625-0400
Attn: Mr. David Jenkins

Local Resource Agencies

The following local Agencies were consulted as part of this EA process:

Manchester Township
Environmental Commission
1 Colonial Drive
Manchester, NJ 08759
Attn: Mr. Robert Runyan, Chairperson

New Jersey Pinelands Commission
PO Box 359
15 Springfield Road
New Lisbon, NJ 08064

Ocean County Department of Planning
129 Hooper Avenue
P.O. Box 2161
Toms River, NJ 08754-2191
Attn: Mr. David McKean, Planning Director

Ocean County Soil Conservation District

714 Lacey Road
Forked River, NJ 08731
Attn: Md. David Friedman

Plumstead Township

121 Evergreen Road
New Egypt, NJ 08533
Attn: Township Committee

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AGENCY RESPONSES RECEIVED FROM 2012 IICEP REQUEST

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Chris Christie
Governor

Kim Guadagno
Lt. Governor

State of New Jersey
THE PINELANDS COMMISSION
P.O. Box 139
New Lisbon, NJ 08064
(609) 894 7300
www.nj.gov/pinelands

General Information: Info@njpines.state.nj.us
Application Specific Information: AppInfo@njpines.state.nj.us



Mark S. Lohbauer
Chairman

Nancy Wittenberg
Executive Director

November 27, 2012

Joseph Schwartz
Department of the Air Force
87 CES/CEAN
5317 Snyder Lane
Joint Base McGuire-Dix-Lakehurst, NJ 08640

Re: Application # 1992-0785.051
Joint Base McGuire-Dix-Lakehurst
New Hanover Township

Dear Mr. Schwartz:

Thank you for your November 6, 2012 letter asking that we identify any concerns that the Commission staff may have related to the proposed development of a Multi-Purpose Machine Gun Range (MPMGR) at Joint Base McGuire-Dix-Lakehurst (JB MDL). This information is requested to aid JB MDL with the preparation of an Environmental Assessment for the proposed MPMGR.

The Pinelands Comprehensive Management Plan (CMP) contains many land use and environmental standards. For example, the land use standards of the CMP require that, where feasible, development at military installations be located in that portion of the installation located within the Pinelands Protection Area and avoid the Pinelands Preservation Area District and Forest Area. Examples of CMP environmental standards include a prohibition on most development in wetlands and a required buffer to wetlands, the protection of threatened and endangered plants and animals and stormwater management.

To discuss these standards, you may wish schedule a pre-application conference with our staff. During this conference we can discuss the proposed development and advise of the specific standards of the CMP that appear to be of concern. There is no fee required for a pre-application conference.

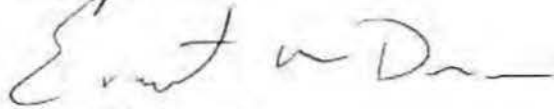
Please note that the proposed development requires the completion of an application with the Commission. The CMP requires an application review fee. Applications filed with the Pinelands Commission may not be reviewed or considered complete unless the application review fee and supporting documentation required by the CMP (N.J.A.C. 7:50-1.6) have been submitted.

For your convenience, application submissions consisting of letter or legal sized documents and electronically notarized application forms may now be submitted via email to AppInfo@njpines.state.nj.us. Large reports, plans, checks, and items that have a manually applied seal (i.e., plans, manually notarized items, etc.) must still be submitted as hard copies.



If you have any questions, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Ernest M. Deman". The signature is fluid and cursive, with a long horizontal line extending to the right.

Ernest M. Deman
Supervising Environmental Specialist



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF PERMIT COORDINATION AND ENVIRONMENTAL REVIEW
P.O. Box 420 Mail Code 401-07J Trenton, New Jersey 08625-0420
Phone Number (609) 292-3600
FAX NUMBER (609) 292-1921

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

November 28, 2012

Mr. Joseph Schwartz
Environmental Specialist
Department of the Air Force
87 CES/CEAN
5317 Snyder Lane
Joint Base McGuire-Dix-Lakehurst, NJ 08640-5501

**RE: Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix-Lakehurst (JB MDL), New Jersey**

Scoping Comments for the Environmental Assessment (EA)

Dear Mr. Schwartz:

The New Jersey Department of Environmental Protection's (Department) Office of Permit Coordination and Environmental Review (PCER) distributed your letter regarding the preparation of an Environmental Assessment (EA) for the proposed Multi-Purpose Machine Gun Range (MPMGR) at Joint Base McGuire-Dix-Lakehurst (JB MDL) for review and comment. We offer the following comments for your consideration.

Cultural Resources

The Department's Historic Preservation Office's (HPO) review notes that it appears that the proposed undertaking will require consultation under Section 106 of the National Historic Preservation Act for the identification, evaluation and treatment of historic properties within the project's area of potential effects. As a result, the HPO looks forward to further consultation with the United States Department of the Air Force, pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR §800.

If you have any questions, please do not hesitate to contact Jonathan Kinney at the HPO (Phone: 609-984-0141; Fax: 609-984-0578; Email: jonathan.kinney@dep.state.nj.us; Website: <http://www.nj.gov/dep/hpo>; Mailing Address: Mail Code 501-04B, Department of Environmental Protection, Historic Preservation Office, P.O. Box 420, Trenton, NJ 08625-0420). If additional consultation is required for this undertaking, please reference the HPO project #13-0174 in any future calls, emails, or written correspondence in order to expedite our review and response.

Land Use Regulations

The Department's Division of Land Use Regulation's (DLUR) review notes that the proposed range clearing begins in an area that was previously cleared and is now beginning to grow over with scrub-shrub vegetation. It then extends into an area that is mostly forested. Just past the mid-range point of the range, northwesterly of the firing location, the range crosses Gaunts Brook and an unnamed tributary to Gaunts Brook, both drainage corridors with associated wetlands and riparian zones regulated by the Freshwater Wetlands Protection Act and Flood Hazard Area Control Act. The range location is outside of any area possibly needing a coastal permit.

The EA should address if stumps will be removed, or if the area needs grading; and ongoing maintenance activities for the cleared area (annual cutting or the application of herbicide).

Freshwater Wetland

The Department regulates discharges of fill in wetlands and waters within Pinelands jurisdiction. Above-ground cutting and/or removal of trees does not require a permit provided there is no soil disturbance. Removal of stumps or other mechanized soil disturbances, such as rutting, or surface grading or leveling that would constitute a discharge of fill, would trigger a permit requirement. Wetlands are documented barred owl habitat and considered to be of exceptional resource value. Removal of trees from the wetlands would adversely affect the area for the barred owl species. **Should the permit requirement be triggered, the rules would greatly discourage this activity within 7.66 (stated) acres of wetlands and barred owl habitat.**

Flood Hazard Area

Wholesale removal of wooded riparian zone vegetation along a regulated stream is discouraged by the rules and requires a project to demonstrate both that a hardship exists and that impacts to riparian zone vegetation are being minimized. The likely presence of State threatened and/or endangered species also would discourage the activity under the rules. The draft EA does not contain enough information to make a hardship demonstration. **A Flood Hazard Area permit is necessary to conduct the proposed activity.**

Threatened & Endangered Species

In addition to the Barred owl wetland habitat, the area chosen for the machine gun range appears to be documented northern pine snake habitat, as well as possibly containing two rare plant species – Pale Beaked-rush and Sickie-leaf Golden-aster. Swamp pink is documented to occur downstream of the proposed clearing area. .

Wetlands and Riparian Zone Mitigation

Mitigation for any activity impacts under a Freshwater Wetlands or Flood Hazard Area individual permit is not considered until after it is determined that an activity meets necessary rule qualifications and is qualified for a permit.

If you have any questions, please contact Bruce Stoneback (609-633-2289 or bruce.stoneback@dep.state.nj.us) at the DLUR.

Natural Resources

The Department's Division of Fish & Wildlife's (DFW) review notes the following.

Gaunts Brook and Tributaries

A time restriction from 4/1 thru 6/30 needs to be imposed on any **in-water** and **sediment generating activities** associated with the project in order to protect warm-water fish nest building and spawning (includes waters that support pickerel).

Preferred Alternative

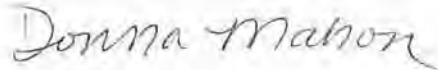
Species Occurrence Area (v8) and Landscape mapping (v3.1) indicates valued habitat for **threatened/endangered** (T/E) and **species of concern** in the area. (Timber Rattlesnake, Northern Pine Snake, Barred Owl, Arogos Skipper, A Silver-bordered Fritillary) Georgia Satyr, Dotted Skipper, Great Blue Heron. These species should be addressed in any EA prepared for this site.

Tree Trimming

The DFW recommends a general timing restriction on mechanical trimming or removal of trees from 3/15 – 7/31 to protect nesting birds covered under the Migratory Bird Treaty Act. Non-mechanical tree trimming may be permitted once trees are checked for nesting activity.

Thank you for giving the New Jersey Department of Environmental Protection the opportunity to comment on the preparation of the EA. Please send six copies of the completed EA directly to our office, so that we can coordinate a comprehensive Departmental review.

Sincerely,

A handwritten signature in cursive script that reads "Donna Mahon".

Donna Mahon
Office of Permit Coordination
and Environmental Review

C: Ken Koschek, NJDEP – PCER
Jonathan Kinney, NJDEP – HPO
Bruce Stoneback, NJDEP – DLUR
Kelly Davis, NJDEP - DFW



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

DEC 4 - 2012

Mr. Joseph Schwartz
Environmental Protection Specialist
Department of the Air Force
87 CES/CEAN
5317 Snyder Lane
Joint Base McGuire-Dix-Lakehurst
New Jersey, 08640-5501

Subject: Final Description of Proposed Action and Alternatives, Proposed Multi-Purpose Machine Gun Range, Joint Base McGuire-Dix-Lakehurst (JB MDL)

Dear Mr. Schwartz:

The Environmental Protection Agency (EPA), Region 2 office has reviewed the Final Description of Proposed Action and Alternatives for the Proposed Multi-Purpose Machine Gun Range at Joint Base McGuire-Dix-Lakehurst. The purpose of the project is to construct and operate a Multi-Purpose Machine Gun Range (MPMGR) to meet the training and qualification objectives using a standard Army range and seven required weapons systems. The Army has determined the current machine gun range does not meet the basic training requirements of a standard Army range.

The Description of Proposed Action was thorough and EPA was pleased to see the mention of sustainable design in the description of the proposed action. There are a number of programs that EPA administers that address areas of green construction that we would like to share with you and which we hope you will consider integrating into your design plans. Please see the enclosed document, "U.S. EPA Region 2, Green Recommendations."

Thank you for the opportunity to comment. Should you have any questions concerning this letter or if you would like to learn more about any of our green recommendations or pollution prevention programs, please feel free to contact Stephanie Lamster of my staff at 212-637-3465.

Sincerely,

A handwritten signature in cursive script, appearing to read "Grace Musumeci", is written over a horizontal line.

Grace Musumeci, Chief
Environmental Review Section

EPA Region 2 Green Recommendations

To the maximum extent possible, project managers are encouraged to utilize local and recycled materials; to recycle materials generated onsite; and to utilize technologies and fuels that minimize greenhouse gas emissions.

Further, to the extent feasible, renewable energy (including, but not limited to solar, wind, geothermal, biogas, and biomass) and energy-efficient technologies should be incorporated into the design, construction, and operation of all types of projects.

To that end, the following information and internet hyperlinks are provided for your consideration and use:

- **Multi-media green building and land design practices**

Utilize green building practices which have multi-media benefits, including energy efficiency, water conservation (see WaterSense below), and healthy indoor air quality. Apply building rating systems and no-cost online tools and guides, such as ENERGY STAR, Portfolio Manager, Target Finder, Indoor Air Quality Package, and WaterSense for building construction. The ENERGY STAR website (see below) includes, among other things, information on new single-family homes, multi-family homes, commercial and other buildings, and schools. The website also provides an ENERGY STAR "Training Center" free of charge.

U.S. Green Building Council (USGBC) LEED Programs and Guides:

<http://www.usgbc.org/programs>

ENERGY STAR home page: <http://www.energystar.gov>

ENERGY STAR Target Finder (no-cost online tool to set energy performance targets):

<http://www.energystar.gov/targetfinder>

Indoor Air Quality: <http://www.epa.gov/iaq>

- **Water conservation and efficiency in building construction**

Promote water conservation and efficiency through the use of water efficient products and practices. For new building construction and restoration projects, we recommend considering the use of products with the WaterSense label where appropriate. Devices receiving the EPA WaterSense label must be at least 20% more water efficient than (and must meet or exceed the performance standards of) non-labeled devices of the same type. Additionally, when possible, consider the use of WaterSense Certified Professional Irrigation Partners and WaterSense Builder Partners. These professionals use WaterSense labeled devices where appropriate, are trained in the latest water conservation practices, and use the latest water efficiency tools and technologies, including irrigation equipment and xeriscaping for landscaping and best management practices for construction in the WaterSense New Home Specifications. Visit the WaterSense website for tips on water efficiency, a WaterSense labeled product search tool, a list of WaterSense Partners, access to the Water Budget Tool at: <http://www.epa.gov/watersense/>

In addition to using WaterSense labeled products and certified professionals, there are many water conservation strategies and best management practices that can be used in new construction and/or restoration. Here are some useful links to water conservation information:



- **Green Building Encyclopedia:**
http://www.whyygreenbuildings.com/water_conservation.php
- **Whole Building Design Guide:**
http://www.wbdg.org/resources/water_conservation.php
- **Alliance for Water Efficiency:**
<http://www.allianceforwaterefficiency.org/>
- **Water Use It Wisely – 100 Ways to Conserve:**
<http://www.wateruseitwisely.com/100-ways-to-conserve/index.php>
- **Determining Energy Usage**
http://water.epa.gov/infrastructure/sustain/energy_use.cfm

- **Green Building in Federal Agency Projects**

The *Federal Green Construction Guide for Specifiers* includes helpful information for procuring green building products and construction/renovation services within the Federal government:

<http://www.wbdg.org/design/greenspec.php>

- **Use Environmentally Preferable Purchasing**

Promote markets for environmentally preferable products by referencing EPA's multi-attribute Environmentally Preferable Purchasing guidance. Products and services include: Building and Construction, Carpets, Cleaning, Electronics, Fleets, Food Services, Landscaping, Meetings and Conferences, Office Supplies, and Paper.

Additional information: <http://www.epa.gov/epp>

- **Purchase 'green' electronics, and measure their benefits**

Require the purchase of desktop computers, monitors, and laptops that are registered as Silver or Gold products with EPEAT, the Electronics Product Environmental Assessment Tool at www.epeat.net. Products registered with EPEAT use less energy, are easier to recycle, and can be more easily upgraded than non-registered products. Energy savings, CO₂ emission reductions, and other environmental benefits achieved by the purchase, use and recycling of EPEAT-registered products can be quantified using the Electronics Environmental Benefits Calculator:

<http://eerc.ra.utk.edu/ccpct/eebc/eebc.html>

Additional information:

http://www.energystar.gov/index.cfm?c=products.pr_find_es_products

- **Consider Low Impact Development to help manage storm water**

Low Impact Development (LID) is an approach to land development (or re-development) that works with nature to manage storm water as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat storm water as a resource rather than a waste product.

Implement site planning, design, construction, and maintenance strategies to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the building site with regard to the temperature, rate, volume, and duration of flow.

Additional information:



<http://www.epa.gov/nps/lid>
<http://water.epa.gov/infrastructure/greeninfrastructure/>

- **Evaluate sustainable storm water management at brownfield sites**

Consider designs for storm water management on compacted, contaminated soils in dense urban areas:

Additional information: <http://www.epa.gov/brownfields/tools/swdp0408.pdf>

- **Alternative and Renewable Energy**

The Department of Energy's "Green Power Network" (GPN) provides information and markets that can be used to supply alternative generated electricity. The following link identifies several suppliers of renewable energy:

Additional information:

http://apps3.eere.energy.gov/greenpower/buying/buying_power.shtml?

- **Clean Diesel**

For new equipment utilize contract specifications requiring advanced pollution controls and clean fuels: <http://www.northeastdiesel.org/pdf/NEDC-Construction-Contract-Spec.pdf> and <http://www.epa.gov/diesel/construction/contract-lang.htm>

Implement diesel controls, cleaner fuel, and cleaner construction practices for on-road and off-road equipment used for transportation, soil movement, or other construction activities, including:

1. Strategies and technologies that reduce unnecessary idling, including auxiliary power units, the use of electric equipment, and strict enforcement of idling limits;
2. Use of ultra low sulfur diesel fuel in non-road applications; and
3. Use of clean diesel through add-on control technologies like diesel particulate filters and diesel oxidation catalysts, repowers, or newer, cleaner equipment.

Additional information: *A How To Guide for Diesel Engine Retrofits in the Construction Industry*:
<http://www.mass.gov/dep/air/diesel/conretro.pdf>

- **Utilizing recycled materials in construction projects**

Many industrial and construction byproducts are available for use in road, building or infrastructure construction. Use of these materials can save money and reduce environmental impacts. The Recycled Materials Resource Center has developed user guidelines for many recycled materials and compiled existing national specifications.

Additional information: <http://rmrc.wisc.edu>

<http://www.fhwa.dot.gov/pavement/recycling/rectools.cfm>

<http://www.epa.gov/osw/conservation/imr/index.htm>

- **Encourage cost-efficient, environmentally friendly landscaping**

EPA's GreenScapes program provides cost-efficient and environmentally friendly solutions for landscaping. Designed to help preserve natural resources and prevent waste and pollution, GreenScapes encourages companies, government agencies, other entities, and homeowners to make more holistic decisions regarding waste generation and disposal and the associated impacts on land, water, air, and energy use.



Additional information: <http://www.epa.gov/osw/conserve/rrr/greenschapes/index.htm>

- **Incorporate on-site energy generation and energy efficient equipment upgrades into projects at drinking water and wastewater treatment facilities**

Consider using captured biogases in combined heat and power systems, and renewable energy (wind, solar, etc.) to generate energy for use on-site. Evaluate the potential energy savings associated with upgrading to more energy efficient equipment (pumps, motors, lighting, etc.).

Additional information: <http://water.epa.gov/infrastructure/sustain/goinggreen.cfm>
<http://www.epa.gov/region9/waterinfrastructure/howto.html>

- **Incorporate green practices into remediation of contaminated sites**

Encourage or incentivize the use of green remediation practices, including designing treatment systems with optimum energy efficiency; use of passive energy technologies such as bio-remediation and phyto-remediation; use of renewable energy to meet power demands of energy-intensive treatment systems or auxiliary equipment; use of cleaner fuels, machinery, and vehicles; use of native plant species; and minimizing waste and water use.

Additional information: <http://clu.in.org/greenremediation/index.cfm>

- **Encourage development in brownfield sites**

Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. These sites are often "infrastructure-ready," eliminating the need to build new roads and utility lines which are necessary in undeveloped land.

Additional information: <http://www.epa.gov/brownfields/>

- **Encourage use of Smart Growth and transit-oriented development principles**

Smart Growth and transit oriented development (TOD) principles help preserve natural lands and critical environmental areas, and protect water and air quality by encouraging developments that are mixed-use, walkable and located near public transit. Encourage use of bicycling with bike commuter parking, storage, and changing facilities. Facilitate increased carpooling or alternative vehicles with preferable parking spaces and/or electric vehicle plug in spots.

Additional information: <http://www.epa.gov/smartgrowth>

- **Integrated Design Process**

The Integrated Design Process calls for the active and continuing engagement of all stakeholders throughout the building design, development, construction, and post-construction phases including the owners, architects, engineers, building department officials, and others. This process creates a higher-performing building at lower cost, allows various building systems to work together to eliminate redundant and unnecessary capacity, and minimizes change order costs.

Additional information: http://www.wbdg.org/design/engage_process.php



In Reply Refer To:
14-CPA-0065

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Jersey Field Office
Ecological Services
927 North Main Street, Building D
Pleasantville, New Jersey 08232
Tel: 609/646 9310
Fax: 609/646 0352
<http://www.fws.gov/northeast/njfieldoffice>



JAN 02 2014

Dear Mr. Rhyner:

The U.S. Fish and Wildlife Service (Service), New Jersey Field Office has reviewed the *Interagency and Intergovernmental Coordination for Environmental Planning for the Environmental Assessment for Proposed Multi-Purpose Machine Gun Range at Joint Base McGuire-Dix-Lakehurst, New Jersey*. The Proposed Action would establish a training facility for seven required weapon systems. The second alternative under consideration is No Action. The Service is providing fish and wildlife review comments on the Proposed Action, including a determination of whether federally listed endangered and threatened species would be affected.

AUTHORITY

The following comments on the Proposed Action are provided pursuant to Section 7 of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) and the Migratory Bird Treaty Act of 1918 (40 Stat. 755; 16 U.S.C. 703-712) (MBTA), as amended, to ensure the protection of federally listed endangered and threatened species, and migratory birds. Additional comments are provided as technical assistance for the draft Environmental Assessment and do not preclude further comment pursuant to the National Environmental Policy Act (83 Stat. 852; 42 U.S.C. 4321 *et seq.*).

FEDERALLY LISTED SPECIES

An historical occurrence of the federally listed (threatened) swamp pink (*Helonias bullata*) was located within palustrine forested wetlands south of Howard Furnace Manchester Road (south-west of the project site). Many areas of New Jersey have not been thoroughly surveyed for endangered and threatened species. If present, swamp pink could be adversely affected by any temporary or permanent impacts to wetlands including clearing, filling, draining, shading, and changes in erosion, sedimentation, water quality, or surface or groundwater hydrology. Therefore, the Service requests that a qualified surveyor conduct a survey of palustrine wetlands within the action area to determine the presence or absence of swamp pink. The action area

includes all areas that may be directly or indirectly affected during or after project implementation, including through hydrologic changes. Guidance for performing swamp pink surveys is enclosed. The results of any survey, whether showing presence or absence of swamp pink, must be forwarded to this office for review; please include photographs and the qualifications of the surveyor(s).

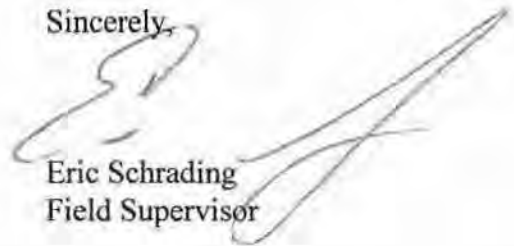
No other federally listed or proposed threatened or endangered flora or fauna under Service jurisdiction are known to occur within the vicinity of the proposed project site. If additional information on federally listed species becomes available, or if project plans change, this determination may be reconsidered.

MIGRATORY BIRDS

Tree removal will have an adverse impact on migratory birds if conducted during the nesting season (destruction of nests with eggs or unfledged birds). The Breeding Bird Atlas (Niles *et al.*, 2001) lists approximately 70 species of breeding migratory birds that occur in the vicinity of the project area. The Service requests a seasonal restriction on tree cutting between March 15 and July 31 to avoid impacts to birds protected under the MBTA.

Thank you for the opportunity to provide comments on the proposed Multi-Purpose Machine Gun Range. Please contact Carlo Popolizio at (609) 383-3938, extension 32, if you require further assistance.

Sincerely,



Eric Schrading
Field Supervisor

Enclosure

REFERENCE

Niles, L.J., M. Valent, J. Tash and J. Myers. 2001. New Jersey's Landscape Project: Wildlife habitat mapping for community land-use planning and endangered species conservation. New Jersey Department of Environmental Protection, New Jersey Division of Fish and Wildlife, Endangered and Nongame Species Program.

cc: joseph.rhyner@us.af.mil
brian.sariano@amec.com

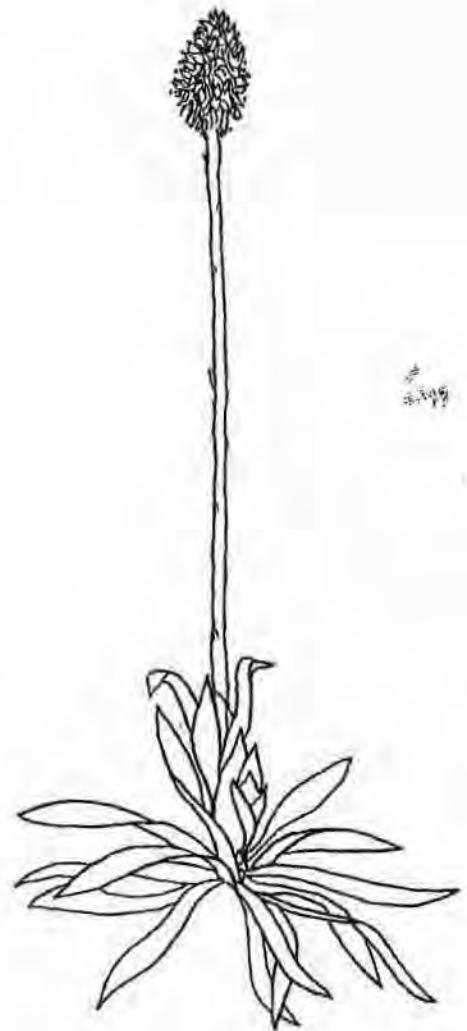
NJFO:ES:cpopolizio:RP:ES:cap: 12/23/13
P:/Shared/Carlo/ 14-CPA0065 [McGuire-Dix-Lakehurst]

Swamp pink

Swamp pink (*Helonias bullata*) was federally listed as a threatened plant species on September 9, 1988, pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). New Jersey contains the majority of the remaining populations of the species; however, not all of the potential swamp pink habitats in New Jersey have been surveyed. The U.S. Fish and Wildlife Service (Service) requests that a qualified biologist conduct a comprehensive search for swamp pink in any potentially suitable wetland habitat, as described below, that may be impacted by project activities. The following information is provided to assist in identifying the species and its habitat and to describe recommended survey techniques.

IDENTIFICATION: Swamp pink is characterized by a bright pink flower cluster that blooms in early spring. The stocky, hollow flower stem grows from one to three feet tall and has sparse modified leaves along its length. In April or early May, the stem is topped by a cluster (approximately one to three inches long) of pink flowers dotted with pale blue anthers. However, only 10 to 15 percent of the plants in a population typically flower in any one season. When the plant is not flowering, swamp pink can be identified by its smooth, evergreen, lance-shaped leaves (approximately 3 to 10 inches long), which lie almost flat on the ground in a basal rosette. The leaves are shiny green when young and often attain a purplish tint in mature plants. In New Jersey, the plant is easiest to identify when in bloom or in the winter months when few other herbaceous plants are still green. Population sizes may vary from a few to several thousand plants.

HABITAT: Considered an obligate wetland species, swamp pink occurs in a variety of palustrine forested and scrub/shrub wetlands in New Jersey including: forested wetlands bordering meandering streamlets, headwater wetlands, sphagnum Atlantic white cedar swamps, and spring seepage areas. Specific hydrologic requirements of swamp pink limit its occurrence to wetlands that are perennially saturated, but not inundated by floodwater. The water table must be at or near the surface, fluctuating only slightly during spring and summer months.



Swamp pink is a shade-tolerant plant that occurs in wetlands with varying canopy closure. Plant species associated with swamp pink include: Atlantic white cedar (*Chamaecyparis thyoides*), red maple (*Acer rubrum*), pitch pine (*Pinus rigida*), American larch (*Larix laricina*), black spruce (*Picea mariana*), red spruce (*Picea rubens*), sweet pepperbush (*Clethra alnifolia*), sweetbay magnolia (*Magnolia virginiana*), sphagnum mosses (*Sphagnum* spp.), cinnamon fern (*Osmunda cinnamomea*), skunk cabbage (*Symplocarpus foetidus*), and laurels (*Kalmia* spp.). Swamp pink often grows on hummocks formed by trees, shrubs, and sphagnum mosses, which indicates that these microtopographic conditions may be an important component of swamp pink habitat.

RANGE: Once found inhabiting wetland areas from New York to Georgia, swamp pink now occurs only along the coastal plain from New Jersey to Virginia and in small isolated bog areas in the Southern Appalachian Mountains. Containing more than 70 percent of the known sites, New Jersey represents the global stronghold for swamp pink. Plant colonies are found in Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Middlesex, Monmouth, Morris, Ocean, and Salem Counties.

THREATS: Threats to swamp pink include: loss or degradation of habitat due to illegal filling of wetlands; sedimentation from off-site construction activities; introduction of excess nutrients or toxic chemicals (e.g., herbicides) into the water; and, changes in groundwater and surface water hydrology due to excavation, water withdrawal, and increased runoff from upstream development (causing flooding and erosion). Additionally, direct discharge from stormwater outfalls can increase the frequency, duration, and volume of flooding in swamp pink wetlands and adversely affect the species.

SURVEY REQUIREMENTS: Although surveys can be conducted year round, the Service recommends conducting surveys from late fall to early spring when the foliage of other plant species is reduced, making the evergreen foliage of swamp pink easier to detect. Random transect surveys are inappropriate since the species may be present in small wet pockets, which may be overlooked during the random transect method. All available suitable habitat within the project impact area should be surveyed, concentrating on forested wetland areas as previously described, with suitable hydrology. The surveyor should census not only the wetlands on the subject property, but also upstream and downstream wetlands. Please **do not** collect specimens or send plants or parts of plants to the Service for identification. Report the survey method used, the qualifications of the surveyor, and the results of the survey (including size of area surveyed, hours searched, aerial and/or ground photographs with index map, and wetland delineations) to:

U.S. Fish and Wildlife Service
New Jersey Field Office
927 North Main Street, Building D-1
Pleasantville, New Jersey 08232
Telephone: (609) 646-9310
Facsimile: (609) 646-0352

CONSERVATION AND PROTECTION: The Service's Swamp Pink Recovery Plan identifies permanent protection of at least 80 large populations. If you own property containing swamp pink or know of other landowners who would be interested in permanently protecting this species, please notify the Service for additional information and assistance.





IICEP Request - Joint Base McGuirde-Dix-Lakehurst - proposed MPMGR

Sariano, Brian P <brian.sariano@amec.com>

Wed, Dec 11, 2013 at 2:18 PM

To: "carlo_popolizio@fws.gov" <carlo_popolizio@fws.gov>

Cc: "RHYNER, JOSEPH R GS-12 USAF AMC 87 CES/CEIEC" <joseph.rhyner@us.af.mil>

Carlo,

Thank you for taking the time to talk to me this afternoon. As we discussed I am working on the EA for the proposed Multi-Purpose Machine Gun Training Range (MPMGR) at JBMDL. JBMDL initially sent the IICEP request out in association with this proposed action back in November 2012. We have come to realize that we have not received a response back from USFWS on the IICEP request. It is likely that the delivery of the IICEP request was hampered by Hurricane Sandy.

Per our conversation, I am sending you the IICEP request and the Description of the Proposed Action and Alternatives. Please note that the IICEP letter from JB MDL indicates that you should provide response to Mr Joe Schwartz; However Mr. Schwartz has subsequently retired from JBMDL. Your response should directed to:

Mr. Joe Rhyner

joseph.rhyner@us.af.mil

Acting JB MDL Environmental Section Head

USAF AMC 87 CES/CEAN

If you could also copy me on your response that would be greatly appreciated.

We look forward to hearing back from you concerning this proposed action.

Brian P. Sariano

Senior Project Manager

AMEC Environment & Infrastructure, Inc.

Hillcrest I

751 Arbor Way, Suite 180

Blue Bell, PA 19422-1960

Tel. 610-877-6126

Fax 610-828-6700

Cell 215-272-4222



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3 attachments



MPMGR IICEP DISTR LIST.pdf
429K



MPMGR IICEP CVR LTR 11.06.12.pdf
482K



FINAL DOPAA 11-15-12.pdf
7189K

Popolizio, Carlo <carlo_popolizio@fws.gov>

Thu, Dec 12, 2013 at 10:28 AM

To: "Sariano, Brian P" <brian.sariano@amec.com>

Cc: "RHYNER, JOSEPH R GS-12 USAF AMC 87 CES/CEIEC" <joseph.rhyner@us.af.mil>

Thank you Brian, Carlo

[Quoted text hidden]

—

Carlo Popolizio, Biologist
USFWS-NJFO

927 N. Main Street, Pleasantville NJ 08232

Phone: (609) 383-3938 x 32

Fax: (609) 646-0352

"Sell your cleverness and buy bewilderment." Rumi



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND
JOINT BASE MCGUIRE-DIX-LAKEHURST

6 November 2012

MEMORANDUM FOR: SEE DISTRIBUTION

FROM: Department of the Air Force
87th Air Base Wing (Air Mobility Command)
Asset Management Flight
87 CES/CEA
2401 Vandenberg Avenue
Joint Base McGuire-Dix-Lakehurst NJ 08641

SUBJECT: Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) for the Environmental Assessment (EA) for the Proposed Multi-Purpose Machine Gun Range (MPMGR) at Joint Base McGuire-Dix-Lakehurst, New Jersey

Joint Base McGuire-Dix-Lakehurst (JB MDL) is preparing an Environmental Assessment (EA) for the proposed construction and operation of a new MPMGR at JB MDL. Pursuant to the National Environmental Policy Act (NEPA) of 1969 [42 USC 4321 et seq.], Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508, and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (EIAP) (32 CFR Part 989), JB MDL will prepare an EA that considers the potential consequences to human health and the natural environment. This EA will examine the effects of the proposed construction and operation of the proposed MPMGR at JB MDL.

The Intergovernmental Coordination Act and Executive Order (EO) 12372, Intergovernmental Review of Federal Programs, require Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. Air Force Instruction (AFI) 32-7060 requires HQ AMC to implement the IICEP process. In accordance with EO 12372 and AFI 32-7060, we invite your agency to review the attached Description of Proposed Action and Alternatives (DOPAA) and to provide comments on the Proposed Action. Please provide your comments relative to specific issues or geographic areas of concern your office may have, based on your expertise or regulatory jurisdiction. Provide any technical information, mitigation or permitting requirements that may be necessary for project implementation. Any preliminary data your office can provide will be evaluated and incorporated into the EA.

The purpose of the proposed action is to construct and operate a MPMGR to meet the training and qualification objectives using a standard Army range and seven (7) required weapons systems. This range would provide a year-round, comprehensive and realistic training and range facility for the training of soldiers in basic machine gun marksmanship skills. The U.S. Army has determined the current machine gun range does not meet the basic training requirements of a standard Army range as codified in Training Circular (TC) 25-8 – Training Ranges (DA 2010).

The proposed new MPMGR range would meet critical live-fire individual marksmanship training needs for both active and reserve component units that train on the installation.

JBMDL looks forward to your participation in this NEPA process. Please provide written comments within 15 days from the date of this letter. Your response on or before 27 November 2012 will enable us to complete this phase of the project within the scheduled time frame. Please direct your correspondence to: Mr. Joseph Schwartz, Environmental Protection Specialist, Department of the Air Force, 87 CES/CEAN, 5317 Snyder Lane, Joint Base McGuire-Dix-Lakehurst, NJ 08640-5501 or via e-mail at joseph.schwartz.5@us.af.mil. If you need further information please contact Mr. Schwartz at 609-562-2216.



Richard P. Sample, GS-13, DAF
Asset Management Flight Chief
87th Civil Engineer Squadron

Attachments:

- 1) Final Description of Proposed Action and Alternatives
- 2) Distribution List

**27 NOVEMBER 2012 INTERGOVERNMENTAL
COORDINATION SUBMITTAL**

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND
JOINT BASE MCGUIRE-DIX-LAKEHURST

27 Nov 12

Mr Christopher A. Archer
87th Civil Engineer Squadron
2401 Vandenberg Avenue
Joint Base McGuire-Dix-Lakehurst NJ 08641

Ms Tamara Francis
Delaware Nation
NAGPRA/Cultural Preservation
PO Box 825
Anadarko, OK 73005

Dear Ms Francis

Joint Base McGuire-Dix-Lakehurst (JB MDL) is preparing an Environmental Assessment (EA) for the proposed construction and operation of a new Multi-Purpose Machine Gun Range (MPMGR) at JB MDL. Pursuant to the National Environmental Policy Act (NEPA) of 1969 [42 USC 4321 *et seq.*], Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508, and Air Force Instruction (AFI) 32-7061, *Environmental Impact Analysis Process* (32 CFR Part 989), JB MDL will prepare an Environmental Assessment (EA) that considers the potential consequences to human health and the natural environment. This EA will examine the effects of the proposed construction and operation of the proposed MPMGR at JB MDL.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, JB MDL invites the Delaware Nation to participate in the EA as a sovereign nation. This consultation is required under Department of Defense Instruction 4710.02, which implements the *Annotated Department of Defense American Indian and Alaska Native Policy* dated 27 October 1999; the National Historic Preservation Act; the Native American Graves and Protection and Repatriation Act; American Indian Religious Freedom Act; Archaeological Resource Protection Act; NEPA, EO 13007, *Indian Sacred Sites*; EO 13175, *Consultation and Coordination with Indian Tribal Governments*; Executive memorandum dated November 5, 2009, *memorandum on Tribal Consultation*; and AFI 32-7065, *Cultural Resources Management Program*.

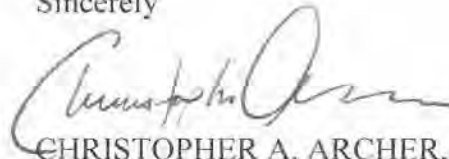
The purpose of the proposed action is to construct and operate a MPMGR to meet the training and qualification objectives using a standard Army range and seven required weapons systems. This range would provide a year-round, comprehensive and realistic training and range facility for the training of soldiers in basic machine gun marksmanship skills. The US Army has determined the current machine gun range does not meet the basic training requirements of a standard Army range as codified in Training Circular 25-8 – Training Ranges (DA 2010). The

proposed new MPMGR range would meet critical live-fire individual marksmanship training needs for both active and reserve component units that train on the installation.

JB MDL is inviting the Delaware Nation to review the attached final description of proposed action and alternatives and determine if you would like to be considered as a consulting party for the EA process. If you are able to identify any historic properties that are of religious or sacred importance in the area or any traditional cultural properties, please notify us as soon as possible so that we can work with you to develop appropriate measures for managing these properties. JB MDL will ensure that any impacts of the proposed action on Native American cultural resources will be fully considered in the NEPA document. As per federal regulations, JB MDL will protect information you provide regarding the existence of sacred or religious historic properties and the location of Native American archaeological sites.

JB MDL looks forward to consulting with you on any concerns you may have with the proposed project. Please direct your correspondence to Mr Joseph Schwartz, Environmental Protection Specialist, 5317 Snyder Lane, Joint Base McGuire-Dix-Lakehurst, NJ 08640-5501. You may also e-mail him at joseph.schwartz.5@us.af.mil, or call (609) 609-562-2216.

Sincerely



CHRISTOPHER A. ARCHER, GS-14, DAF
Deputy Base Civil Engineer

1 Attachment:
Final Description of Proposed Action and Alternatives



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND
JOINT BASE MCGUIRE-DIX-LAKEHURST

27 Nov 12

Christopher A. Archer
87th Civil Engineer Squadron
2401 Vandenberg Avenue
Joint Base McGuire-Dix-Lakehurst NJ 08641

Dr. Brice Obermeyer
Delaware Tribe of Indians
1420 C of E Street
Suite 190
Emporia KS 66801

Dear Dr Obermeyer

Joint Base McGuire-Dix-Lakehurst (JB MDL) is preparing an Environmental Assessment (EA) for the proposed construction and operation of a new Multi-Purpose Machine Gun Range (MPMGR) at JB MDL. Pursuant to the National Environmental Policy Act (NEPA) of 1969 [42 USC 4321 *et seq.*], Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508, and Air Force Instruction (AFI) 32-7061, *Environmental Impact Analysis Process* (32 CFR Part 989), JB MDL will prepare an Environmental Assessment (EA) that considers the potential consequences to human health and the natural environment. This EA will examine the effects of the proposed construction and operation of the proposed MPMGR at JB MDL.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, JB MDL invites the Delaware Nation to participate in the EA as a sovereign nation. This consultation is required under Department of Defense Instruction 4710.02, which implements the *Annotated Department of Defense American Indian and Alaska Native Policy* dated 27 October 1999; the National Historic Preservation Act; the Native American Graves and Protection and Repatriation Act; American Indian Religious Freedom Act; Archaeological Resource Protection Act; NEPA, EO 13007, *Indian Sacred Sites*; EO 13175, *Consultation and Coordination with Indian Tribal Governments*; Executive memorandum dated November 5, 2009, *memorandum on Tribal Consultation*; and AFI 32-7065, *Cultural Resources Management Program*.

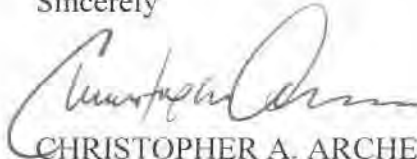
The purpose of the proposed action is to construct and operate a MPMGR to meet the training and qualification objectives using a standard Army range and seven required weapons systems. This range would provide a year-round, comprehensive and realistic training and range facility for the training of soldiers in basic machine gun marksmanship skills. The US Army has determined the current machine gun range does not meet the basic training requirements of a standard Army range as codified in Training Circular 25-8 – Training Ranges (DA 2010). The

proposed new MPMGR range would meet critical live-fire individual marksmanship training needs for both active and reserve component units that train on the installation.

JB MDL is inviting the Delaware Nation to review the attached final description of proposed action and alternatives and determine if you would like to be considered as a consulting party for the EA process. If you are able to identify any historic properties that are of religious or sacred importance in the area or any traditional cultural properties, please notify us as soon as possible so that we can work with you to develop appropriate measures for managing these properties. JB MDL will ensure that any impacts of the proposed action on Native American cultural resources will be fully considered in the NEPA document. As per federal regulations, JB MDL will protect information you provide regarding the existence of sacred or religious historic properties and the location of Native American archaeological sites.

JB MDL looks forward to consulting with you on any concerns you may have with the proposed project. Please direct your correspondence to Mr Joseph Schwartz, Environmental Protection Specialist, 5317 Snyder Lane, Joint Base McGuire-Dix-Lakehurst, NJ 08640-5501. You may also e-mail him at joseph.schwartz.5@us.af.mil, or call (609) 609-562-2216.

Sincerely

A handwritten signature in dark ink, appearing to read "Christopher A. Archer", written in a cursive style.

CHRISTOPHER A. ARCHER, GS-14, DAF
Deputy Base Civil Engineer

1 Attachment:
Final Description of Proposed Action and Alternatives

From: RHYNER, JOSEPH R GS-12 USAF AMC 87 CES/CEIEC [joseph.rhyner@us.af.mil]
Sent: Thursday, September 18, 2014 2:42 PM
To: jross@delewarenation.com
Cc: Sariano, Brian P; REYNOLDS, JEAN A CIV USAF HAF AFCEC/CZN
Subject: Joint Base McGuire Dix Lakehurst Multi Purpose Machine Gun Range
Environmental Assessment
Attachments: MPMG Consultation letter.pdf

Mr. Ross,

In November of 2012, Joint Base sent an invitation to consult on a proposed Multi-Purpose Machine Gun Range Description of Proposed Actions and Alternatives. Since that letter the primary point of contact for the effort has retired and we no longer have access to his emails for this project.

We have no record of a response from your Tribe on the project and need one so that we can continue on with the public comment portion of the project.

For your reference a copy of the original letter is attached to this email.

Thank you for your time and attention to this matter.

Respectfully,
Joe

Joseph Rhyner PE
87 CES/CEIE
Acting Environmental Element Chief
(609) 754 6166
JB MDL

KOUDELKA, ADAM J Maj USAF AFLOA JA/JACE-FSC

From: Peterson, Dorothy S CIV NAVAIR, 4.3 <dorothy.s.peterson@navy.mil>
Sent: Thursday, September 24, 2015 6:39 AM
To: RHYNER, JOSEPH R GS-13 USAF AMC 787 CES/CEIE
Subject: FW: Stockbridge-Munsee
Signed By: dorothy.s.peterson@navy.mil

To clarify, the Solar EA included land-based sites on both McGuire and Lakehurst - so it was not just Ocean but also Burlington County they indicated no interest in.

DP

-----Original Message-----

From: Peterson, Dorothy S CIV NAVAIR, 4.3
Sent: Thursday, September 24, 2015 7:09 AM
To: 'RHYNER, JOSEPH R GS-13 USAF AMC 787 CES/CEIE'; DURYEE, ADRIENNE J GS-12 USAF AFCEC AFCEC/CZO
Subject: RE: Stockbridge-Munsee

Hi Joe,

They sent a letter in response to the Solar EA project indicating they weren't interested in this area of NJ. It is in Appendix A of that document. I extracted the letter and attached a pdf of it. After we received this and to follow up on the base's initiation of the G2G process, I believe Adrienne followed up with the phone call where they indicated they did not want to be consulted on future JB MDL projects.

Vr
Dorothy

-----Original Message-----

From: RHYNER, JOSEPH R GS-13 USAF AMC 787 CES/CEIE [mailto:joseph.rhyner@us.af.mil]
Sent: Thursday, September 24, 2015 6:47 AM
To: PETERSON, DOROTHY S GS-13 USN Code 4.3.4.2; DURYEE, ADRIENNE J GS-12 USAF AFCEC AFCEC/CZO
Subject: FW:

Do either of you have the original of this email, that I only have in text form?

The AFLOA guy wants me to put in my MPMGR EA...

Thanks
Joe

-----Original Message-----

From: Corson, Sevie - FS [mailto:scorson@fs.fed.us]
Sent: Wednesday, September 23, 2015 2:52 PM
To: RHYNER, JOSEPH R GS-13 USAF AMC 787 CES/CEIE
Subject:

Hi Joe,

This is the most recent correspondence I can find regarding removing the Stockbridge-Munsee tribe as consultants.

I found it in the CRM Archive.

Sevrie

Stockbridge-Munsee Tribal Historic Preservation Office

Sherry White - Tribal Historic Preservation Officer

W13447 Camp 14 Road

P.O. Box 70

Bowler, WI 54416

Date Dec. 9, 2011
Project Number JB MDL Solar photovoltaic systems
TCNS Number _____
Company Name Dept. of the air force

We have received your letter for the above listed project. Before we can process the request we need more information. The additional items needed are checked below.

Additional Information Required:

- ☐ Site visit by Tribal Historic Preservation Officer
- ☐ Archeological survey, Phase 1
- ☐ Literature/record search including colored maps
- ☐ Pictures of the site
- ☐ Any reports the State Historic Preservation Office may have
- ☐ Has the site been previously disturbed
- ☐ Review fee must be included with letter

If site has been previously disturbed please explain what the use was and when it was disturbed.

Other comments or information needed _____

After reviewing your letter we find that:

☐ "No Properties" the Tribe concurs with a Federal agency's finding that there are no National Register eligible or listed properties within the Federal undertaking's area of potential effect or APE 36CFR 800.4 (d) (1)

☐ "No Effect" historic or prehistoric properties are present but the Federal undertaking will have no effect on the National Register eligible or listed properties as defined in Sec. 800.16(i)

☐ "No Adverse Effect" refers to written opinions provided to a Federal agency as to whether or not the Tribe agrees with (or believes that there should be) a Federal agency finding that its Federal undertaking would have "No Adverse Effect" 36 CFR 800.5(b)

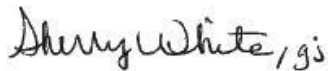
_____ "Adverse Effect" refers to written opinions provided to a Federal Agency that undertaking would cause Adverse Effects to the area of potential effect on National Register or eligible properties according to the criteria set forth in 36 CFR 800. 5(a) (1), (2) (i)- (vii)

X Project not within a county the Mohican Tribe has interest in

Should this project inadvertently uncover a Native American site, we ask that you halt all construction and notify the Stockbridge-Munsee Tribe immediately.

Please do not resubmit project for changes that are not ground disturbance.

Sincerely,



Sherry White
Tribal Historic Preservation Officer

RE Phone call with Sherry White July 2012

From: DURYEE, ADRIENNE J CTR USAF AMC 87 CES/CEAN
Sent: Monday, January 14, 2013 4:57 PM
To: DURYEE, ADRIENNE J CTR USAF AMC 87 CES/CEAN; PETERSON, DOROTHY S
CTR USAF AMC 87 CES/CEA
Subject: RE: Phone call with Sherry White

The date was Tuesday, July 24, 2012 8:55 AM. Assistant Rainer called me back and said that Sherry White told him to tell me to take the Stockbridge-Munsee off of the consultation list. He said specifically that this was Oklahoma-Delaware territory and that they (Stockbridge Munsee) were further north.

Adrienne Lazazzera, Ph.D.
Staff Archaeologist
Contractor (ASN Corporation)
609-562-7358
adrienne.duryee.ctr@us.af.mil

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**INTERGOVERNMENTAL RESPONSES RECEIVED FROM 2012 INTERGOVERNMENTAL
COORDINATION REQUEST**

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**Delaware Tribe Historic Preservation Office**

1420 C of E Drive, Suite 190

Emporia, KS 66801

(620) 340-0111

bobermeyer@delawaretribe.org

December 11, 2012

Mr. Joseph Schwartz
Environmental Protection Specialist
5317 Snyder Lane
Joint Base McGuire-Dix-Lakehurst, NJ 08640-5501

Re: Multi-Purpose Machine Gun Range (MPMGR) at JB MDL; Contract #FA4484-07-D-0005

Dear Mr. Joseph Schwartz:

Thank you for informing the Delaware Tribe on the proposed construction associated with the above referenced project. Our review indicates that there are no religious or culturally significant sites in the project area. As such, we defer comment to your office as well as to the State Historic Preservation Office and/or the State Archaeologist.

We wish to continue as a consulting party on this project and look forward to receiving a copy of the cultural resources survey report if one is performed. We also ask that if any human remains are accidentally unearthed during the course of the survey and/or the construction project that you cease development immediately and inform the Delaware Tribe of Indians of the inadvertent discovery.

If you have any questions, please feel free to contact this office by phone at (620) 340-0111 or by e-mail at bobermeyer@delawaretribe.org

Sincerely,

Brice Obermeyer
Delaware Tribe Historic Preservation Office
1420 C of E Drive, Suite 190
Emporia, KS 66801

From: RHYNER, JOSEPH R GS-12 USAF AMC 87 CES/CEIEC [joseph.rhyner@us.af.mil]
Sent: Thursday, October 02, 2014 4:20 PM
To: Sariano, Brian P
Subject: FW: Joint Base McGuire Dix Lakehurst Multi Purpose Machine Gun Range Environmental Assessment

Brian,
A response from the Delaware Nation on the MPMGR. Please include this in the Appendix.

Thank you.
Joe

-----Original Message-----

From: Jason Ross [<mailto:JRoss@delawarenation.com>]
Sent: Thursday, October 02, 2014 3:44 PM
To: RHYNER, JOSEPH R GS-12 USAF AMC 87 CES/CEIEC
Subject: RE: Joint Base McGuire Dix Lakehurst Multi Purpose Machine Gun Range Environmental Assessment

Hello Mr. Rhyner,

Per our phone conversation I checked into this and upon research of our database(s) and files we find that the Lenape people occupied this area either prehistorically or historically. However, the location of the project does not endanger cultural or religious sites of interest to the Delaware Nation. Please continue with the project as planned. However, should this project inadvertently uncover an archaeological site or object(s), we request that you halt all construction and ground disturbance activities and immediately contact the appropriate agencies, as well as our office (within 24 hours).

Also, I wanted to let you know that Tamara Francis-Fourkiller is no longer our Cultural Preservation Director and below I have our Assistant Director and Director's info for your files.

Corey Smith
Assistant Director
Delaware Nation Cultural Preservation
P.O. Box 825
Anadarko, OK 73005
Phone: (405) 247-2448 Ext. 1405
Fax: (405) 247-8905

Nekole Alligood
Director of Cultural Preservation
Delaware Nation
31064 HWY 281
PO Box 281
Anadarko, OK 73005

SECTION 106 CONSULTATION DOCUMENTATION

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND
JOINT BASE MCGUIRE-DIX-LAKEHURST

October 9, 2013

Joint Base McGuire-Dix-Lakehurst
Joseph Rhyner
Acting Chief, Environmental Section
5317 Snyder Lane
JB MDL, New Jersey 08640

Mr. Daniel Saunders
Deputy State Historic Preservation Officer
New Jersey Department of Environmental Protection
P.O. Box 404
Trenton, NJ 08625-0404

SUBJECT: Section 106 consultation for the construction of Multipurpose Machine Gun Range (HPO Project #13-0174) on Dix Range Area.

Dear Mr. Saunders:

The U.S. Army proposes to construct, operate and maintain a Multi-Purpose Machine Gun Range (MPMGR) on Joint Base McGuire-Dix-Lakehurst (JB MDL) in the Dix Range Area. The U.S. Army has determined that the current Machine Gun Range does not meet the size requirements for basic training as outlined in the Training Circular (TC) 25-8 Training Ranges (DA 2010). The proposed new MPMGR would meet critical live-fire individual marksmanship training needs for both active and reserve component units that train on the installation. The range construction will include a range complex, fixed target locations, direct buried utilities, and access roads (see attached proposed project design plans). Tree clearing will be conducted prior to range construction, including cutting trees to within three inches of ground surface, leaving stumps in wetlands areas and removing cut trees with track-loader equipment. Vegetation will be maintained by mowing.

In a letter dated November 28, 2012 responding to the submission of the Description of Proposed Action and Alternatives for the MPMGR (AMEC 2012), the NJ HPO requests consultation pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800) for the potential effects of the proposed MPMGR on cultural resources. This letter and the attached cultural resources review serves as our response to the request. JB MDL Cultural Resources staff has determined that there are no historic architectural resources present within the immediate APE or within ¼ mile of the proposed MPMGR.

The JB MDL Cultural Resources staff has also determined that there will be no adverse effect of the proposed MPMGR on archaeological resources. A review of historic maps, aerial photography, LIDAR imagery, previous cultural resource survey and a recent site walkover indicates that the majority of the APE has been disturbed through use as a military training area since the late 1940s. Such disturbance includes previous range construction, fire management activity, and explosive ordnance disposal. In addition, relatively undisturbed portions of the proposed MPMGR have a high risk of unexploded ordnance (UXO), which prohibits subsurface survey without prior ordnance sweep and removal. A UXO sweep will be conducted prior to tree clearing and range construction. JB MDL proposes to have a

qualified professional archaeologist monitor the UXO removal, tree clearing and range construction activities. Sites, should they be identified during these activities, will be recorded and preserved in place.

Thank you very much for your timely review of potential cultural resource impacts of the proposed MPMGR. We request concurrence on the above determination. Please call Joe Rhyner at 609-562-2189 if you have any questions or if you require additional information.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Joe Rhyner', with a long horizontal stroke extending to the right.

JOSEPH RHYNER
Chief, Environmental Section, 87th Civil Engineer
Squadron

Attachments:

- (1) Project review of potential effects
- (2) Proposed project plans



Figure 1. 2007 Aerial photograph (approximate APE shown in white)

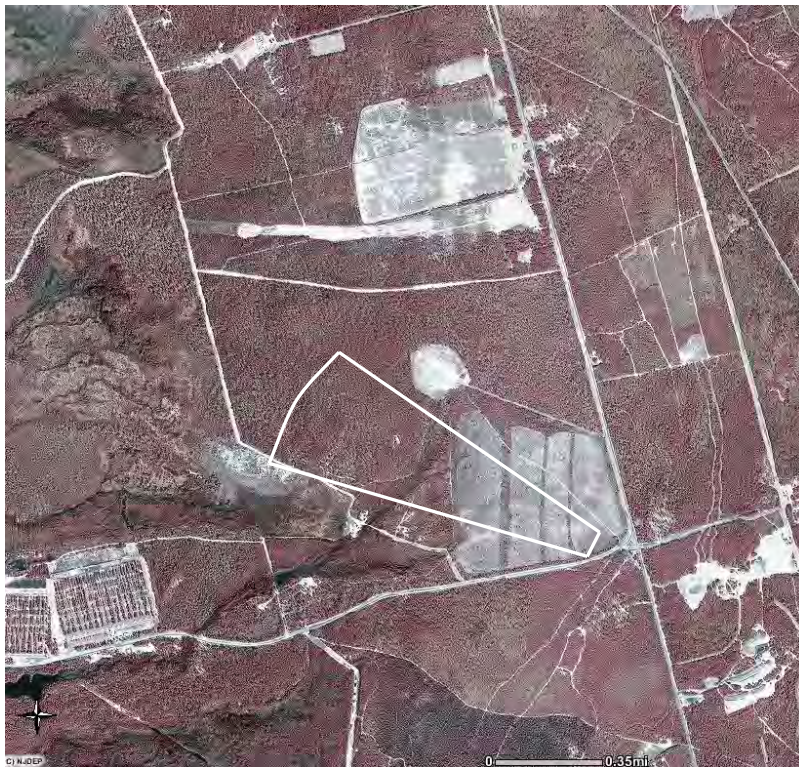


Figure 2. 2002 Aerial photograph (approximate APE shown in white)



Figure 3. 1995/1997 Aerial photograph (approximate APE shown in white)

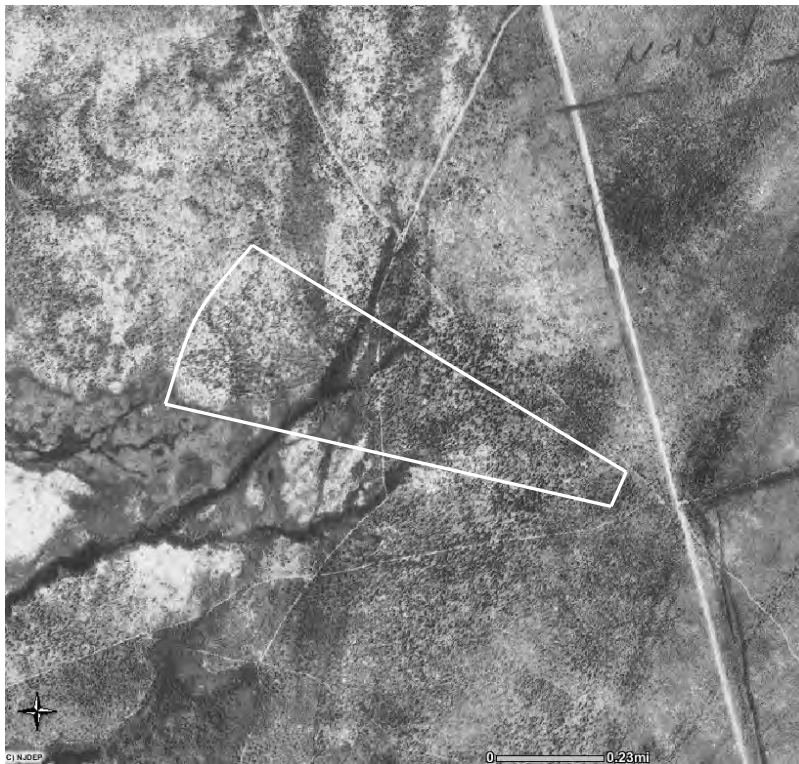


Figure 4. 1930 Aerial photograph (approximate APE shown in white)

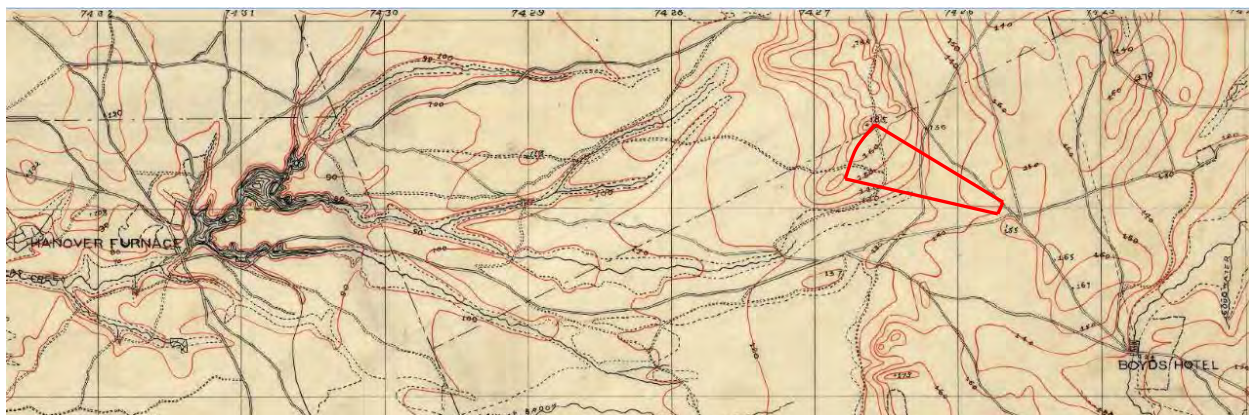


Figure 5. 1880s Vermeule Map (approximate APE shown in red)

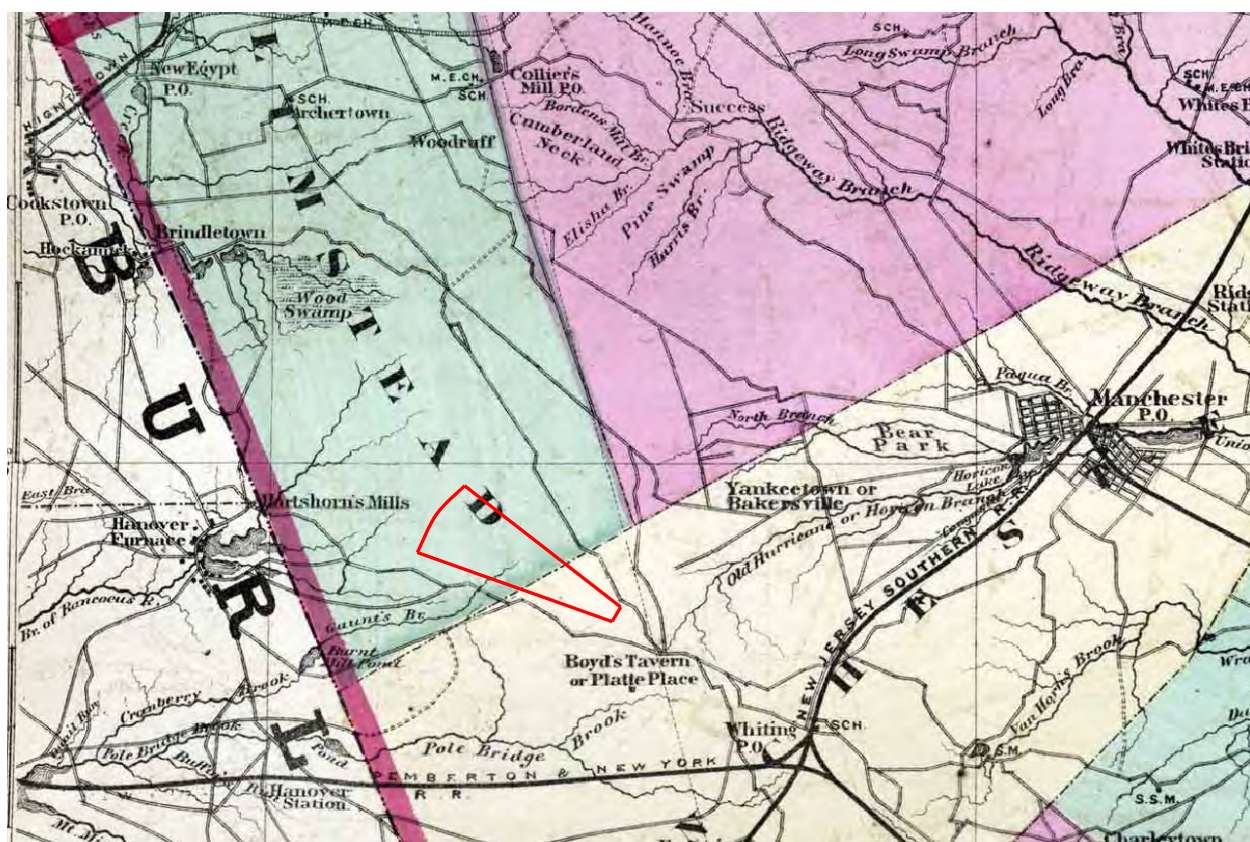


Figure 6. 1872 Beers map of Ocean County (approximate APE shown in red)

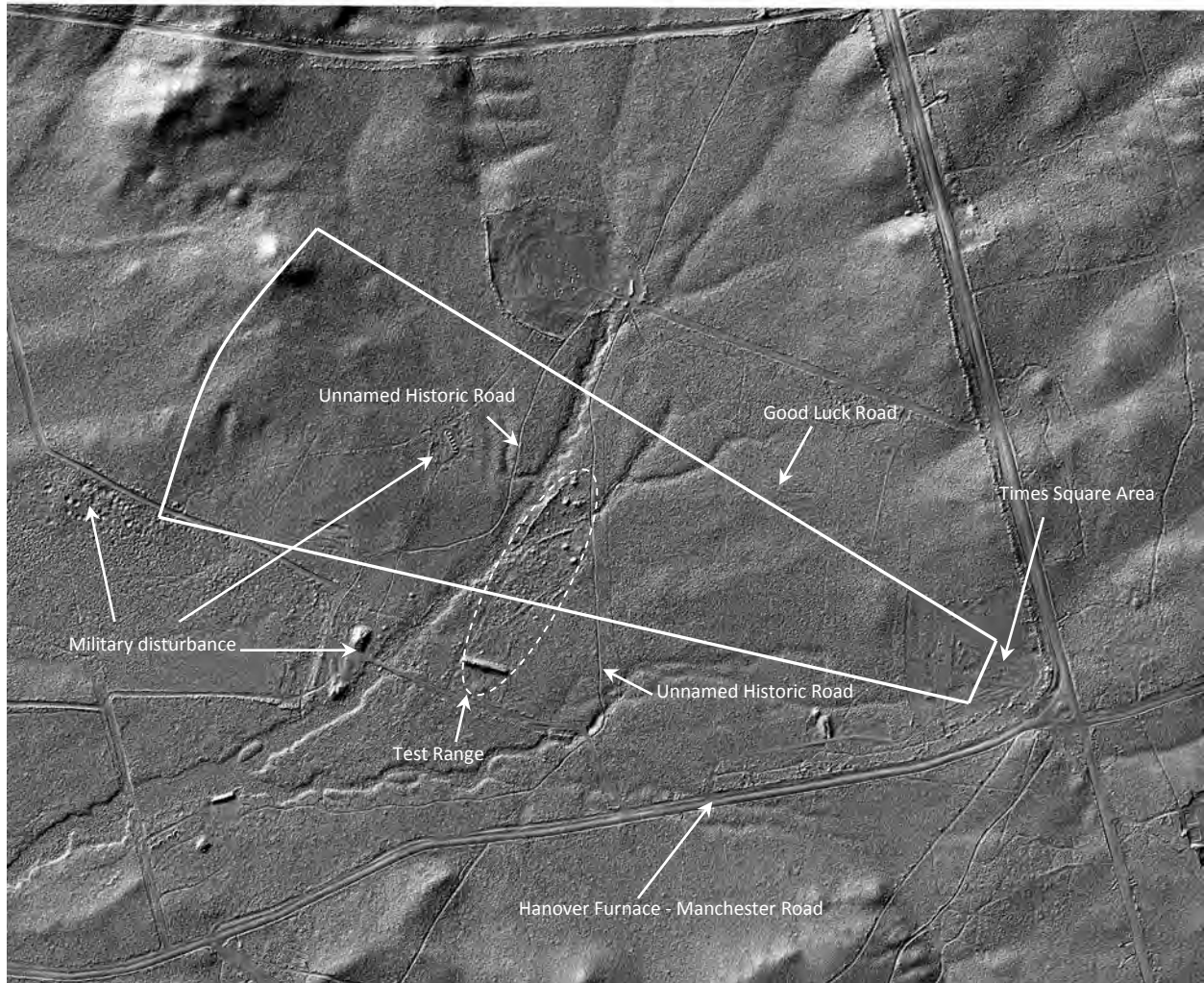


Figure 7. LIDAR image showing APE in relation to historic roads and military disturbance

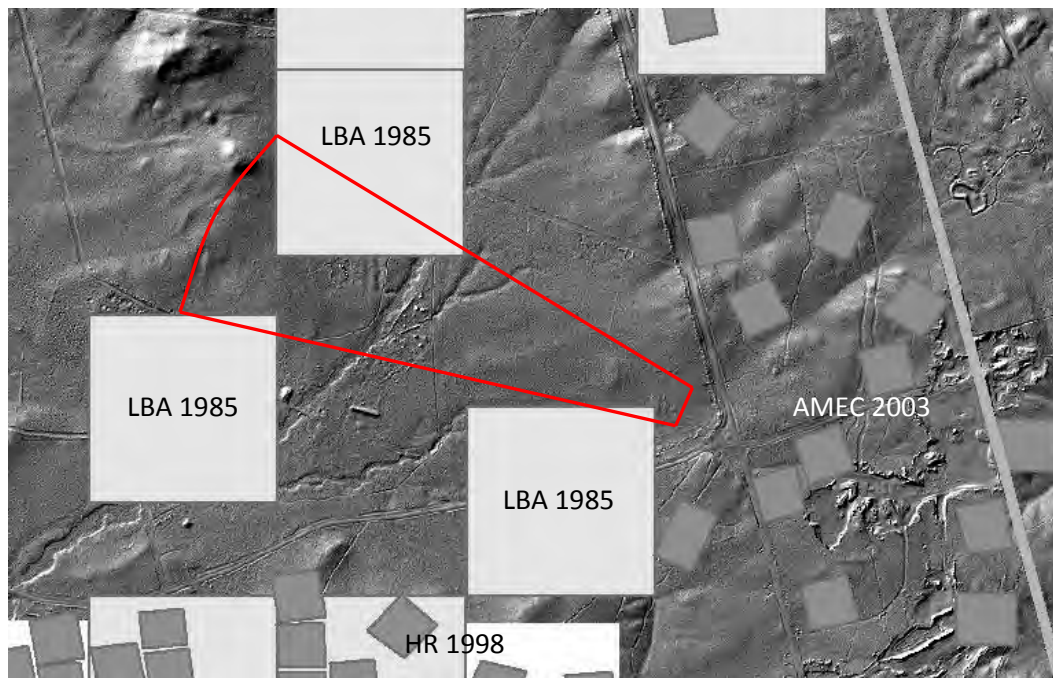


Figure 8. LIDAR image with locations of previous survey overlain (approximate APE shown in red)

Summary of proposed undertaking – JB MDL is proposing to construct a multipurpose machine gun range (MPMGR) within the former Fort Dix impact area in the vicinity of what is known as Times Square, adjacent to the Range EOD, Range 39 and 39A, and mortar firing points one and four (See Figures 1-4). The range construction will include a range complex, fixed target locations, direct buried utilities, and access roads (see attached proposed project design plans). Tree clearing will be conducted prior to range construction, including cutting trees to within 3 inches of ground surface, leaving stumps in wetlands areas and removing cut trees with track-loader equipment. Vegetation will be maintained by mowing.

National Register listed and eligible sites – no NR listed or eligible sites within APE. NR listed Hanover Furnace archaeological sites (ca. 1800) located approximately 5 miles east of APE. Potentially eligible prehistoric site 28OC67 located approximately 1.5 miles south of APE.

Historic map research – The MPMGR APE is situated among several 18th century roads including the still-named “Good Luck Road” that leads north to Head of Woods and to Archertown and south to Boyds Hotel (1.75 miles to southeast). This road continues southeast to the historic coastal town of “Good Luck” (now known as Murray Grove) that is known for the first Methodist Church built in the 1760s. Hanover Furnace – Manchester Road also lies south of the APE, it was built as an extension of Hanover Furnace Road built ca. 1792. A third historic road leads north along what is now known as Grand Concourse or Pinehurst Road to Head of Snag. A fourth historic road, identifiable on the 1880s Vermeule map, can be seen leading north on the west side of Gaunt’s Brook intersecting with Good Luck/Archertown Road (Figure 5). Although this area was likely in use by the late 18th century, historic maps do not show any structures or points of interest other than the roads themselves (Figure 6).

Geographic Location – Geographically, the APE sits at a relatively high elevation at the headwaters of Gaunt's Brook. Gaunt's Brook, one of the upper tributaries leading into the North Branch of the Rancocas Creek, passes through the APE. It is located approximately ¼ mile west of the boundary between west and east New Jersey as defined by the Quintipartite or Lawrence Line, drawn in 1676 but not surveyed until 1743. This boundary line also marks a terrace that runs roughly north-south that divides waters draining west to the Delaware River (Rancocas and Crosswicks) and east to the Tom's River (Ridgeway Creek and Hurricane Brook). Hanover Furnace – Manchester Road, located just south of the APE, traverses the terrace at what appears to have been a "pass" or relatively low point.

Current conditions – In order to assess current conditions within the MPMGR APE, a walkover was conducted by JB MDL Staff Archaeologist and staff in September 2013. Despite considerable land disturbance caused by military training, the four historic roadways likely dating from the late 18th-early 19th century were identifiable on LIDAR imagery as well as currently passable by vehicle (Figure 7). Military activities have been conducted in the area since the Army acquired the land in the early 1940s. Areas of varied and considerable disturbance can be identified throughout much of the APE from LIDAR imagery. The majority of training took place at the intersection of Grand Concourse and Hanover Furnace Manchester Road known as Times Square where there appears to be no intact surface soils. Several other range areas consisting of sighting berms and EOD fields where ordnance is recovered and detonated can be identified on the LIDAR as areas with presumed recent disturbance. JB MDL Natural Resources staff also reports that forest fires that occurred during the 1980s required management for further fire hazard. Soils in four parallel patches were stripped of burned wood, disked and reseeded. These soil disturbing activities are also visible on LIDAR imagery as well as aerial photographs. In addition to the obvious signs of disturbance, areas with the potential to contain unexploded ordnance (UXO) exist within the APE, primarily to the west of Gaunt's Brook (see enclosed design plans for risk of UXO).

Previous Surveys – Three previous surveys were conducted on the periphery of the proposed MPMGR APE. Louis Berger and Associates (LBA 1985) conducted surface collection and limited subsurface testing within three areas as shown in Figure 8. The area surveyed was found to be significantly disturbed by military activity. Hunter Research (HR 1998) tested in TAC area 13 to the south of the MPMGR APE. No historic or prehistoric artifacts were recovered from test units nearest the MPMGR APE. AMEC also conducted shovel testing in TAC area 11 and 12 (AMEC 2003) approximately ¼ mile to the east of the APE. Although patches of black sand and charcoal were identified in the soil profiles, no cultural material was recovered. Charcoal and black sands could have resulted from known fires that have taken place within the last 50 years in the vicinity, or less likely may have been related to historic charcoal production known to have taken place in the region.

Potential for archaeological sites – Regional models for prehistoric settlement in the Outer Coastal Plain suggest that Native American sites are more likely to be found along major drainages, within zones of well drained soil approximately 500 feet of streams and wetlands. Along the stretch of Gaunt's Brook that flows through the APE, the soils range from well drained to excessively well drained. Though extensive testing along the terrace portion of JB MDL (HR n.d.) identified no prehistoric sites, the margins of Gaunt's Brook are considered to have the potential for evidence of prehistoric habitation. In

addition, terraces at the headwaters of major drainages such as the Rancocas Creek may have been preferred by prehistoric populations. Nonetheless, large portions of the APE primarily to the southeast of Gaunt's Brook appear to have been disturbed by military activity as shown in the LIDAR imagery. Prehistoric sites if extant in this location would likely consist of small, surface scatters of stone tools and would have been disturbed by military activity. Undisturbed and as yet unsurveyed portions of the APE within 500 feet of Gaunt's Brook have a moderate potential to contain prehistoric archaeological sites.

The APE is also considered to have a moderate potential for historic archaeological remains. Historic roads currently extant and passing through the APE are identifiable on historic maps dating back to the mid-19th century and associated with roads and historic places dating as early as the mid to late 18th century. No structures are indicated on historic maps in this location and previous cultural resource surveys (e.g., LBA 1985) suggest that the area was more of a thoroughfare rather than a destination. Nonetheless, the APE is within the tract of land associated with Hanover Furnace and other nearby iron forges and sawmills. The area was likely associated with those industries including lumbering and charcoal production and related historic sites may manifest in the archaeological record as ephemerally as prehistoric sites. That is, small temporary camps may have been occupied in the woods along roadways and waterways outlying the major furnaces. Similar to prehistoric sites, however, such historic archaeological sites if present would have been significantly disturbed by military activity shown across portions of the APE.

Potential effects of proposed MPMGR – Potential ground disturbance for the proposed MPMGR consists mainly of new construction (targets, roadways, support buildings, electric lines, a tower, fence and gate posts) and clearing of trees and vegetation over approximately 180 acres. Targets will be non-permanent structures secured by concrete housing set at or up to one foot below ground surface (see attached project designs). Roadways leading to targets will be graded up to one foot below surface and paved with gravel. No targets or roadways will be constructed within a 100-foot wetland buffer as shown in the project designs. Support buildings and a tower will be located in Times Square portion of the APE. Utilities will be direct buried adjacent to buildings and extending along roadways to targets. Ten-inch diameter post supports for a perimeter fence and gate will be set up to three feet below surface. Tree clearing will consist of cutting vegetation to within three inches of the ground surface, leaving tree stumps in place within the 100-foot wetland buffer and grinding stumps to ground surface in all other locations.

JB MDL acknowledges that undisturbed portions of the APE have the potential to contain remains of prehistoric and historic archaeological sites. If present, however, those sites are expected to be small, ephemeral camps not likely to rise to the level of national significance, in part due to the primary military context of the immediately surrounding area. Moreover, the undisturbed areas within the APE are contained within a high risk zone for UXO which could not be surveyed safely without first conducting a UXO sweep. A UXO sweep is planned for the high risk portions of the APE prior to construction of the MPMGR. Due to the potential adverse effects of tree removal and range construction, JB MDL proposes to use a qualified professional archaeologist to monitor UXO removal, tree clearing and range construction in previously undisturbed areas within the APE. Sites, if present, are expected to be found at or near the ground surface and will surface collected and mapped and presented in a project report.

References

Hunter Research, Inc.

- 1998 Phase I Archaeological Sensitivity Investigation, Fort Dix Military Installation, Burlington and Ocean Counties, New Jersey: Management Summary of Work Completed in 1997-8 (Task Order 3). Report on file with the JB MDL HPO.

AMEC

- 2003 Phase I Cultural Resource Survey, Fort Dix Tactical Training Areas 11 and 12, Fort Dix, New Jersey. Prepared by AMEC Earth & Environmental, Inc. Plymouth Meeting, PA. Report on file with the JB MDL HPO.

Louis Berger & Associates, Inc. and Heritage Studies Inc.

- 1985 Cultural Resource Survey and Evaluation, U.S. Army Training Center and Fort Dix. Report on file with the JB MDL HPO.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND
JOINT BASE MCGUIRE-DIX-LAKEHURST

October 9, 2013

Joint Base McGuire-Dix-Lakehurst
Joseph Rhyner
Acting Chief, Environmental Section
5317 Snyder Lane
JB MDL, New Jersey 08640

Mr. Daniel Saunders
Deputy State Historic Preservation Officer
New Jersey Department of Environmental Protection
P.O. Box 404
Trenton, NJ 08625-0404

SUBJECT: Section 106 consultation for the construction of Multipurpose Machine Gun Range (HPO Project #13-0174) on Dix Range Area.

Dear Mr. Saunders:

The U.S. Army proposes to construct, operate and maintain a Multi-Purpose Machine Gun Range (MPMGR) on Joint Base McGuire-Dix-Lakehurst (JB MDL) in the Dix Range Area. The U.S. Army has determined that the current Machine Gun Range does not meet the size requirements for basic training as outlined in the Training Circular (TC) 25-8 Training Ranges (DA 2010). The proposed new MPMGR would meet critical live-fire individual marksmanship training needs for both active and reserve component units that train on the installation. The range construction will include a range complex, fixed target locations, direct buried utilities, and access roads (see attached proposed project design plans). Tree clearing will be conducted prior to range construction, including cutting trees to within three inches of ground surface, leaving stumps in wetlands areas and removing cut trees with track-loader equipment. Vegetation will be maintained by mowing.

In a letter dated November 28, 2012 responding to the submission of the Description of Proposed Action and Alternatives for the MPMGR (AMEC 2012), the NJ HPO requests consultation pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800) for the potential effects of the proposed MPMGR on cultural resources. This letter and the attached cultural resources review serves as our response to the request. JB MDL Cultural Resources staff has determined that there are no historic architectural resources present within the immediate APE or within 1/4 mile of the proposed MPMGR.

The JB MDL Cultural Resources staff has also determined that there will be no adverse effect of the proposed MPMGR on archaeological resources. A review of historic maps, aerial photography, LIDAR imagery, previous cultural resource survey and a recent site walkover indicates that the majority of the APE has been disturbed through use as a military training area since the late 1940s. Such disturbance includes previous range construction, fire management activity, and explosive ordnance disposal. In addition, relatively undisturbed portions of the proposed MPMGR have a high risk of unexploded ordnance (UXO), which prohibits subsurface survey without prior ordnance sweep and removal. A UXO sweep will be conducted prior to tree clearing and range construction. JB MDL proposes to have a

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OCT 17 2013

U.S. DEPARTMENT OF THE ARMY

13-0174-39K
HPO-J2013-340

qualified professional archaeologist monitor the UXO removal, tree clearing and range construction activities. Sites, should they be identified during these activities, will be recorded and preserved in place.

Thank you very much for your timely review of potential cultural resource impacts of the proposed MPMGR. We request concurrence on the above determination. Please call Joe Rhyner at 609-562-2189 if you have any questions or if you require additional information.

Sincerely,



JOSEPH RHYNER
Chief, Environmental Section, 87th Civil Engineer
Squadron

Attachments:

- (1) Project review of potential effects
- (2) Proposed project plans

CONCUR	
	10/29/13
Daniel D. Saunders DEPUTY STATE HISTORIC PRESERVATION OFFICER	DATE

USFWS CONCURRENCE OF JB MDL SWAMP PINK SURVEY

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Sariano, Brian P

From: RHYNER, JOSEPH R GS-12 USAF AMC 87 CES/CEIEC [joseph.rhyner@us.af.mil]
Sent: Thursday, April 03, 2014 2:54 PM
To: Sariano, Brian P
Cc: REYNOLDS, JEAN A CIV USAF HAF AFCEC/CZN; Hoben, Sean M LRL (Sean.M.Hoben@usace.army.mil)
Subject: FW: swamp pink

Brian,
Good news no swamp pink at the MPMGR. Please incorporate this information in the EA.

Thanks
Joe

-----Original Message-----

From: JOYCE, JOHN G GS-12 USAF AMC 87 CES/CEIEA
Sent: Thursday, April 03, 2014 2:51 PM
To: RHYNER, JOSEPH R GS-12 USAF AMC 87 CES/CEIEC
Subject: FW: swamp pink

FYI

John Joyce, CF, CWB
Installation Natural and Cultural Resources Manager
Joint Base McGuire-Dix-Lakehurst
Office: 732-323-2911
Cell: 609-498-5702
john.joyce.7@us.af.mil

-----Original Message-----

From: Popolizio, Carlo [<mailto:carlo.popolizio@fws.gov>]
Sent: Thursday, April 03, 2014 2:44 PM
To: JOYCE, JOHN G GS-12 USAF AMC 87 CES/CEIEA
Subject: Re: swamp pink

Hello John,

the Service concurs with the survey results provided by you and Ms. Armento.

Carlo

On Thu, Apr 3, 2014 at 1:52 PM, JOYCE, JOHN G GS-12 USAF AMC 87 CES/CEIEA
<john.joyce.7@us.af.mil> wrote:

Hi Carlo,

Yesterday morning Jennifer Armento (staff biologist) and I walked approximately .7 miles along the portion of Gaunt's Brook which will be affected by the proposed Multi-Purpose Machine Gun Range on the Dix section

of JB MDL. We conducted an extensive search (4 hours) for swamp pink
but we
were unable to find any plants.

John

John Joyce, CF, CWB
Installation Natural and Cultural Resources Manager
Joint Base McGuire-Dix-Lakehurst
Office: 732-323-2911
Cell: 609-498-5702
john.joyce.7@us.af.mil

USFWS FOLLOWUP CONSULTATION

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***** Delivered via Email *****

August 22, 2014

Carlo Popolizio
U.S. Fish and Wildlife Service
NJ Field Office
927 North Main Street, Building D
Pleasantville, New Jersey 08232

Re: Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) for the Environmental Assessment (EA) for the Proposed Multi-Purpose Machine Gun Range (MPMGR) at Joint Base McGuire-Dix-Lakehurst, New Jersey

Dear Mr. Popolizio:

This letter is in response to a January 2, 2014 United States Fish and Wildlife Service (USFWS) letter received by Mr. Joseph R. Rhyner (Acting JB MDL Environmental Section Head) regarding the proposed Multi-Purpose Machine Gun Range (MPMGR) at Joint Base McGuire-Dix-Lakehurst (JB MDL). A copy of this letter is attached as well as a site location map.

The January 2, 2014 letter indicated that the Proposed Action could adversely affect the federally-listed (threatened) swamp pink (*Helonias bullata*) if present, to the southwest of the project site. However, the letter did not indicate the Proposed Action's potential for adversely affecting three additional species that resulted from our use of the USFWS' Information, Planning, and Conservation System (IPaC) database. These three additional species were as follows:

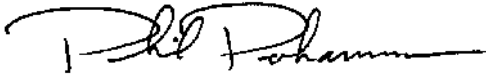
Bog turtle (*Clemmys muhlenbergii*)
American chaffseed (*Schwalbea americana*)
Knieskern's beaked-rush (*Rhynchospora knieskernii*)

Although it is understood that the IPAC system is merely a screening tool, the EA requires that the Federal entity receive USFWS consultation on all federally-listed species that have the potential for impact from a Proposed Action. Therefore, this current letter is requesting consultation from the USFWS for all four of these species. It should also be noted that it is our opinion that potential habitat for bog turtle is not present on or within the vicinity of the site, but that potential habitat for American chaffseed and Knieskern's beaked-rush is present.

Please let us know if you require an additional copy of the Draft EA that was previously provided for your office. If you have any questions regarding this letter, please do not hesitate to contact me at (732) 302-9500 x 116 or at phil.perhamus@amec.com. Thank you.

Sincerely,

AMEC Environment & Infrastructure, Inc.

A handwritten signature in black ink, appearing to read "Phil Perhamus". The signature is fluid and cursive, with a long horizontal stroke at the end.

Phil Perhamus, P.W.S.
Senior Biologist

cc: J. Rhyner (JB MDL)
B. Sariano (AMEC)

Attachments



In Reply Refer To:
14-CPA-0065

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Jersey Field Office
Ecological Services
927 North Main Street, Building D
Pleasantville, New Jersey 08232
Tel: 609/646 9310
Fax: 609/646 0352
<http://www.fws.gov/northeast/njfieldoffice>



JAN 02 2014

Dear Mr. Rhyner:

The U.S. Fish and Wildlife Service (Service), New Jersey Field Office has reviewed the *Interagency and Intergovernmental Coordination for Environmental Planning for the Environmental Assessment for Proposed Multi-Purpose Machine Gun Range at Joint Base McGuire-Dix-Lakehurst, New Jersey*. The Proposed Action would establish a training facility for seven required weapon systems. The second alternative under consideration is No Action. The Service is providing fish and wildlife review comments on the Proposed Action, including a determination of whether federally listed endangered and threatened species would be affected.

AUTHORITY

The following comments on the Proposed Action are provided pursuant to Section 7 of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) and the Migratory Bird Treaty Act of 1918 (40 Stat. 755; 16 U.S.C. 703-712) (MBTA), as amended, to ensure the protection of federally listed endangered and threatened species, and migratory birds. Additional comments are provided as technical assistance for the draft Environmental Assessment and do not preclude further comment pursuant to the National Environmental Policy Act (83 Stat. 852; 42 U.S.C. 4321 *et seq.*).

FEDERALLY LISTED SPECIES

An historical occurrence of the federally listed (threatened) swamp pink (*Helonias bullata*) was located within palustrine forested wetlands south of Howard Furnace Manchester Road (south-west of the project site). Many areas of New Jersey have not been thoroughly surveyed for endangered and threatened species. If present, swamp pink could be adversely affected by any temporary or permanent impacts to wetlands including clearing, filling, draining, shading, and changes in erosion, sedimentation, water quality, or surface or groundwater hydrology. Therefore, the Service requests that a qualified surveyor conduct a survey of palustrine wetlands within the action area to determine the presence or absence of swamp pink. The action area

includes all areas that may be directly or indirectly affected during or after project implementation, including through hydrologic changes. Guidance for performing swamp pink surveys is enclosed. The results of any survey, whether showing presence or absence of swamp pink, must be forwarded to this office for review; please include photographs and the qualifications of the surveyor(s).

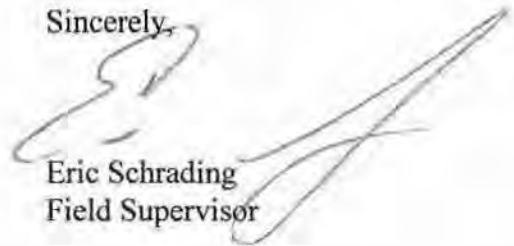
No other federally listed or proposed threatened or endangered flora or fauna under Service jurisdiction are known to occur within the vicinity of the proposed project site. If additional information on federally listed species becomes available, or if project plans change, this determination may be reconsidered.

MIGRATORY BIRDS

Tree removal will have an adverse impact on migratory birds if conducted during the nesting season (destruction of nests with eggs or unfledged birds). The Breeding Bird Atlas (Niles *et al.*, 2001) lists approximately 70 species of breeding migratory birds that occur in the vicinity of the project area. The Service requests a seasonal restriction on tree cutting between March 15 and July 31 to avoid impacts to birds protected under the MBTA.

Thank you for the opportunity to provide comments on the proposed Multi-Purpose Machine Gun Range. Please contact Carlo Popolizio at (609) 383-3938, extension 32, if you require further assistance.

Sincerely,



Eric Schradling
Field Supervisor

Enclosure

REFERENCE

Niles, L.J., M. Valent, J. Tash and J. Myers. 2001. New Jersey's Landscape Project: Wildlife habitat mapping for community land-use planning and endangered species conservation. New Jersey Department of Environmental Protection, New Jersey Division of Fish and Wildlife, Endangered and Nongame Species Program.

cc: joseph.rhyner@us.af.mil
brian.sariano@amec.com

NJFO:ES:cpopolizio:RP:ES:cap: 12/23/13
P:/Shared/Carlo/ 14-CPA0065 [McGuire-Dix-Lakehurst]



IICEP Request - Joint Base McGuirde-Dix-Lakehurst - proposed MPMGR

Sariano, Brian P <brian.sariano@amec.com>

Wed, Dec 11, 2013 at 2:18 PM

To: "carlo_popolizio@fws.gov" <carlo_popolizio@fws.gov>

Cc: "RHYNER, JOSEPH R GS-12 USAF AMC 87 CES/CEIEC" <joseph.rhyner@us.af.mil>

Carlo,

Thank you for taking the time to talk to me this afternoon. As we discussed I am working on the EA for the proposed Multi-Purpose Machine Gun Training Range (MPMGR) at JBMDL. JBMDL initially sent the IICEP request out in association with this proposed action back in November 2012. We have come to realize that we have not received a response back from USFWS on the IICEP request. It is likely that the delivery of the IICEP request was hampered by Hurricane Sandy.

Per our conversation, I am sending you the IICEP request and the Description of the Proposed Action and Alternatives. Please note that the IICEP letter from JB MDL indicates that you should provide response to Mr Joe Schwartz; However Mr. Schwartz has subsequently retired from JBMDL. Your response should directed to:

Mr. Joe Rhyner

joseph.rhyner@us.af.mil

Acting JB MDL Environmental Section Head

USAF AMC 87 CES/CEAN

If you could also copy me on your response that would be greatly appreciated.

We look forward to hearing back from you concerning this proposed action.

Brian P. Sariano

Senior Project Manager

AMEC Environment & Infrastructure, Inc.

Hillcrest I

751 Arbor Way, Suite 180

Blue Bell, PA 19422-1960

Tel. 610-877-6126

Fax 610-828-6700

Cell 215-272-4222



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3 attachments



MPMGR IICEP DISTR LIST.pdf
429K



MPMGR IICEP CVR LTR 11.06.12.pdf
482K



FINAL DOPAA 11-15-12.pdf
7189K

Popolizio, Carlo <carlo_popolizio@fws.gov>

Thu, Dec 12, 2013 at 10:28 AM

To: "Sariano, Brian P" <brian.sariano@amec.com>

Cc: "RHYNER, JOSEPH R GS-12 USAF AMC 87 CES/CEIEC" <joseph.rhyner@us.af.mil>

Thank you Brian, Carlo

[Quoted text hidden]

—

Carlo Popolizio, Biologist
USFWS-NJFO

927 N. Main Street, Pleasantville NJ 08232

Phone: (609) 383-3938 x 32

Fax: (609) 646-0352

"Sell your cleverness and buy bewilderment." Rumi



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND
JOINT BASE MCGUIRE-DIX-LAKEHURST

6 November 2012

MEMORANDUM FOR: SEE DISTRIBUTION

FROM: Department of the Air Force
87th Air Base Wing (Air Mobility Command)
Asset Management Flight
87 CES/CEA
2401 Vandenberg Avenue
Joint Base McGuire-Dix-Lakehurst NJ 08641

SUBJECT: Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) for the Environmental Assessment (EA) for the Proposed Multi-Purpose Machine Gun Range (MPMGR) at Joint Base McGuire-Dix-Lakehurst, New Jersey

Joint Base McGuire-Dix-Lakehurst (JB MDL) is preparing an Environmental Assessment (EA) for the proposed construction and operation of a new MPMGR at JB MDL. Pursuant to the National Environmental Policy Act (NEPA) of 1969 [42 USC 4321 et seq.], Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA 40 CFR Parts 1500-1508, and Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (EIAP) (32 CFR Part 989), JB MDL will prepare an EA that considers the potential consequences to human health and the natural environment. This EA will examine the effects of the proposed construction and operation of the proposed MPMGR at JB MDL.

The Intergovernmental Coordination Act and Executive Order (EO) 12372, Intergovernmental Review of Federal Programs, require Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. Air Force Instruction (AFI) 32-7060 requires HQ AMC to implement the IICEP process. In accordance with EO 12372 and AFI 32-7060, we invite your agency to review the attached Description of Proposed Action and Alternatives (DOPAA) and to provide comments on the Proposed Action. Please provide your comments relative to specific issues or geographic areas of concern your office may have, based on your expertise or regulatory jurisdiction. Provide any technical information, mitigation or permitting requirements that may be necessary for project implementation. Any preliminary data your office can provide will be evaluated and incorporated into the EA.

The purpose of the proposed action is to construct and operate a MPMGR to meet the training and qualification objectives using a standard Army range and seven (7) required weapons systems. This range would provide a year-round, comprehensive and realistic training and range facility for the training of soldiers in basic machine gun marksmanship skills. The U.S. Army has determined the current machine gun range does not meet the basic training requirements of a standard Army range as codified in Training Circular (TC) 25-8 – Training Ranges (DA 2010).

The proposed new MPMGR range would meet critical live-fire individual marksmanship training needs for both active and reserve component units that train on the installation.

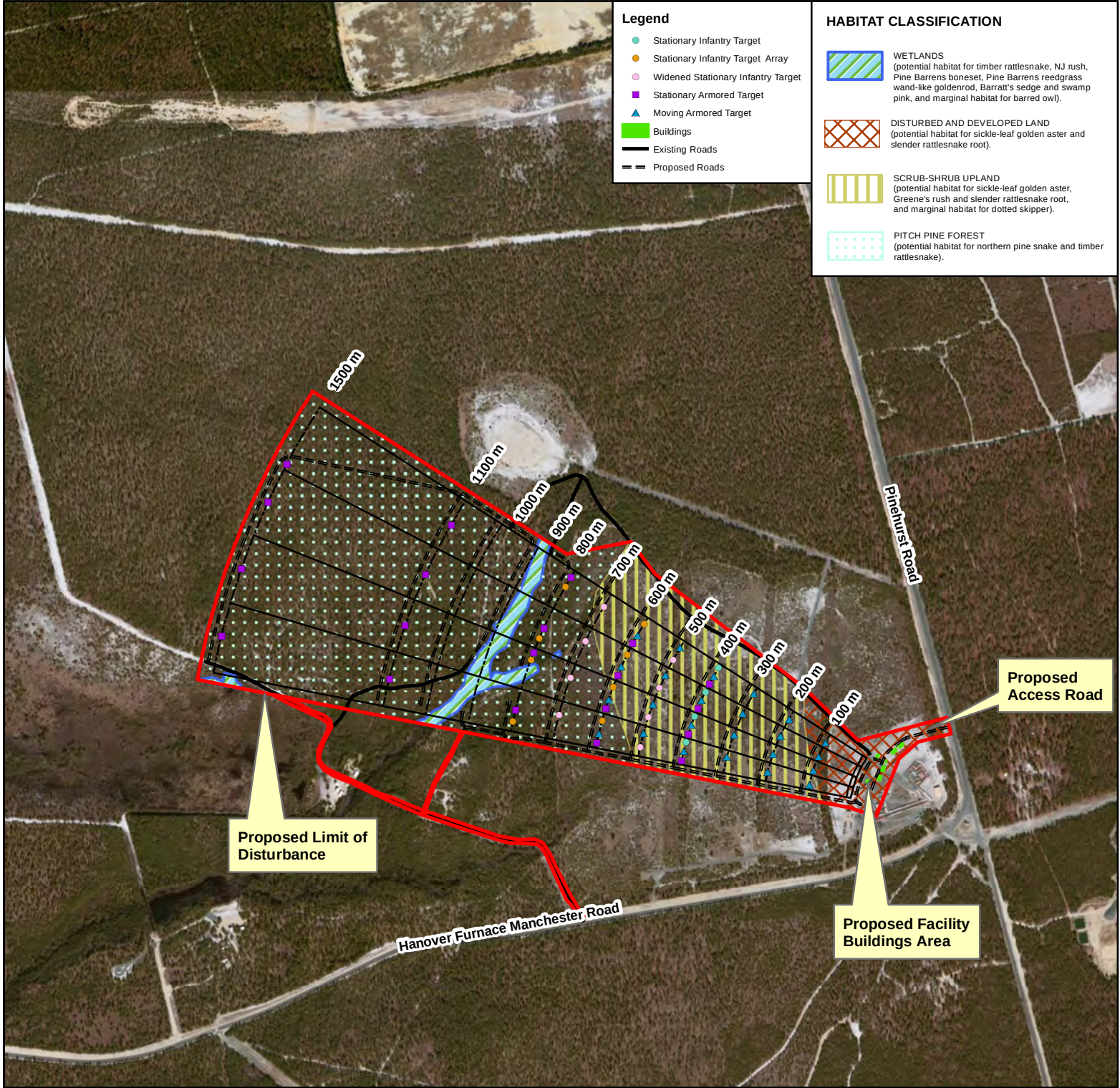
JBMDL looks forward to your participation in this NEPA process. Please provide written comments within 15 days from the date of this letter. Your response on or before 27 November 2012 will enable us to complete this phase of the project within the scheduled time frame. Please direct your correspondence to: Mr. Joseph Schwartz, Environmental Protection Specialist, Department of the Air Force, 87 CES/CEAN, 5317 Snyder Lane, Joint Base McGuire-Dix-Lakehurst, NJ 08640-5501 or via e-mail at joseph.schwartz.5@us.af.mil. If you need further information please contact Mr. Schwartz at 609-562-2216.



Richard P. Sample, GS-13, DAF
Asset Management Flight Chief
87th Civil Engineer Squadron

Attachments:

- 1) Final Description of Proposed Action and Alternatives
- 2) Distribution List



Legend

- Stationary Infantry Target
- Stationary Infantry Target Array
- Widened Stationary Infantry Target
- Stationary Armored Target
- Moving Armored Target
- Buildings
- Existing Roads
- Proposed Roads

HABITAT CLASSIFICATION

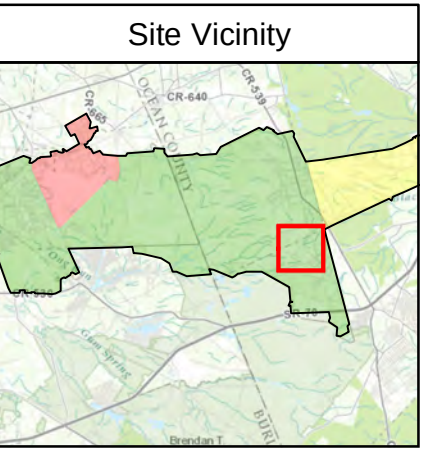
- WETLANDS**
(potential habitat for timber rattlesnake, NJ rush, Pine Barrens boneset, Pine Barrens reedgrass wand-like goldenrod, Barratt's sedge and swamp pink, and marginal habitat for barred owl).
- DISTURBED AND DEVELOPED LAND**
(potential habitat for sickle-leaf golden aster and slender rattlesnake root).
- SCRUB-SHRUB UPLAND**
(potential habitat for sickle-leaf golden aster, Greene's rush and slender rattlesnake root, and marginal habitat for dotted skipper).
- PITCH PINE FOREST**
(potential habitat for northern pine snake and timber rattlesnake).

**Alternative 1 Layout
Special Status
Species Habitat**

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL

Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014



Map Ref. :

World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Range Layout from pg. 12 of the 95% Submittal of the Multi-Purpose Machine Gun Range at JBMDL by the U.S. Army Corps of Engineers Louisville District

Scale: 0 500 1,000 1,500 Feet

North Arrow: N

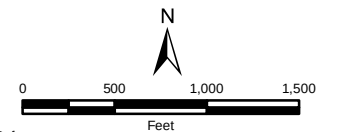
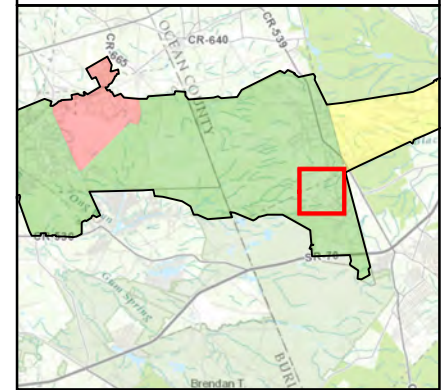
Figure 3-10a

Alternative 1 Layout Wetlands & Flood Hazard/Riparian Zone Map

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL
Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



Map Ref. :

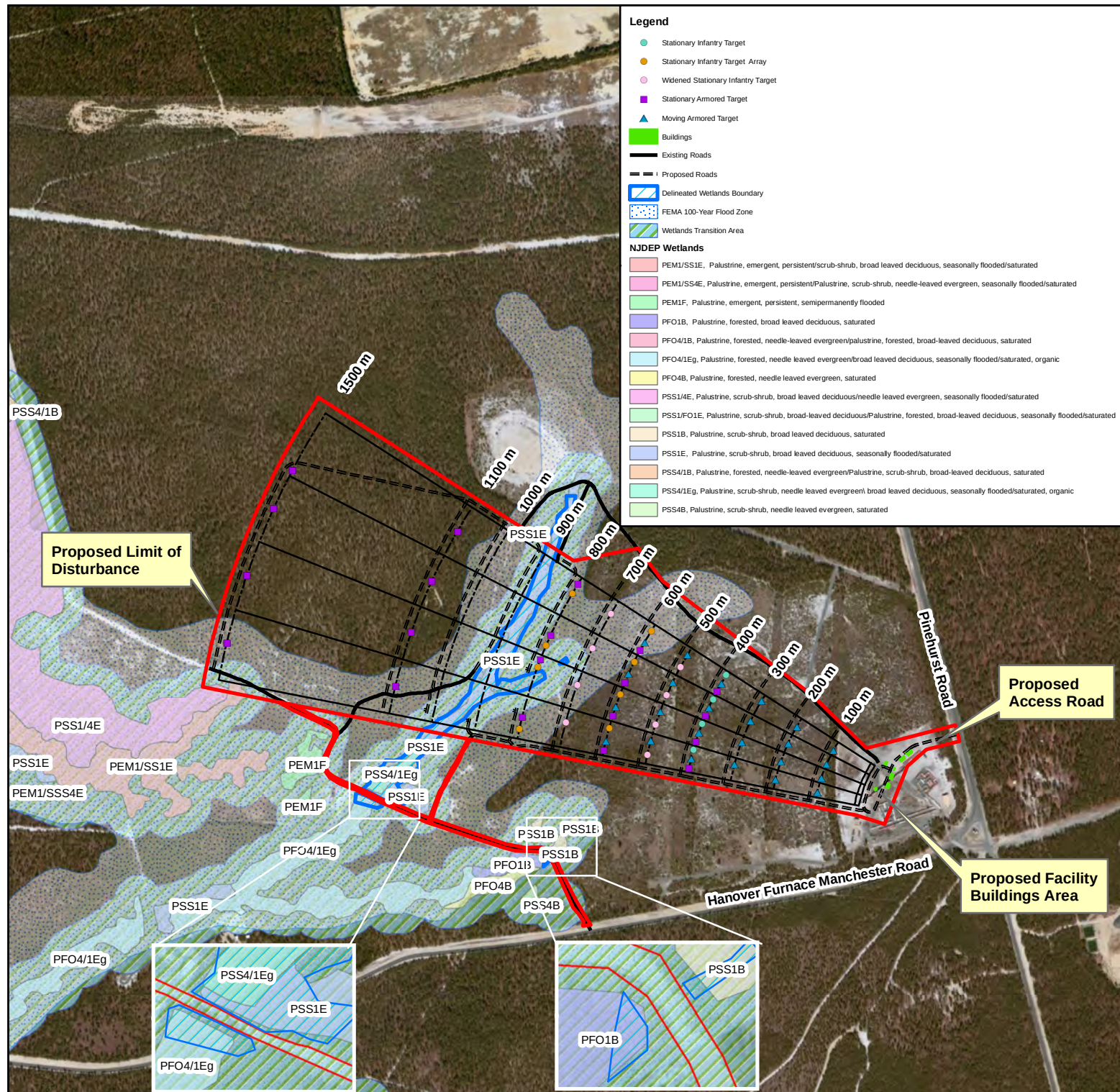
World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Wetlands
http://www.state.nj.us/dep/gis/crossaccept.htm#wetlands_ca

Flood Zone <http://edd.msc.fema.gov/edd/>

Range Layout from pg. 12 of the 95% Submittal of the Multi-Purpose Machine Gun Range at JBMDL by the U.S. Army Corps of Engineers Louisville District

Figure 4-1a



Sariano, Brian P

From: JOYCE, JOHN G GS-12 USAF AMC 87 CES/CEIEA [john.joyce.7@us.af.mil]
Sent: Thursday, September 11, 2014 3:30 PM
To: Carlo Popolizio (Carlo_Popolizio@fws.gov)
Cc: Sariano, Brian P
Subject: JB MDL Multi-Purpose Machine Gun Range

Hi Carlo,

I have recently seen the correspondence between the USFWS and AMEC, the government contractor doing the EA for the new Multi-Purpose Machine Gun Range (MPMGR) on the Dix portion of JBMDL. Although we addressed the swamp pink issue during the spring, AMEC has since been tasked by AFCEC (Air Force Civil Engineering Center in San Antonio) to inquire about three other species listed under the ESA: bog turtle, American Chaffseed and Knieskern's Beaked-rush. The three species in question were taken from the Information, Planning and Conservation (IPAC) system. But as you are aware, IPAC is only a planning tool and often does not reflect habitat conditions at a specific site. All three of these species require moderate to large open canopy: open swamp for bog turtle, open, early successional wetlands for Knieskern's Beaked-rush and open savanna for American Chaffseed. The area in question is heavily forested with an extremely narrow stream corridor. It was along this corridor that we searched for swamp pink back in April.

As the federal entity pursuing this project, it is our (mine) informed opinion that none of the three species in question are present on this site, so there is no adverse effect on ESA-listed species. The habitat is not even remotely similar to the lone Knieskern's location on JBMDL (an open wetland) or the one bog turtle location (last siting was 1993 at an abandoned cranberry bog) on JBMDL. It also has none of the characteristics of the only American Chaffseed location I'm familiar with in the area, a county highway shoulder in Pemberton Township. In consideration of these factors, I hope that we can conclude our consultation with USFWS regarding this project.

Please notify me directly (copy Brian Sariano at AMEC) if there will be any further requirements for JBMDL to satisfy our obligations under the ESA before we move forward with the MPMGR. Thanks.

John

John Joyce, CF, CWB
Installation Natural and Cultural Resources Manager Joint Base McGuire-Dix-Lakehurst
Office: 732-323-2911
Cell: 609-498-5702
john.joyce.7@us.af.mil

From: JOYCE, JOHN G GS-12 USAF AMC 87 CES/CEIEA [john.joyce.7@us.af.mil]
Sent: Wednesday, September 24, 2014 9:08 AM
To: Sariano, Brian P
Cc: RHYNER, JOSEPH R GS-12 USAF AMC 87 CES/CEIEC
Subject: FW: JBMDL Multi-Purpose Machine Gun Range

Hi Brian,

See Carlo's very brief answer below. As far as I'm concerned, this concludes our consultation with USFWS relative to the Multi-Purpose Machine Gun Range. Keep us posted on the discussion with Kelly at NJDEP.

John

John Joyce, CF, CWB
Installation Natural and Cultural Resources Manager
Joint Base McGuire-Dix-Lakehurst
Office: 732-323-2911
Cell: 609-498-5702
john.joyce.7@us.af.mil

-----Original Message-----

From: Popolizio, Carlo [<mailto:carlo.popolizio@fws.gov>]
Sent: Wednesday, September 24, 2014 8:28 AM
To: JOYCE, JOHN G GS-12 USAF AMC 87 CES/CEIEA
Subject: Re: JBMDL Multi-Purpose Machine Gun Range

Thank you John, good to see you the other day. Carlo

On Tue, Sep 23, 2014 at 4:24 PM, JOYCE, JOHN G GS-12 USAF AMC 87 CES/CEIEA <john.joyce.7@us.af.mil> wrote:

Hi Carlo,
As the lead federal agency (US Air Force, landowner) for the Multi-Purpose Machine Gun Range proposed for the Dix section of Joint Base McGuire-Dix-Lakehurst, we have determined that this project will have No Effect on the three listed species in question: Knieskern's Beaked-rush, American Chaffseed and Bog Turtle. The appropriate habitat is not present on the site. If there is any further information required of us, please let me know.

John Joyce, CF, CWB
Installation Natural and Cultural Resources Manager
Joint Base McGuire-Dix-Lakehurst
Office: 732-323-2911
Cell: 609-498-5702
john.joyce.7@us.af.mil

-----Original Message-----

From: Popolizio, Carlo [mailto:carlo_popolizio@fws.gov]

Sent: Tuesday, September 16, 2014 2:46 PM

To: JOYCE, JOHN G GS-12 USAF AMC 87 CES/CEIEA

Cc: Sariano, Brian P

Subject: Re: JBMDL Multi-Purpose Machine Gun Range

Hello John:

the consultation process starts with the lead Federal agency (in this case DOD-Army) providing a determination pursuant to the Section 7 of the Endangered Species Act. If the determination is "no effect" our concurrence is not required and the project may proceed. If the determination is "may affect, but not likely to adversely affect" (meaning a listed species is in the vicinity or potential habitat is present), but the lead Fed. agency proposes a project with effects presumed INSIGNIFICANT or DISCOUNTABLE on listed species) then our concurrence is required to complete consultation. If we don't concur, then either the project is modified to bring all effects to the level of insignificant or discountable or we go into formal consultation (may affect). In a nutshell, this is the consultation process I was pointing out to your consultant. I know in the past we commented on T&E species in reviewing NEPA documents, but ESA and NEPA are two different Acts of Congress and we are trying to bring other Federal agencies in compliance with ESA procedures.

I hope this clarifies the consultation process. Any questions, please let me know.

Thanks, Carlo

<<https://ssl.gstatic.com/ui/v1/icons/mail/images/cleardot.gif>>

On Thu, Sep 11, 2014 at 3:30 PM, JOYCE, JOHN G GS-12 USAF AMC 87 CES/CEIEA <john.joyce.7@us.af.mil> wrote:

Hi Carlo,
I have recently seen the correspondence between the USFWS and AMEC, the government contractor doing the EA for the new Multi-Purpose Machine Gun Range

(MPMGR) on the Dix portion of JBMDL. Although we addressed the swamp pink issue during the spring, AMEC has since been tasked by AFCEC (Air Force Civil Engineering Center in San Antonio) to inquire about three other species listed under the ESA: bog turtle, American Chaffseed and Knieskern's Beaked-rush. The three species in question were taken from the Information, Planning and Conservation (IPAC) system. But as you are aware, IPAC is only a planning tool and often does not reflect habitat conditions at a specific site. All three of these species require moderate to large open canopy: open swamp for bog turtle, open, early successional wetlands for Knieskern's Beaked-rush and open savanna for American Chaffseed. The area in question is heavily forested with an extremely narrow stream corridor. It was along this corridor that we searched for swamp pink back in April.

As the federal entity pursuing this project, it is our (mine) informed opinion that none of the three species in question are present on this site, so there is no adverse effect on ESA-listed species. The habitat is not even remotely similar to the lone Knieskern's location on JBMDL (an open wetland) or the one bog turtle location (last siting was 1993 at an abandoned cranberry bog) on JBMDL. It also has none of the characteristics of the only American Chaffseed location I'm familiar with in the area, a county highway shoulder in Pemberton Township. In consideration of these factors, I hope that we can conclude our consultation with USFWS regarding this project.

Please notify me directly (copy Brian Sariano at AMEC) if there will be any further requirements for JBMDL to satisfy our obligations under the ESA before we move forward with the MPMGR. Thanks.

John

John Joyce, CF, CWB
Installation Natural and Cultural Resources Manager
Joint Base McGuire-Dix-Lakehurst
Office: 732-323-2911
Cell: 609-498-5702

john.joyce.7@us.af.mil

--

Carlo Popolizio, Biologist
USFWS-NJFO
927 N. Main Street, Pleasantville NJ 08232
Phone: (609) 383-3938 x 32
Fax: (609) 646-0352

The warbling of birds and the grandeur and the beauties of the forest, the majestic clouds, the golden tints of a summer evening sky, and all the changes of nature combine to furnish ample matter for reflection to the contemplating youth.

Francis Assikinack (Blackbird) Ottawa

--

Carlo Popolizio, Biologist
USFWS-NJFO
927 N. Main Street, Pleasantville NJ 08232
Phone: (609) 383-3938 x 32
Fax: (609) 646-0352

The warbling of birds and the grandeur and the beauties of the forest, the majestic clouds, the golden tints of a summer evening sky, and all the changes of nature combine to furnish ample matter for reflection to the contemplating youth.

Francis Assikinack (Blackbird) Ottawa

NJDEP FOLLOWUP CONSULTATION

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***** Delivered via Email *****

August 28, 2014

Kelly Davis
New Jersey Department of Environmental Protection
Office of Environmental Review
Mail Code 501-03
P.O. Box 420
501 East State Street, 3rd Floor
Trenton, New Jersey 08625-0420

Re: Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) for the Environmental Assessment (EA) for the Proposed Multi-Purpose Machine Gun Range (MPMGR) at Joint Base McGuire-Dix-Lakehurst, New Jersey

Dear Mr. Davis:

This letter is a follow-up to a November 28, 2012 New Jersey Department of Environmental Protection, Office of Permit Coordination and Environmental Review (PCER) letter regarding the potential threatened and endangered species that could be impacted by the proposed Multi-Purpose Machine Gun Range (MPMGR) at Joint Base McGuire-Dix-Lakehurst (JBMDL). A copy of this letter is attached as well as a site location map.

The November 28, 2012 letter indicated that the Proposed Action could adversely affect barred owl habitat, northern pine snake habitat, pale beaked-rush, and sickle-leaf golden aster. The letter also indicated that swamp pink is documented to occur downstream of the site. Our review of the site area using the NJDEP GeoWeb site and discussions with the JBMDL Environmental Department also indicated the following species to potentially be impacted by the Proposed Action: Pine Barrens boneset, New Jersey rush, American chaffseed, Pine Barrens treefrog, great blue heron, arogos skipper, silver-bordred fritillary, dotted skipper, Georgia satyr, timber rattlesnake, and bog turtle. The table below summarizes all of the potential endangered, threatened, or special concern species that may be affected by the Proposed Action:

Species	Common Name	Status
<i>Eupatorium resinosum</i>	Pine Barrens boneset	State Endangered
<i>Helonias bullata</i>	Swamp pink	Federally Endangered
<i>Juncus caesariensis</i>	New Jersey rush	State Endangered
<i>Rhynchospora pallida</i>	Pale beaked-rush	State Special Concern
<i>Schwalbea americana</i>	American chaffseed	Federally Endangered
<i>Chrysopsis falcata</i>	Sickle-leaf golden aster	State Listed
<i>Hyla andersonii</i>	Pine Barrens treefrog	State Endangered
<i>Ardea herodias</i>	Great blue heron	State Special Concern
<i>Strix varia</i>	Barred Owl	State Threatened

Species	Common Name	Status
<i>Atrytone arogos</i>	Arogos skipper	State Endangered
<i>Bolaria selene myrina</i>	Silver-bordered fritillary	State Threatened
<i>Hesperia allalus</i>	Dotted skipper	State Special Concern
<i>Neonympha areaolatus</i>	Georgia satyr	State Special Concern
<i>Crotalus horridus</i>	Timber rattlesnake	State Endangered
<i>Pituophis melanoleucus</i>	Northern pine snake	State Threatened
<i>Clemmys muhlenbergii</i>	Bog turtle	Federally Endangered

Although it is understood that the GeoWeb system is merely a screening tool, the EA requires that the Federal entity (i.e. JBMDL) receive consultation on all state-listed species that have the potential for impact from a Proposed Action. Therefore, this current letter is requesting consultation from the NJDEP for all of these species.

The following should also be noted:

- The Proposed Action area has been field surveyed for swamp pink habitat by an AMEC wetland scientist experienced in this species, and suitable habitat was not found on, or within the immediate vicinity of the site; however, potential habitat may be present to the southwest of the site. In addition, JB MDL also conducted a survey along Gaunts Brook within and downstream of the Alternative 1 project area on April 2, 2014. Although suitable swamp pink habitat was observed, no occurrence of swamp pink was noted. Results of the survey were presented to the USFWS. The USFWS provided a response via e-on April 3, 2014 indicating their concurrence with the survey results that no populations of swamp pink would be affected by the proposed action. (see attached)
- Pine Barrens treefrog is documented by JBMDL in a pond to the south of the Proposed Action area, and calls were heard by the above-referenced AMEC wetland scientist in 2014 from the same pond.
- Bog turtle habitat is not considered to be present on or within the immediate vicinity of the site.

Please let us know if you require an additional copy of the Draft EA that was previously provided for your office. If you have any questions regarding this letter, please do not hesitate to contact me at (732) 302-9500 x 116 or at phil.perhamus@amec.com. Thank you.

Sincerely,

AMEC Environment & Infrastructure, Inc.



Phil Perhamus, P.W.S.
Senior Biologist

cc: J. Rhyner (JBMDL)
B. Sariano (AMEC)

Attachments



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF PERMIT COORDINATION AND ENVIRONMENTAL REVIEW
P.O. Box 420 Mail Code 401-07J Trenton, New Jersey 08625-0420
Phone Number (609) 292-3600
FAX NUMBER (609) 292-1921

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

November 28, 2012

Mr. Joseph Schwartz
Environmental Specialist
Department of the Air Force
87 CES/CEAN
5317 Snyder Lane
Joint Base McGuire-Dix-Lakehurst, NJ 08640-5501

**RE: Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix-Lakehurst (JB MDL), New Jersey**

Scoping Comments for the Environmental Assessment (EA)

Dear Mr. Schwartz:

The New Jersey Department of Environmental Protection's (Department) Office of Permit Coordination and Environmental Review (PCER) distributed your letter regarding the preparation of an Environmental Assessment (EA) for the proposed Multi-Purpose Machine Gun Range (MPMGR) at Joint Base McGuire-Dix-Lakehurst (JB MDL) for review and comment. We offer the following comments for your consideration.

Cultural Resources

The Department's Historic Preservation Office's (HPO) review notes that it appears that the proposed undertaking will require consultation under Section 106 of the National Historic Preservation Act for the identification, evaluation and treatment of historic properties within the project's area of potential effects. As a result, the HPO looks forward to further consultation with the United States Department of the Air Force, pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR §800.

If you have any questions, please do not hesitate to contact Jonathan Kinney at the HPO (Phone: 609-984-0141; Fax: 609-984-0578; Email: jonathan.kinney@dep.state.nj.us; Website: <http://www.nj.gov/dep/hpo>; Mailing Address: Mail Code 501-04B, Department of Environmental Protection, Historic Preservation Office, P.O. Box 420, Trenton, NJ 08625-0420). If additional consultation is required for this undertaking, please reference the HPO project #13-0174 in any future calls, emails, or written correspondence in order to expedite our review and response.

Land Use Regulations

The Department's Division of Land Use Regulation's (DLUR) review notes that the proposed range clearing begins in an area that was previously cleared and is now beginning to grow over with scrub-shrub vegetation. It then extends into an area that is mostly forested. Just past the mid-range point of the range, northwesterly of the firing location, the range crosses Gaunts Brook and an unnamed tributary to Gaunts Brook, both drainage corridors with associated wetlands and riparian zones regulated by the Freshwater Wetlands Protection Act and Flood Hazard Area Control Act. The range location is outside of any area possibly needing a coastal permit.

The EA should address if stumps will be removed, or if the area needs grading; and ongoing maintenance activities for the cleared area (annual cutting or the application of herbicide).

Freshwater Wetland

The Department regulates discharges of fill in wetlands and waters within Pinelands jurisdiction. Above-ground cutting and/or removal of trees does not require a permit provided there is no soil disturbance. Removal of stumps or other mechanized soil disturbances, such as rutting, or surface grading or leveling that would constitute a discharge of fill, would trigger a permit requirement. Wetlands are documented barred owl habitat and considered to be of exceptional resource value. Removal of trees from the wetlands would adversely affect the area for the barred owl species. **Should the permit requirement be triggered, the rules would greatly discourage this activity within 7.66 (stated) acres of wetlands and barred owl habitat.**

Flood Hazard Area

Wholesale removal of wooded riparian zone vegetation along a regulated stream is discouraged by the rules and requires a project to demonstrate both that a hardship exists and that impacts to riparian zone vegetation are being minimized. The likely presence of State threatened and/or endangered species also would discourage the activity under the rules. The draft EA does not contain enough information to make a hardship demonstration. **A Flood Hazard Area permit is necessary to conduct the proposed activity.**

Threatened & Endangered Species

In addition to the Barred owl wetland habitat, the area chosen for the machine gun range appears to be documented northern pine snake habitat, as well as possibly containing two rare plant species – Pale Beaked-rush and Sickie-leaf Golden-aster. Swamp pink is documented to occur downstream of the proposed clearing area. .

Wetlands and Riparian Zone Mitigation

Mitigation for any activity impacts under a Freshwater Wetlands or Flood Hazard Area individual permit is not considered until after it is determined that an activity meets necessary rule qualifications and is qualified for a permit.

If you have any questions, please contact Bruce Stoneback (609-633-2289 or bruce.stoneback@dep.state.nj.us) at the DLUR.

Natural Resources

The Department's Division of Fish & Wildlife's (DFW) review notes the following.

Gaunts Brook and Tributaries

A time restriction from 4/1 thru 6/30 needs to be imposed on any **in-water** and **sediment generating activities** associated with the project in order to protect warm-water fish nest building and spawning (includes waters that support pickerel).

Preferred Alternative

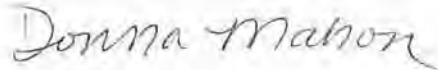
Species Occurrence Area (v8) and Landscape mapping (v3.1) indicates valued habitat for **threatened/endangered** (T/E) and **species of concern** in the area. (Timber Rattlesnake, Northern Pine Snake, Barred Owl, Arogos Skipper, A Silver-bordered Fritillary) Georgia Satyr, Dotted Skipper, Great Blue Heron. These species should be addressed in any EA prepared for this site.

Tree Trimming

The DFW recommends a general timing restriction on mechanical trimming or removal of trees from 3/15 – 7/31 to protect nesting birds covered under the Migratory Bird Treaty Act. Non-mechanical tree trimming may be permitted once trees are checked for nesting activity.

Thank you for giving the New Jersey Department of Environmental Protection the opportunity to comment on the preparation of the EA. Please send six copies of the completed EA directly to our office, so that we can coordinate a comprehensive Departmental review.

Sincerely,

A handwritten signature in cursive script that reads "Donna Mahon".

Donna Mahon
Office of Permit Coordination
and Environmental Review

C: Ken Koschek, NJDEP – PCER
Jonathan Kinney, NJDEP – HPO
Bruce Stoneback, NJDEP – DLUR
Kelly Davis, NJDEP - DFW

Sariano, Brian P

From: RHYNER, JOSEPH R GS-12 USAF AMC 87 CES/CEIEC [joseph.rhyner@us.af.mil]
Sent: Thursday, April 03, 2014 2:54 PM
To: Sariano, Brian P
Cc: REYNOLDS, JEAN A CIV USAF HAF AFCEC/CZN; Hoben, Sean M LRL (Sean.M.Hoben@usace.army.mil)
Subject: FW: swamp pink

Brian,
Good news no swamp pink at the MPMGR. Please incorporate this information in the EA.

Thanks
Joe

-----Original Message-----

From: JOYCE, JOHN G GS-12 USAF AMC 87 CES/CEIEA
Sent: Thursday, April 03, 2014 2:51 PM
To: RHYNER, JOSEPH R GS-12 USAF AMC 87 CES/CEIEC
Subject: FW: swamp pink

FYI

John Joyce, CF, CWB
Installation Natural and Cultural Resources Manager
Joint Base McGuire-Dix-Lakehurst
Office: 732-323-2911
Cell: 609-498-5702
john.joyce.7@us.af.mil

-----Original Message-----

From: Popolizio, Carlo [<mailto:carlo.popolizio@fws.gov>]
Sent: Thursday, April 03, 2014 2:44 PM
To: JOYCE, JOHN G GS-12 USAF AMC 87 CES/CEIEA
Subject: Re: swamp pink

Hello John,

the Service concurs with the survey results provided by you and Ms. Armento.

Carlo

On Thu, Apr 3, 2014 at 1:52 PM, JOYCE, JOHN G GS-12 USAF AMC 87 CES/CEIEA
<john.joyce.7@us.af.mil> wrote:

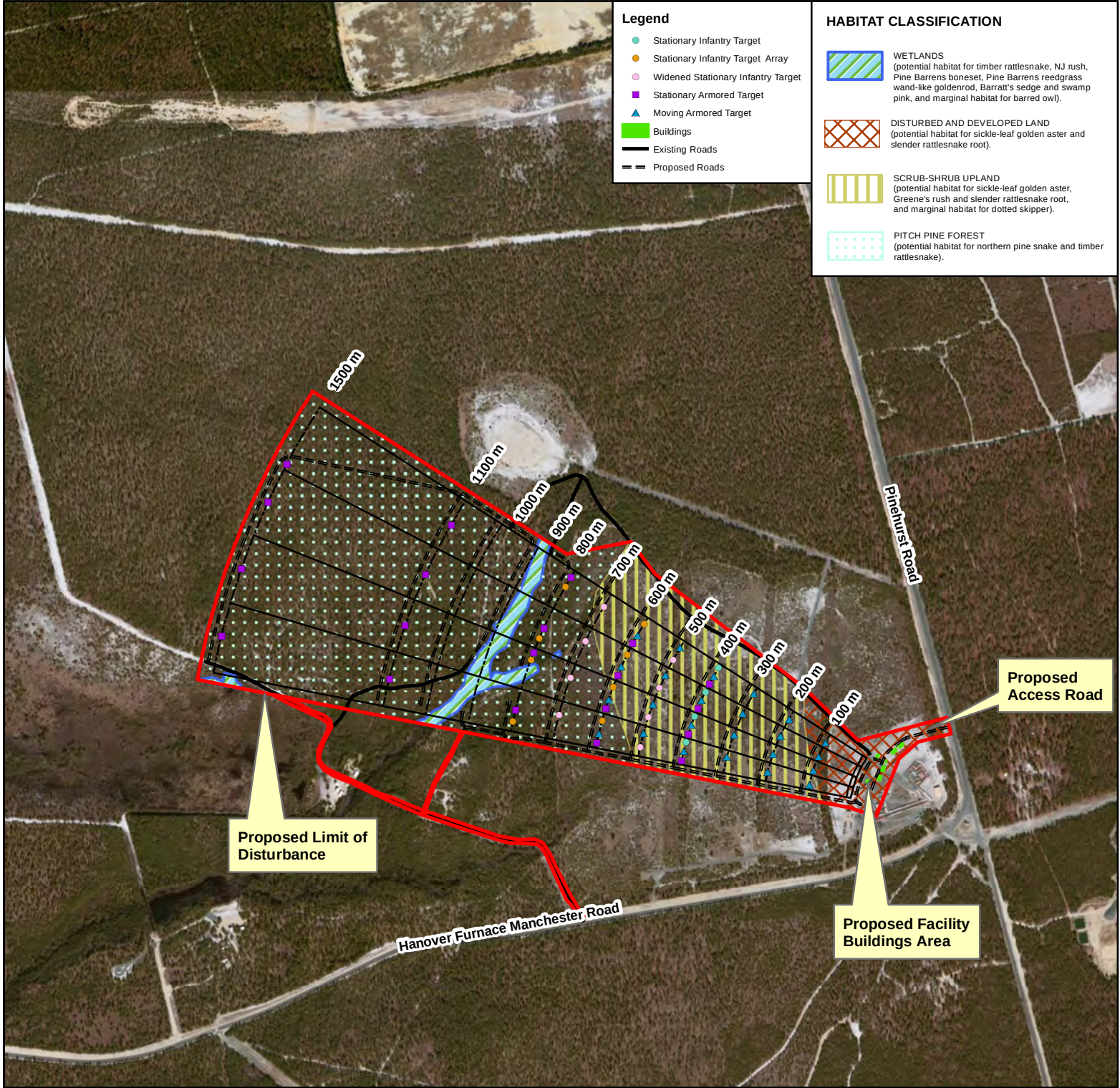
Hi Carlo,

Yesterday morning Jennifer Armento (staff biologist) and I walked approximately .7 miles along the portion of Gaunt's Brook which will be affected by the proposed Multi-Purpose Machine Gun Range on the Dix section

of JB MDL. We conducted an extensive search (4 hours) for swamp pink
but we
were unable to find any plants.

John

John Joyce, CF, CWB
Installation Natural and Cultural Resources Manager
Joint Base McGuire-Dix-Lakehurst
Office: 732-323-2911
Cell: 609-498-5702
john.joyce.7@us.af.mil



Legend

- Stationary Infantry Target
- Stationary Infantry Target Array
- Widened Stationary Infantry Target
- Stationary Armored Target
- Moving Armored Target
- Buildings
- Existing Roads
- Proposed Roads

HABITAT CLASSIFICATION

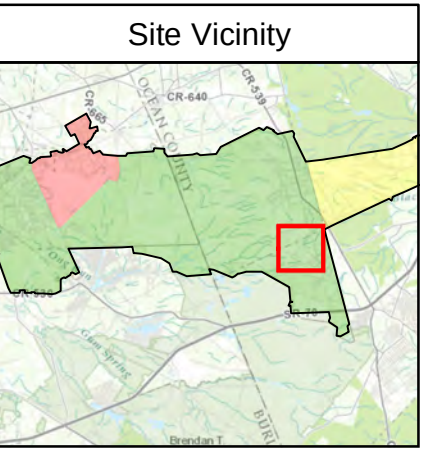
- WETLANDS**
(potential habitat for timber rattlesnake, NJ rush, Pine Barrens boneset, Pine Barrens reedgrass wand-like goldenrod, Barratt's sedge and swamp pink, and marginal habitat for barred owl).
- DISTURBED AND DEVELOPED LAND**
(potential habitat for sickle-leaf golden aster and slender rattlesnake root).
- SCRUB-SHRUB UPLAND**
(potential habitat for sickle-leaf golden aster, Greene's rush and slender rattlesnake root, and marginal habitat for dotted skipper).
- PITCH PINE FOREST**
(potential habitat for northern pine snake and timber rattlesnake).

**Alternative 1 Layout
Special Status
Species Habitat**

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL

Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014



Map Ref. :

World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Range Layout from pg. 12 of the 95% Submittal of the Multi-Purpose Machine Gun Range at JBMDL by the U.S. Army Corps of Engineers Louisville District

Scale: 0 500 1,000 1,500 Feet

North Arrow: N

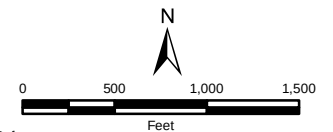
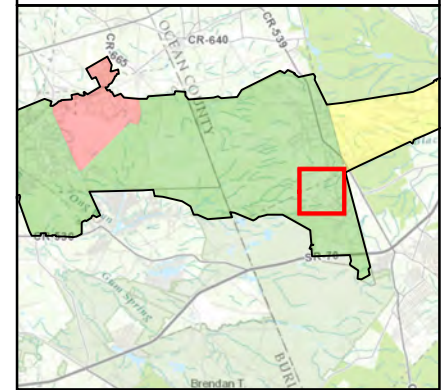
Figure 3-10a

Alternative 1 Layout Wetlands & Flood Hazard/Riparian Zone Map

Environmental Assessment (EA)
Multi-Purpose Machine Gun Range
at JB MDL
Contract No. FA4484-07-D-0005
Task Order No. 5013

Joint Base McGuire-Dix-Lakehurst
Dix Area, New Jersey
AMEC Project No. 77485.0014

Site Vicinity



Map Ref. :

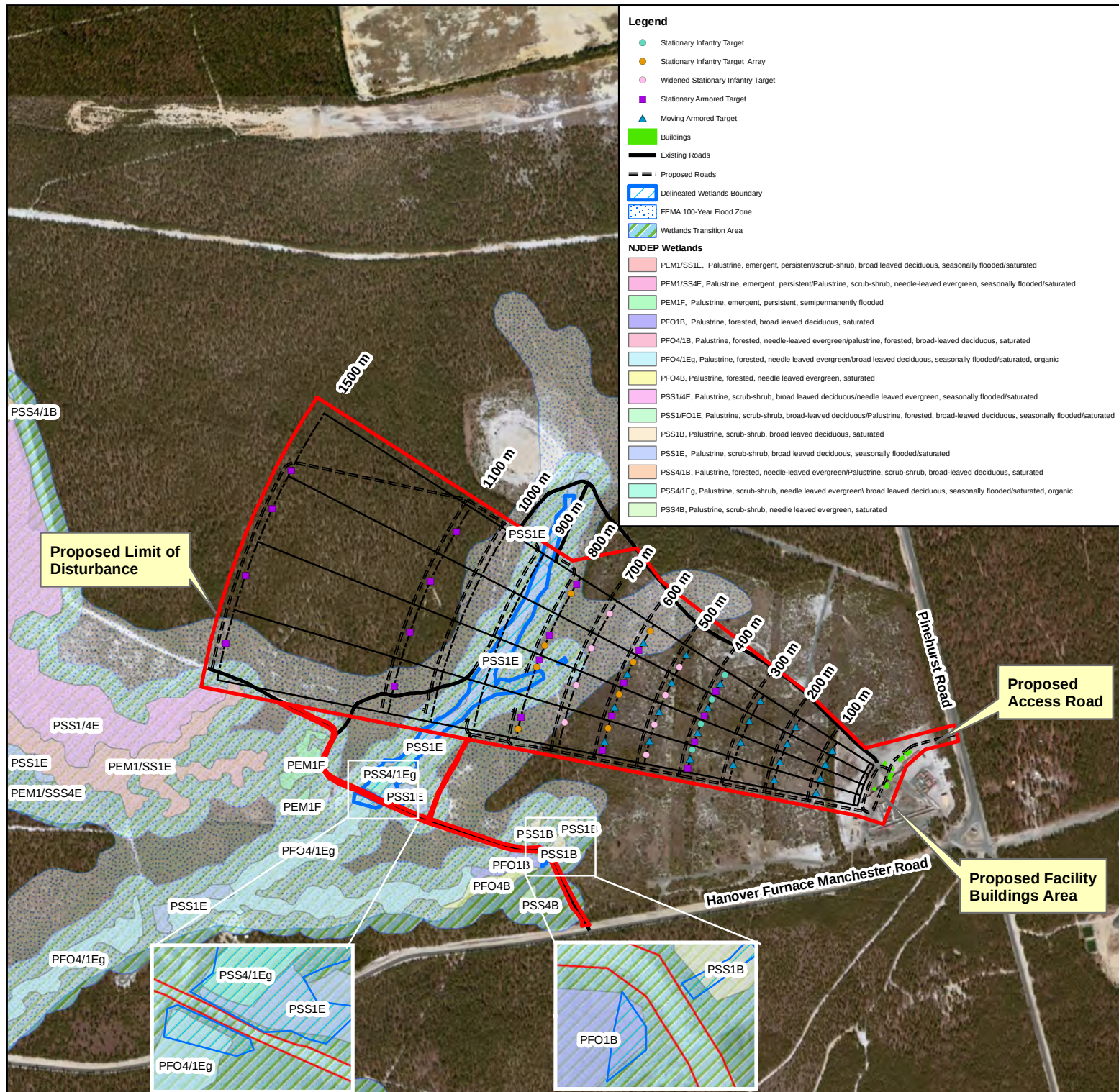
World Imagery from ESRI
<http://services.arcgisonline.com/ArcGIS/services>

Wetlands
http://www.state.nj.us/dep/gis/crossaccept.htm#wetlands_ca

Flood Zone <http://edd.msc.fema.gov/edd/>

Range Layout from pg. 12 of the 95% Submittal of the Multi-Purpose Machine Gun Range at JBMDL by the U.S. Army Corps of Engineers Louisville District

Figure 4-1a



APPENDIX B

Documentation of Public Review and Comment Period

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Notice of Availability of Draft EA and Draft FONSI/FONPA

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Notice of Availability

Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI)/Finding of No Practical Alternative (FONPA) for the Proposed Multi-Purpose Machine Gun Range (MPMGR) at Joint Base McGuire-Dix-Lakehurst (JB MDL), New Jersey

JB MDL announces the availability of and invites public comments on the Draft EA and Draft FONSI/FONPA for the proposed MPMGR at JB MDL. Under the Proposed Action, the Army would construct and operate a new MPMGR in Dix Range Area. The range would be used to train and test individual soldiers on the skills necessary to zero in, detect, identify, engage, and defeat stationary and moving infantry targets along with stationary armor targets in a tactical array using machine guns. The proposed action is to construct, operate, and maintain a MPMGR designed to train individual soldiers in the basic machine gun live-fire training tasks they require to sustain combat proficiency. The range would feature four (4) firing lanes reaching to a distance of 1500 meters, and fully automated targets to a distance of 1000 meters. This EA considers direct, indirect, and cumulative effects of the Proposed Action, Alternatives to the Proposed Action, and the No Action Alternative. The Draft EA was prepared in accordance with the National Environmental Policy Act. The Draft EA and the Draft FONSI/FONPA will undergo a 30-day public comment period from October 31, 2014 through November 30, 2014. During this period the public may submit comments on the Draft EA and the Draft FONSI/FONPA. The Draft EA and the Draft FONSI/FONPA can be reviewed at the Manchester Branch of the Ocean County Library, 21 Colonial Drive, Manchester, NJ; and the Pemberton Branch of the Burlington County Library, 16 Broadway, Browns Mills, NJ. Written comments regarding the Final EA and Draft FONSI/FONPA should be submitted by November 30, 2014 to: Joseph Rhyner, Department of the Air Force, 87th CES/CEIE, 2404 Vandenberg Ave., JB MDL, New Jersey, 08641

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Newspaper Publication Affidavits

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Agency:

AMEC ENVIRONMENT & INFRASTRUCTURE, INC.
AMEC ENVIRONMENT & INFRASTRUCTURE, INC.
751 ARBOR WAY, SUITE 180
BLUE BELL, PA 19422
ATTN: Brian P. Sariano

Client:

AMEC ENVIRONMENT & INFRASTRUCTURE, IN
751 ARBOR WAY, SUITE 180,
BLUE BELL, PA 19422

Acct No: 6108776126AMEC

Acct: 6108776126AMEC

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		Affidavit of Publication Charge	1	\$35.00
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I CERTIFY AND DECLARE THAT THIS BILL OR INVOICE IS CORRECT, AND THAT SUFFICIENT FUNDS ARE AVAILABLE TO SATISFY THIS CLAIM. THE PAYMENT SHALL BE CHARGEABLE TO:

APPROPRIATION ACCOUNT(S) AND AMOUNTS CHARGED P.O. # _____

SIGNATURE: _____

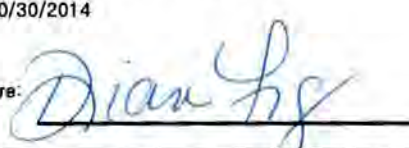
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Date: 10/30/2014

Federal ID #: 061032273

Signature: 

Official Position: Clerk

Kindly return a copy of this bill with your payment so that we can assure you proper credit.

Asbury Park Press
New Jersey Press Media Solutions
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Dallas, TX 75267-7599

AFFIDAVIT OF PUBLICATION

Publisher's Fee \$56.25 Affidavit \$35.00

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Monmouth/Ocean Counties

Personally appeared

Diana Figueroa

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10/30/14 A.D 2014

Kathleen A. Gibson

Diana L. Figueroa

Sworn and subscribed before me, this 30 day of October, 2014

Ad Number: 0000154484

Kathleen A. Gibson
Notary Public State of New Jersey
My Commission Expires Dec. 18, 2014

OTHER HEADINGS

Notice of Availability

Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI)/Find-

ing of No Practical Alternative (FONPA) for the Proposed Multi-Purpose Machine Gun Range (MPMGR) at Joint Base McGuire-Dix-Lakehurst (JB MDL), New Jersey

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State of New Jersey
County of Burlington

} SS.

Ad Content Proof

NOTICE OF AVAILABILITY

Draft Environmental Assessment
(EA) and Draft Finding of No
Significant Impact
(FONSI)/Finding of No Practical
Alternative (FONPA) for the
Proposed Multi-Purpose Machine
Gun Range (MPMGR) at Joint
Base McGuire-Dix-Lakehurst
(JB MDL), New Jersey

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Adv. Fee: \$43.24
BCT: Oct. 30, 2014
Aff. Chg: \$20.00

AMEC ENVIRONMENT & INFRASTRUCTURE, II
ATTN: BRIAN P. SARIANO
BLUE BELL, PA 19422

6108776126
0006713592-01

Rachel Dougherty being duly sworn or affirmed according to law, deposes and says that she is the Legal Billing Coordinator of the BURLINGTON TIMES, INC. Publisher of the "Burlington County Times" and that a copy of a notice published in such paper on

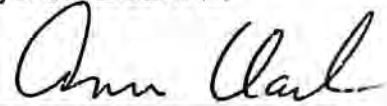
October 30, 2014

appears hereto, exactly as
published in said newspaper


LEGAL BILLING CO-ORDINATOR

Sworn and subscribed to before me
this 30th day of October 2014 A.D.

Affirmed and subscribed to me before me this
30th day of October 2014 A.D.



Ann Clark
My Commission expires on
May 04, 2015

Received Comment Letters and JB MDL Responses to Comments

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In Reply Refer To:
14-CPA-0065b

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Jersey Field Office
Ecological Services
927 North Main Street, Building D
Pleasantville, New Jersey 08232
Tel: 609/646 9310
Fax: 609/646 0352
<http://www.fws.gov/northeast/njfieldoffice>



Joseph Rhyner, Acting JBMDL Environmental Section Head
87th Civil Engineer Squadron
Highway 547, Building 5
Lakehurst, New Jersey 08733

NOV 20 2014

Dear Mr. Rhyner:

The U.S. Fish and Wildlife Service (Service), New Jersey Field Office has reviewed the *Draft Environmental Assessment (DEA) for the Proposed Multi-Purpose Machine Gun Range (MPMGR) at Joint Base McGuire-Dix-Lakehurst (JBMDL), New Jersey*. The Service is providing fish and wildlife review comments on the following Proposed Alternatives.

Alternative 1 (the Preferred Alternative) is to construct, operate, and maintain a MPMGR in a 178-acre tract referred to as the "Times Square" area of JBMDL. Out of the 178 acres, approximately 6.1 acres are delineated as wetlands and 61 acres are found within the 100-year floodplain. Construction would require removing trees and stumps from the uplands and removing trees while leaving stumps in wetlands associated with Gaunts Brook and its tributary.

Alternative 2 is to construct, operate, and maintain a MPMGR in a 160-acre tract between Range 39 and the Explosive Ordnance Disposal Range at JBMDL. Out of the 160 acres, approximately 23.7 acres are delineated as wetlands and 32.8 acres are found within the 100-year floodplain. Construction would require removing trees and stumps from the uplands and removing trees while leaving stumps in wetland areas.

Alternative 3 is No Action.

AUTHORITY

The following comments on the Proposed Action are provided pursuant to the National Environmental Policy Act (83 Stat. 852; 42 U.S.C. 4321 *et seq.*). Additional comments are provided pursuant to Section 7 of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) the Migratory Bird Treaty Act of 1918 (MBTA) (40 Stat. 755; 16 U.S.C. 703-712), as amended, and the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 *et seq.*) to ensure the protection of federally listed endangered and threatened species, migratory birds, and fish and wildlife resources.

FEDERALLY LISTED SPECIES

An historical occurrence of the federally listed (threatened) swamp pink (*Helonias bullata*) was located within palustrine forested wetlands south of Howard Furnace Manchester Road and in the vicinity (approximately 0.4 mile southwest) of the Preferred Alternative area. On January 4, 2014, the Service requested a swamp pink survey of all wetlands associated with Gaunts Brook. On April 2, 2014, personnel from JBMDL, who were qualified to survey for swamp pink, searched 0.7 mile of wetlands associated with Gaunts Brook and informed the Service that no plants were found. On April 3, 2014, the Service concurred with the survey results provided by personnel from JBMDL.

On September 23, 2014, the JBMDL determined that the proposed MPMGR would have no effect on the federally listed (endangered) American chaffseed (*Schwalbea americana*), federally listed (threatened) bog turtle (*Clemmys muhlenbergii*) and Knieskern's beaked-rush (*Rhynchospora knieskernii*). No concurrence was required from the Service on these determinations of no effect.

A-1

The conversion of forested wetlands to herbaceous wetlands may create suitable habitat for the establishment of the federally listed Knieskern's beaked-rush. This species establishes and thrives in early successional wetland habitats, often on bog-iron substrate or mud deposits adjacent to slow-moving streams in the Pinelands region of New Jersey. This species is also found in disturbed wet areas including abandoned borrow pits, clay pits, ditches, rights-of-way, and unimproved roads among relatively sparse vegetation. The Service may request that future surveys be conducted, reconsider the determination of no effect provided by the JBMDL and re-initiate consultation, and request conservation measures to avoid or minimize adverse effects on Knieskern's beaked-rush.

No other federally listed flora or fauna under Service jurisdiction are known to occur within the vicinity of the proposed project site. If additional information on federally listed species becomes available, or if project plans change, the Service may reconsider this determination.

SPECIES PROPOSED FOR LISTING

A-2

The JBMDL is delineated as summer migratory range for the northern long-eared bat (*Myotis septentrionalis*). On October 2, 2013, the Service announced a proposed rule to list the northern long-eared bat as an endangered species throughout its range. The northern long-eared bat is a medium-sized bat found across much of the eastern and north-central United States. The northern long-eared bat predominantly overwinters in hibernacula that include caves and abandoned mines. During the summer, this species typically roosts singly or in colonies underneath bark or in cavities or crevices of both live trees and snags. Northern long-eared bats are also known to roost in human-made structures such as buildings, barns, sheds, and under eaves of windows. Threats to the northern long-eared bat include disease due to the emergence of white-nose syndrome, improper closure at hibernacula, degradation and destruction of summer

habitat, and use of pesticides. Tree removal could impact this species by killing, injuring, or disturbing breeding or roosting bats if conducted between April 1 and September 30.

On October 3, 2013, the Service informed JBMDL of the proposed rule to list the northern long-eared bat. On June 25 and June 30, 2014, the Service notified JBMDL of a 6-month extension for making a final determination on listing the northern long-eared bat as endangered. With the extension, the Service will make a final decision on listing the northern long-eared bat no later than April 2, 2015. As part of the extension, the Service reopened a 60-day public comment period and sought input from States, Tribes, Federal agencies, and other stakeholders about the status of the northern long-eared bat. In addition, the Service encouraged interested parties to work with the Service on issues such as forest management and bat conservation.

A-2
(contd.)

While there is no prohibition for “taking” proposed species, there are certain statutory requirements under the ESA for proposed species. Section 7(a)(4) of the ESA states, “Each Federal agency shall confer with the Secretary on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed or result in the destruction or adverse modification of critical habitat proposed to be designated for such species.” Conference is a process of early interagency cooperation involving informal and/or formal discussions between the action agency and the Service pursuant to section 7(a)(4) of the ESA regarding the likely impact of an action on proposed species or proposed critical habitat.

While consultation under Section 7 of the ESA is required when a proposed action “may affect” a listed species, a conference is required only if the proposed action is likely to jeopardize the continued existence of a proposed species or destroy or adversely modify proposed critical habitat. The conference process is discretionary for all other effect determinations besides jeopardy/adverse modification. However, it is in the best interest of the species, and our Federal partners to consider the value of voluntary conservation measures in a conference opinion or conference report for projects that are not likely to cause jeopardy, but are likely to adversely affect the northern long-eared bat. So far, the Department of Defense – Air Force as the lead Federal agency has not sought to conference with the Service.

The proposed activities by the JBMDL under Alternatives 1 and 2 will occur within night foraging and day roosting habitat of the northern long-eared bat and may result in harm or harassment if this species becomes federally listed. Federal regulation pursuant to Section 9 of the ESA, prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in the death or injury to listed species by significantly impairing essential behavioral patterns such as breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering.

A-3 If the northern long-eared bat is listed as endangered, the Service recommends that JBMDL conduct a summer survey for this species. Currently the Service is requesting that project proponents follow the *2014 Range-wide Indiana Bat Summer Survey Guidelines* (enclosed) to complete summer surveys for the northern long-eared bat. The summer survey should be conducted by a recognized, qualified Indiana bat surveyor (list enclosed) who should submit a work plan for Service approval prior to completing the survey. The surveyor should also determine whether other species of bats are present within or in the vicinity of the two proposed alternative areas, namely the little brown bat (*Myotis lucifugus*), eastern red bat (*Lasiurus borealis*), tricolored bat/eastern pipistrelle (*Perimyotis subflavus*), big brown bat (*Eptesicus fuscus*), and silver haired bat (*Lasionycteris noctivagans*).

If the long-eared bat is listed as endangered, JBMDL must refrain from project construction until the survey results are provided to this office. Consultation with the Service will be required if the species is listed.

MIGRATORY BIRDS

A-4 On July 31, 2006, the Department of Defense and the Service entered into a Memorandum of Understanding to promote conservation of migratory birds. Tree removal will have an adverse impact on migratory birds if conducted during the nesting season (destruction of nests with eggs or unfledged birds). The Breeding Bird Atlas (Niles *et al.*, 2001) lists approximately 70 species of breeding migratory birds that are known to occur in the vicinity of the project area. The Service requests a seasonal restriction on tree cutting between March 15 and July 31 to avoid impacts to birds protected under the MBTA.

OTHER COMMENTS OR RECOMMENDATIONS ON THE DEA

A-5 A field habitat survey was conducted by JBMDL contractors within the Alternative 1 area and a small portion of the Alternative 2 area on September 13 and 14, 2012. The primary scope of this survey was the partial delineation of wetland areas. In the DEA, the two-day survey is referenced in Table 3.10 as evidence that State-listed species and species of special concern listed in this table are absent within the Alternative 1 and 2 areas. The Service notes that, with the exception of the federally listed species discussed in the section above, the survey may be inadequate to determine whether the State-listed species and species of special concern listed in Table 3.8 of the DEA are present within the Alternative 1 and 2 areas. The Service recommends that JBMDL coordinate with the New Jersey Division of Fish and Wildlife (NJDFW), Endangered and Nongame Species Program (ENSP) to ensure the NEPA requirement of assessing environmental impacts on State-listed species of the proposed action and alternatives.

A-6 The JBMDL states that no significant impact is expected to occur from lead dispersal across the machine gun range and, specifically, via wetland areas by proposing to use the non-lead 5.56 millimeter (mm) M855A1 round and the 7.62 mm M80A1 round when the latter becomes available in 2017. However, other contaminants associated with munitions on training ranges may move long distances in solution and have a high potential to contaminate ground water and

A-6
(contd.)

surface water (as referenced in the DEA by USEPA 2005 and Larson *et al.* 2007) resulting from the high content of sand and gravel in the soil (page 4.13 and 4.14), as well as relatively high precipitation and relatively shallow ground water table. Yet, the likely contamination of ground water, surface water, and soils by munitions-related metals and propellants is not addressed in the DEA. Pursuant to the NJDEP Surface Water Quality Standards (N.J.A.C. 7:9B), Gaunts Brook is classified as “Pinelands Waters” (Outstanding Natural Resource Waters) and afforded the protections thereof. As such, the Service strongly recommends that JBMDL implement a monitoring program to ensure the sustained quality of the Gaunts Brook water, sediments, and surrounding lands with respect to site use-related contamination. One excellent review of such monitoring program is the EPA Federal Facilities Forum Issue Paper entitled: *Site Characterization for Munitions Constituents, EPA-505-S-11-001* (January 2012). Upon implementing such an environmental quality monitoring plan for Gaunts Brook, the Service would be available to assist in the technical review of the data with respect to sensitive ecological receptors.

A-7

The Service questions the proposal to plant species for soil erosion control that would attract State-listed or rare butterflies and moths to the impact area (Page 4.21, lines 15-17), such as the endangered arogos skipper (*Atrytone arogos*), the threatened silver-bordered fritillary (*Bolaria selene myrina*), and the species of special concern dotter skipper (*Hesperia attalus*) and Georgia satyr (*Neonympha areolatus*). The Service recommends not planting vegetation attractive to these aforementioned species if use of the MAMGR would result in adverse impacts to these species.

A-8

The DEA references the Integrated Natural Resources Management Plan (INRMP) (page 3.37 line 27). The Service notes that the INRMP has yet to be finalized and re-authorized. Also, the citation is missing in the References section.

SUMMARY OF RECOMMENDED ACTIONS

To avoid and minimize potential impacts on State- and federally-listed threatened and endangered species, species proposed for listing, species of special concern, migratory birds, and other fish and wildlife resources within on in the vicinity of the project area, the Service recommends that the JBMDL incorporate the following measures into project planning, including a response to comments and recommendations received from other Federal and State agencies, and provide a re-draft of the Environmental Assessment document to the Federal and State agencies for further review and comment.

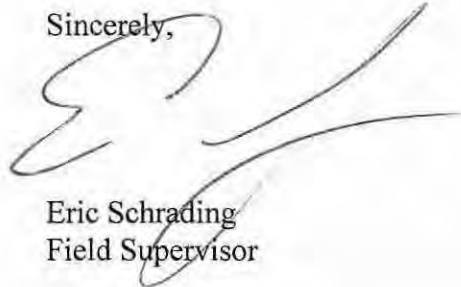
1. While the proposed action is not likely to jeopardize the continued existence of the northern long-eared bat, the Service recommends that JBMDL initiate voluntary conservation measures in a conference opinion or conference report with the Service.
2. If the northern long-eared bat is listed as endangered, the Service recommends that JBMDL conduct a summer survey for this species. A work plan should be submitted to the Service for approval prior to completing the survey.

- a. The surveyor should also determine whether other species of bats are present within or in the vicinity of the two proposed alternative areas.
 - b. Refrain from project construction until the survey results are provided to the Service. Consultation with the Service will be required if the species is listed.
3. Be aware that conversion of forested wetlands to herbaceous wetlands may create suitable habitat for the establishment of the federally listed Knieskern's beaked-rush and that the Service may request that future surveys be conducted; reconsider the determination of no effect provided by the JBMDL; and request conservation measures to avoid or minimize adverse effects on Knieskern's beaked-rush.
4. Apply a seasonal restriction on tree cutting between March 15 and July 31 to avoid impacts to birds protected under the MBTA.
5. Coordinate with the NJDFW-ENSP regarding presence of and impacts to State-listed species and species of special concern listed in Table 3.8.
6. Implement a long-term, site-related contaminant monitoring plan to ensure the ecological sustainability of the Gaunts Brook and its environs.
7. Avoid attracting State-listed or rare butterflies and moths to the impact area by not planting vegetation attractive to these aforementioned species if use of the MPMGR would result in adverse impacts to these species.
8. Finalize the INRMP for re-authorization.

CONCLUSIONS

The Service recommends that the DEA be revised to incorporate the aforementioned recommendations. We also note that the DEA does not address potential impacts of ordnance ammunition to fish and wildlife species and the potential contamination of Pinelands headwaters found within the surface danger zone that extends beyond the MPMGR. Thank you for the opportunity to provide comments and recommendations on the proposed DEA. Please contact Carlo Popolizio at (609) 383-3938, extension 32, if you require further assistance.

Sincerely,



Eric Schradung
Field Supervisor

Enclosures

REFERENCES

- Larson, S.L., J.L. Davis, W.A. Martin, D.R. Felt, C.C. Nestler, D.L. Brandon, G. Fabian, and G. O'Connor. 2007. Grenade range management using lime for metals immobilization and explosive transformation. U.S. Army Corps of Engineers, Engineer Research and Development Center. June 2007. ERDC/EL TR-07-05.
- Niles, L.J., M. Valent, J. Tash and J. Myers. 2001. New Jersey's Landscape Project: Wildlife habitat mapping for community land-use planning and endangered species conservation. New Jersey Department of Environmental Protection, New Jersey Division of Fish and Wildlife, Endangered and Nongame Species Program.
- U.S. Environmental Protection Agency. 2005. Best management practices for lead at outdoor shooting ranges. EPA-802-B-01-001.
- _____. 2012. EPA Federal facilities forum issue paper: site characterization for munitions constituents. Solid Waste and Emergency Response (5203P), EPA-505-S-11-001.

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JB MDL Response to comments from the United States Fish and Wildlife Service letter dated November 20, 2014

Comment A-1 - Be aware that conversion of forested wetlands to herbaceous wetlands may create suitable habitat for the establishment of the federally listed Knieskern's beaked-rush and that the Service may request that future surveys be conducted; reconsider the determination of no effect provided by the JBMDL; and request conservation measures to avoid or minimize adverse effects on Knieskern's beaked-rush.

Response - There may be a net positive effect on Knieskern's beaked rush. However surveys of active ranges may be problematic. The ranges are also maintained by mowing on an annual basis to maintain open sightlines and limit woody vegetation growth. The plan is to plant grasses on the site to minimize erosion. This may limit the extent that Knieskern's beaked-rush can propagate. No change was made in the document.

Comment A-2 - While the proposed action is not likely to jeopardize the continued existence of the Northern long-eared bat, the Service recommends that JBMDL initiate voluntary conservation measures in a conference opinion or conference report with the Service.

Response - The Northern long eared bat was listed as a threatened species by the USFWS on April 2, 2015. JBMDL conducted bat surveys in June 2015 which included the proposed MPMGR site (See response to Comment A-3 below). No specimens of Northern long eared bat were recorded. The Air Force will undertake voluntary conservation measures as part of our ongoing Integrated Natural Resources plan. If the Service is interested in current and planned actions for long eared bats and bats in general, we would be happy to meet with FWS personnel to discuss those plans.

Comment A-3 - If the northern long-eared bat is listed as endangered, the Service recommends that JBMDL conduct a summer survey for this species. A work plan should be submitted to the Service for approval prior to completing the survey.

- a) The surveyor should also determine whether other species of bats are present within or in the vicinity of the two proposed alternative areas.
- b) Refrain from project construction until the survey results are provided to the Service. Consultation with the Service will be required if the species is listed.

Response – JB MDL conducted a two week bat survey between June 14, 2015 and June 27, 2015. The survey involved the use of mist nets to capture bat species within the two project alternative locations. The mist nets were set at locations recommended by Jeremy Markuson from the USFWS New Jersey Ecological Field Services Office during a joint site visit. No northern long eared bat specimens were captured or collected during the survey.

Comment A-4 - Apply a seasonal restriction on tree cutting between March 15 and July 31 to avoid impacts to birds protected under the MBTA.

Response - This restriction is a normal part of our operations and is already incorporated into the contract specifications and is incorporated into the EA in Section 4.7.4 of the EA.

Comment A-5 - Coordinate with the NJDFW-ENSP regarding presence of and impacts to State-listed species and species of special concern listed in Table 3.8.

Response - JB MDL has submitted the EA and additional correspondence to the NJDEP. Comments were received and are addressed in the EA as summarized in Appendix B – Response to NJDEP letter dated December 9, 2014.

Comment A-6 - Implement a long-term, site-related contaminant monitoring plan to ensure the ecological sustainability of the Gaunts Brook and its environs.

Response - Ft Dix performed a Baseline Ecological Evaluation of Gaunts Brook between Range Road and the Lake Shore Bridge Drive in 2007. This location is downstream of the entire southern end of the JB MDL range complex. This location receives all the surface water flow from the ranges that have been in existence in one form or another since the early 1940's. The results of the study show that while there may be metals in the water column from the ranges, there is no ecological impact from the ranges. There are no additional weapons or munitions being fired in the range area or in the Gaunts Brook watershed as part of this proposed action. The existing range will remain, with half of the training load moving to the new range. There will be no additional impact on the water body from this range. Long term monitoring from one range serves little purpose as opposed to the overall impact of the ranges on the watershed. Furthermore, JBMDL conducts annual groundwater sampling of the Explosive Ordnance Disposal range immediately adjacent to (north of) the proposed MPMGR range. The annual sampling events have demonstrated that there has been no adverse impact to groundwater as it relates to munitions use in that location. The Air Force is not proposing to add a long term monitoring program for this project.

Comment A-7 - Avoid attracting State-listed or rare butterflies and moths to the impact area by not planting vegetation attractive to these aforementioned species if use of the MPMGR would result in adverse impacts to these species.

Response – JB MDL concurs with this comment. There will be no effort provided to attracting endangered species to the site. The EA was revised to read “JB MDL would plant grass to prevent soil erosion”.

Comment A-8 - Finalize the INRMP for reauthorization.

Response - As you are aware, JB MDL has undertaken a Wildlife Hazard Assessment for the McGurie Airfield. When the results of this study are available, JB MDL will finalize the INRMP. The INRMP is a completely separate project from the subject MPMGR EA and, if the results of the WHA require substantial revisions to the previous version, NEPA analysis will be required and the USFW will be consulted as needed.



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF PERMIT COORDINATION AND ENVIRONMENTAL REVIEW
P.O. Box 420 Mail Code 401-07J Trenton, New Jersey 08625-0420
Phone Number (609) 292-3600
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CHRIS CHRISTIE
Governor

BOB MARTIN
Commissioner

KIM GUADAGNO
Lt. Governor

December 9, 2014

Mr. Joseph Rhyner
Department of the Air Force
87 CES/CEIE
2404 Vandenberg Avenue
Joint Base McGuire-Dix Lakehurst
Lakehurst, NJ 08641

**RE: Proposed Multi-Purpose Machine Gun Range
Joint Base McGuire-Dix Lakehurst**

Comments on the Environmental Assessment

Dear Mr. Rhyner:

The New Jersey Department of Environmental Protection's (Department) Office of Permit Coordination and Environmental Review (PCER) distributed, for review and comment, the environmental assessment (EA) and Finding of No Significant Impact (FONSI) for the proposed Multi-Purpose Machine Gun Firing Range (MPMGFR) at Joint Base McGuire-Dix Lakehurst (JBMDL). The Department previously commented on a scoping document for this project on November 28, 2012 (enclosed). In addition to the previously stated comments, and on behalf of the Department, we offer the following additional comments based on our review of the draft EA.

Natural Resources

The Department's Division of Fish & Wildlife (DFW) - Fisheries and Non-Game Threatened and Endangered Species

Fisheries: The DFW would have serious concerns with the EA's contention that the impacts to water resource are expected to be minimal without actually addressing them. The Gaunts Brook and tributaries, are classified Pinelands Waters (PL), are Outstanding National Resource Waters. In section 4.6.1, there is plenty of discussion of the contaminants being moved by stormwater (*Acidic water and soil are conditions typically found in this portion of the State. When metals are exposed to acidic water or soil, it breaks down by weathering into hydroxides, sulfates, sulfides, carbonates, and phosphates (EA 1996). With each rainfall, these compounds may be dissolved, and move in solution in the storm runoff waters*), but no discussion that the Gaunts Brook is a flowing stream and constantly moving. In the project area and downstream, fish, amphibians and insects will be laying eggs in this water. The section states that "*munitions-related contaminants at military ranges include a variety of chemical mixtures (Larson et al. 2007)*", but doesn't address direct impact to resident fauna. It is not only conceivable that some bullets

B-1
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could enter Gaunts Brook and its associated wetlands, it's highly likely. While the majority of bullets fired on the range would be focused on the target areas, all of which would be situated in upland areas and no targets are proposed within the Gaunts Brook stream corridor or in any wetland areas. Machine guns generally spray a burst of bullets down range, some will miss the target, some will pass through the targets and more than a few will end up in Gaunts Brook, its associated tributaries and its associated wetlands.

If you have any additional questions, please contact Kelly Davis at (908) 236-2118.

Non-Game Threatened and Endangered Species:

In addition to concerns raised above and in the November 28, 2012 comment letter, an addition to the list of rare, threatened or endangered species is the Corn Snake (*Pantherophis guttatus*) for which the applicant should prepare a survey and/or habitat assessment during their final site assessments of Alternative 1 (and/or Alternative 2) site locations. Further, because of the nature of the site selection criteria, ENSP will accept the site location recommendation, and would merely ask that the staff of JBDML continue to be good stewards of the land and coordinate with Department staff regarding the identification, protection and/or avoidance of State listed reptiles and lepidoptera known to inhabit the project area as this project moves forward. It is also possible that completion of construction and/or restoration of disturbed areas could be performed in a manner which perhaps enhances or benefits native wildlife species. Notwithstanding potential adverse effects associated with the operation or use of the site, there may be opportunities for wildlife on the Alternative 1 location post-construction.

If you have any additional questions, please contact John H. Heilferty at (609) 984-1581.

Cultural and Historic Resources

Thank you for providing the Historic Preservation Office (HPO) with the opportunity to review and comment on the potential for the above-referenced project to affect historic properties as part of the preparation of an Environmental Assessment under the National Environmental Protection Act. The HPO previously had the opportunity to review and comment on this undertaking pursuant to the United States Air Force's (USAF) obligations under Section 106 of the National Historic Preservation Act. In an enclosed review letter dated October 29, 2013 (13-0174-3/HPO-J2013-340), the HPO concurred with the USAF determination that a majority of the project's area of potential effects (APE) had been previously disturbed by various military activities. For portions of the APE that remain undisturbed, the USAF proposed the employment of a qualified professional archaeologist to monitor unexploded ordinance removal, prior to tree clearing and range construction. A copy of this correspondence has been included for your records. Consequently, the HPO does not recommend further review prior to permit issuance, provided the stipulations agreed to in the HPO's previous consultation, as well as those outlined in the Environmental Assessment, are carried out.

If you have any questions, please contact Jesse West-Rosenthal at 609-984-6019. If additional consultation with the HPO is needed for this undertaking, please reference the HPO project number 13-0174 in any future calls, emails, submissions or written correspondence to help expedite your review and response.

Land Use Regulation

In addition to the comments of November 28, 2012, we restate that no wetland permit shall be required within the Pinelands Commission jurisdiction unless there is a discharge of fill (removal of stumps, grading, filling, placement of structures, etc.) in wetlands. The proposal does include removal of wooded

B-5 or forested vegetation around Gaunts Brook. A Flood Hazard Area permit is required for that activity and has been previously commented upon and as follows:

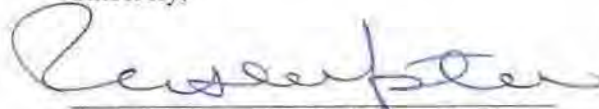
B-6 Freshwater Wetlands – the department regulates discharges of fill in wetlands and waters within the Pinelands jurisdiction. Above –ground cutting or removal of trees does not require a permit provided there is no soil disturbance. Removal of stumps or other mechanized soil disturbances, such as rutting or surface grading or leveling that would constitute a discharge of fill, would trigger a permit requirement.

B-7 Wetlands are documented barred owl habitat and considered to be of exceptional resource value. Removal of trees from the wetlands would adversely affect the area barred owl species. Should the permit requirement be triggered, the rules would greatly discourage this activity within the stated areas of wetlands and barred owl habitat.

B-8 Flood Hazard Area – Wholesale removal of wooded riparian zone vegetation along a stream is discouraged by the rules and required a project to demonstrate both that a hardship exists and that impacts to riparian zone vegetation are being minimized. The likely presence of State threatened and/or endangered species also would discourage the activity under the rules. The Draft EA does not contain enough information to make a hardship demonstration. A flood hazard area permit is necessary to conduct the proposed activity.

If you have any additional questions, please contact Bruce Stoneback at (609) 633-9261.

Sincerely,



Ruth W. Foster, PhD., Section Chief
Office of Permit Coordination
and Environmental Review

Enclosures

C: John Gray, NJDEP-PCER
Kelly Davis, NJDEP – DFW
John Heilferty, NJDEP – DFW
Jesse West-Rosenthal, NJDEP – HPO
Gwen Zervas, Haiyesh Shay – NJDEP-SRP
Bruce Stoneback, NJDEP-Land Use
Brian Sariano, AMEC Environmental



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND
JOINT BASE MCGUIRE-DIX-LAKEHURST

October 9, 2013

Joint Base McGuire-Dix-Lakehurst
Joseph Rhyner
Acting Chief, Environmental Section
5317 Snyder Lane
JB MDL, New Jersey 08640

Mr. Daniel Saunders
Deputy State Historic Preservation Officer
New Jersey Department of Environmental Protection
P.O. Box 404
Trenton, NJ 08625-0404

OCT 17 2013

13-0174-392
HPO-J2013-340

SUBJECT: Section 106 consultation for the construction of Multipurpose Machine Gun Range (HPO Project #13-0174) on Dix Range Area.

Dear Mr. Saunders:

The U.S. Army proposes to construct, operate and maintain a Multi-Purpose Machine Gun Range (MPMGR) on Joint Base McGuire-Dix-Lakehurst (JB MDL) in the Dix Range Area. The U.S. Army has determined that the current Machine Gun Range does not meet the size requirements for basic training as outlined in the Training Circular (TC) 25-8 Training Ranges (DA 2010). The proposed new MPMGR would meet critical live-fire individual marksmanship training needs for both active and reserve component units that train on the installation. The range construction will include a range complex, fixed target locations, direct buried utilities, and access roads (see attached proposed project design plans). Tree clearing will be conducted prior to range construction, including cutting trees to within three inches of ground surface, leaving stumps in wetlands areas and removing cut trees with track-loader equipment. Vegetation will be maintained by mowing.

In a letter dated November 28, 2012 responding to the submission of the Description of Proposed Action and Alternatives for the MPMGR (AMEC 2012), the NJ HPO requests consultation pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800) for the potential effects of the proposed MPMGR on cultural resources. This letter and the attached cultural resources review serves as our response to the request. JB MDL Cultural Resources staff has determined that there are no historic architectural resources present within the immediate APE or within 1/4 mile of the proposed MPMGR.

The JB MDL Cultural Resources staff has also determined that there will be no adverse effect of the proposed MPMGR on archaeological resources. A review of historic maps, aerial photography, LIDAR imagery, previous cultural resource survey and a recent site walkover indicates that the majority of the APE has been disturbed through use as a military training area since the late 1940s. Such disturbance includes previous range construction, fire management activity, and explosive ordnance disposal. In addition, relatively undisturbed portions of the proposed MPMGR have a high risk of unexploded ordnance (UXO), which prohibits subsurface survey without prior ordnance sweep and removal. A UXO sweep will be conducted prior to tree clearing and range construction. JB MDL proposes to have a

qualified professional archaeologist monitor the UXO removal, tree clearing and range construction activities. Sites, should they be identified during these activities, will be recorded and preserved in place.

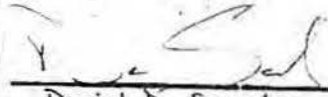
Thank you very much for your timely review of potential cultural resource impacts of the proposed MPMGR. We request concurrence on the above determination. Please call Joe Rhyner at 609-562-2189 if you have any questions or if you require additional information.

Sincerely,


JOSEPH RHYNER
Chief, Environmental Section, 87th Civil Engineer
Squadron

Attachments:

- (1) Project review of potential effects
- (2) Proposed project plans

CONCUR	
 Daniel B. Saunders DEPUTY STATE HISTORIC PRESERVATION OFFICER	10/29/13 DATE



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF PERMIT COORDINATION AND ENVIRONMENTAL REVIEW
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November 28, 2012

Mr. Joseph Schwartz
Environmental Specialist
Department of the Air Force
87 CES/CEAN
5317 Snyder Lane
Joint Base McGuire-Dix-Lakehurst, NJ 08640-5501

RE: Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix-Lakehurst (JB MDL), New Jersey

Scoping Comments for the Environmental Assessment (EA)

Dear Mr. Schwartz:

The New Jersey Department of Environmental Protection's (Department) Office of Permit Coordination and Environmental Review (PCER) distributed your letter regarding the preparation of an Environmental Assessment (EA) for the proposed Multi-Purpose Machine Gun Range (MPMGR) at Joint Base McGuire-Dix-Lakehurst (JB MDL) for review and comment. We offer the following comments for your consideration.

Cultural Resources

The Department's Historic Preservation Office's (HPO) review notes that it appears that the proposed undertaking will require consultation under Section 106 of the National Historic Preservation Act for the identification, evaluation and treatment of historic properties within the project's area of potential effects. As a result, the HPO looks forward to further consultation with the United States Department of the Air Force, pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR §800.

If you have any questions, please do not hesitate to contact Jonathan Kinney at the HPO (Phone: 609-984-0141; Fax: 609-984-0578; Email: jonathan.kinney@dep.state.nj.us; Website: <http://www.nj.gov/dep/hpo>; Mailing Address: Mail Code 501-04B, Department of Environmental Protection, Historic Preservation Office, P.O. Box 420, Trenton, NJ 08625-0420). If additional consultation is required for this undertaking, please reference the HPO project #13-0174 in any future calls, emails, or written correspondence in order to expedite our review and response.

Land Use Regulations

The Department's Division of Land Use Regulation's (DLUR) review notes that the proposed range clearing begins in an area that was previously cleared and is now beginning to grow over with scrub-shrub vegetation. It then extends into an area that is mostly forested. Just past the mid-range point of the range, northwesterly of the firing location, the range crosses Gaunts Brook and an unnamed tributary to Gaunts Brook, both drainage corridors with associated wetlands and riparian zones regulated by the Freshwater Wetlands Protection Act and Flood Hazard Area Control Act. The range location is outside of any area possibly needing a coastal permit.

The EA should address if stumps will be removed, or if the area needs grading; and ongoing maintenance activities for the cleared area (annual cutting or the application of herbicide).

Freshwater Wetland

The Department regulates discharges of fill in wetlands and waters within Pinelands jurisdiction. Above-ground cutting and/or removal of trees does not require a permit provided there is no soil disturbance. Removal of stumps or other mechanized soil disturbances, such as rutting, or surface grading or leveling that would constitute a discharge of fill, would trigger a permit requirement. Wetlands are documented barred owl habitat and considered to be of exceptional resource value. Removal of trees from the wetlands would adversely affect the area for the barred owl species. **Should the permit requirement be triggered, the rules would greatly discourage this activity within 7.66 (stated) acres of wetlands and barred owl habitat.**

Flood Hazard Area

Wholesale removal of wooded riparian zone vegetation along a regulated stream is discouraged by the rules and requires a project to demonstrate both that a hardship exists and that impacts to riparian zone vegetation are being minimized. The likely presence of State threatened and/or endangered species also would discourage the activity under the rules. The draft EA does not contain enough information to make a hardship demonstration. **A Flood Hazard Area permit is necessary to conduct the proposed activity.**

Threatened & Endangered Species

In addition to the Barred owl wetland habitat, the area chosen for the machine gun range appears to be documented northern pine snake habitat, as well as possibly containing two rare plant species – Pale Beaked-rush and Sickle-leaf Golden-aster. Swamp pink is documented to occur downstream of the proposed clearing area. .

Wetlands and Riparian Zone Mitigation

Mitigation for any activity impacts under a Freshwater Wetlands or Flood Hazard Area individual permit is not considered until after it is determined that an activity meets necessary rule qualifications and is qualified for a permit.

If you have any questions, please contact Bruce Stoneback (609-633-2289 or bruce.stoneback@dep.state.nj.us) at the DLUR.

Natural Resources

The Department's Division of Fish & Wildlife's (DFW) review notes the following.

Gaunts Brook and Tributaries

A **time restriction from 4/1 thru 6/30** needs to be imposed on any **in-water** and **sediment generating activities** associated with the project in order to protect warm-water fish nest building and spawning (includes waters that support pickerel).

Preferred Alternative

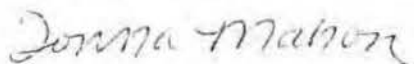
Species Occurrence Area (v8) and Landscape mapping (v3.1) indicates valued habitat for **threatened/endangered** (T/E) and **species of concern** in the area. (Timber Rattlesnake, Northern Pine Snake, Barred Owl, Arogos Skipper, A Silver-bordered Fritillary) Georgia Satyr, Dotted Skipper, Great Blue Heron. These species should be addressed in any EA prepared for this site.

Tree Trimming

The DFW recommends a general timing restriction on mechanical trimming or removal of trees from 3/15 – 7/31 to protect nesting birds covered under the Migratory Bird Treaty Act. Non-mechanical tree trimming may be permitted once trees are checked for nesting activity.

Thank you for giving the New Jersey Department of Environmental Protection the opportunity to comment on the preparation of the EA. Please send six copies of the completed EA directly to our office, so that we can coordinate a comprehensive Departmental review.

Sincerely,



Donna Mahon
Office of Permit Coordination
and Environmental Review

C: Ken Koschek, NJDEP - PCER
Jonathan Kinney, NJDEP - HPO
Bruce Stoneback, NJDEP - DLUR
Kelly Davis, NJDEP - DFW

**JB MDL Response to comments from the New Jersey Department of
Environmental Protection letter dated December 9, 2014**

Comment B-1 – The Department of Fish and Wildlife (DFW) would have serious concerns with the EA's contention that the impacts to water resources are expected to be minimal without actually addressing them. The Gaunts Brook and tributaries are classified Pinelands Waters (PL), are outstanding Natural Resource Waters. In Section 4.6.1, there is plenty of discussion of the contaminants being moved by storm water (*Acid water and soil are conditions typically found in this portion of the State. When metals are exposed to acidic water or soil, it breaks down by weathering into hydroxides, sulfates, sulfides, carbonates, and phosphates (EA 1996). With each rainfall, these compounds may be dissolved, and move in solution in the storm runoff waters*), but no discussion that the Gaunts Brook is a flowing stream and constantly moving. In the project area and downstream, fish, amphibians, and insects will be laying eggs in this water. This section states that “*munitions-related contamination at military ranges include a variety of chemical mixtures (Larson et. al. 2007)*”. But doesn't address impact to resident fauna. It is not only conceivable that some bullets could enter Gaunts Brook and its associated wetlands, it's highly likely. While the majority of bullets fired on the range would be focused on the target areas, all of which will be situated in upland areas and no targets are proposed within the Gaunts Brook stream corridor or in any wetlands. Machine guns generally spray a burst of bullets down range, some will miss the target, some will pass through the targets, and more than a few will end up in Gaunts brook, its associated tributaries, and its associated wetlands.

Response - Ft Dix performed a Baseline Ecological Evaluation of Gaunts Brook between Range Road and the Lake Shore Bridge Drive in 2007. This location is downstream of the entire southern end of the JB MDL range complex. This location receives all the surface water flow from the ranges that have been in existence in one form or another since the early 1940's. The results of the study show that while there may be metals in the water column from the ranges, there is no ecological impact from the ranges. There are no additional weapons or munitions being fired in the range area or in the Gaunts Brook watershed as part of this proposed action. The existing range will remain, with half of the training load moving to the new range. There will be no additional impact on the water body from this range. In fact, there is a larger acreage of wetlands associated with the existing machine gun range at Range 11 (over 173 acres) in comparison to the proposed new machine gun range discussed in this EA (6.12 acres). Conceivably far fewer bullets will be entering Gaunts Brook and its associated wetlands.

Comment B-2 – In addition to concerns raised above and in the November 28, 2012 comment letter, an addition to the list of rare, threatened, or endangered species is the Corn Snake (*Pantherophis guttatus*) for which the applicant should prepare a survey and/or habitat assessment during their final assessment of Alternative 1 (and/or Alternative 2) site locations. Further, because of the nature of the site selection criteria, ENSP will accept the site recommendation and would merely ask that staff of JBMDL continue to be good stewards of the land and coordinate with Department staff regarding the identification, protection, and/or avoidance of State listed reptiles and leiodoptera known to inhabit the project area as this project moves forward. It is also possible that the completion of construction and/or restoration of disturbed areas could perform in a manner which perhaps enhances or benefits native wildlife

species. Notwithstanding potential adverse effects associated with the operation or use of the site, there may be opportunities for wildlife on the Alternative 1 location post-construction.

- **Response** – Portions of Section 3.8.3 (specifically Table 3-8) and Section 4.7.1 were updated to address the potential presence and effects to the Corn Snake. The following language was added to Section 4.7.1 *“Vegetation removal is not anticipated to have any potential adverse effect to the corn snake. Although potential habitat is present and vegetation removal may result in this species being displaced to other areas of the JB MDL, the presence of this species within the Alternative 1 location has not been verified. A 2010 survey by Herpetological Associates in the eastern portion of the former Ft. Dix property found one live specimen(July, 2010) and two road killed individuals (both in September, 2010) within 2 miles of the proposed range. An additional road kill Corn snake was found on Route 539 within 2 miles of the proposed range in September, 2009. (JB MDL 2012)”*. JB MDL does not anticipate or plan to conduct any additional species surveys in association with the proposed action, however, as part of best management practices and standard operating procedures, JB MDL would educate contractors to identify rare species and develop a procedure for work stoppage and reporting of rare species sightings. Finally JB MDL concurs that it is possible that the completion of construction and/or restoration of disturbed areas could perform in a manner which perhaps enhances or benefits native wildlife species.

Comment B-3 – The Historic Preservation Office (HPO) does not recommend further review prior to permit issuance, provided the stipulations agreed to in the HPO’s previous consultation, as well as those outlined in the Environmental Assessment, are carried out.

Response – JB MDL intends to comply with the stipulations agreed to in the HPO’s previous consultation, as well as those outlined in the Environmental Assessment.

Comment B-4 – In addition to the comments of November 28, 2012, we restate that no wetland permit shall be required within the Pinelands Commission jurisdiction unless there is a discharge of fill (removal of stumps, grading, filling, placement of structures, etc.) in wetlands.

Response – As described in the Environmental Assessment, the proposed action does not involve any discharge to wetlands, nor does it involve the removal of stumps, grading, filling, placement of structures, etc.in wetlands.

Comment B-5 – The proposal does include removal of wooded or forested vegetation around Gaunts Brook. A Flood Hazard Area permit is required for activity and has been previously commented on.

Response – JB MDL will not be applying for a Flood Hazard Area permit for this proposed action as JB MDL is a federal installation and has not waived its sovereign immunity.

Comment B-6 – The Department regulates discharges of fill in wetlands and waters within the Pinelands jurisdiction. Above-ground cutting or removal of trees does not require a permit provided there is no soil disturbance. Removal of stumps or other mechanized soil disturbances, such as rutting or surface grading or leveling that would constitute a discharge of fill would trigger permit requirements.

Response – Understood. See response to Comment B-4.

Comment B-7 – Wetlands are documented barred owl habitat and considered to be of exceptional resource value. Removal of trees from the wetlands would adversely affect the area barred owl species. Should permit requirements be triggered, the rules would greatly discourage this activity within the stated wetland barred owl habitat.

Response – Bird surveys conducted at JB MDL in 2007, 2010, 2011, and 2012 did not identify any Barred owl specimens in the vicinity of Alternative 1. The nearest Barred owl find was over 1 mile from the proposed MPMGR range in the 2012 survey. (JB MDL 2012, CEMML 2012) Although potential habitat is present for this species, the species has not been identified as occupying the area. As a result no adverse impacts to the Barred owl would be expected.

Comment B-8 – Wholesale removal of wooded riparian zone vegetation along a stream is discouraged by the rules and required a project to demonstrate both that a hardship exists and that impacts to riparian zone vegetation are being minimized. The likely presence of State threatened and/or endangered species would also discourage the activity under the rules. The Draft EA does not contain enough information to make a hardship determination. A flood hazard permit is necessary to conduct the proposed activity.

Response - JB MDL will not be applying for a Flood Hazard Area permit for this proposed action as JB MDL is a federal installation and has not waived its sovereign immunity.

APPENDIX C

Applicable Laws and Executive Orders

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APPENDIX C

Applicable Regulations

EXECUTIVE ORDERS (EO)	
EO 11593 – Protection and Enhancement of the Cultural Environment	All Federal agencies are required to locate, identify, and record all cultural and natural resources. Cultural resources include sites of archaeological, historical, or architectural significance. Natural resources include the presence of endangered species, critical habitat, and areas of special biological significance.
EOs 11988 and 13690 – Floodplain Management	Requires Federal agencies to provide leadership and to take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.
EO 11990 – Protection of Wetlands	Requires Federal agencies to avoid undertaking or providing assistance for new construction located in wetlands unless there is no practicable alternative, and all practicable measures to minimize harm to wetlands have been implemented.
EO 12088 – Federal Compliance with Pollution Control Standards	Requires Federal agencies to ensure that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to Federal facilities and activities.
EO 12372 – Intergovernmental Review of Federal Programs (as amended by EO 12416)	Requires Federal agencies to foster an intergovernmental partnership and to strengthen federalism by relying on state and local processes for state and local coordination and review of proposed Federal financial assistance.
EO 12856 – Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements	Requires Federal agencies to plan for chemical emergencies. Facilities that store, use, or release certain chemicals are subject to various reporting requirements. Reported information is made available to the public.

EO 12898, Environmental Justice.	Requires certain Federal agencies, including the Department of Homeland Security (DHS), to the greatest extent practicable permitted by law, to make environmental justice part of their missions by identifying and addressing disproportionately high and adverse health or environmental effects on minority and low-income populations.
EO 13007 – <i>Indian Sacred Sites</i>	Requires Federal agencies to accommodate access to, and ceremonial use of, sacred sites by practitioners and avoid adversely affecting physical integrity of such sites.
EO 13045 – <i>Protection of Children from Environmental Health and Safety Risks</i>	Makes it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children. It also directs agencies to ensure that policies, programs, activities, and standards address such risks if identified.
EO 13112 – <i>Invasive Species</i>	Requires Federal agencies to prevent the introduction of invasive species and to provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.
EO 13148 – <i>Greening the Government through Leadership in Environmental Management</i>	Requires Federal agencies to ensure that all necessary actions are taken to integrate environmental accountability into agency day-to-day decision making and long-term planning processes, across all agency missions, activities, and functions. Environmental management considerations must be a fundamental and integral component of federal government policies, operations, planning, and management.
EO 13186 – <i>Responsibilities of Federal Agencies to Protect Migratory Birds</i>	Requires Federal agencies to take steps to protect migratory birds, including restoring and enhancing habitat, preventing or abating pollution affecting birds, and incorporating migratory bird conservation into agency planning processes whenever possible.

APPENDIX D
Wetland Delineation Report
and Listed Species Habitat Survey

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FINAL
WETLAND DELINEATION REPORT AND LISTED SPECIES HABITAT SURVEY
PROPOSED MULTI-PURPOSE MACHINE GUN RANGE
JOINT BASE MCGUIRE-DIX-LAKEHURST (JB MDL)

Contract Number: FA4484-07-D-0005
Deliver Order 5013

Prepared for



JOINT BASE MCGUIRE-DIX-LAKEHURST, DIX AREA
NEW JERSEY

Prepared by:



AMEC Environment & Infrastructure, Inc.
One Plymouth Meeting, Suite 850
Plymouth Meeting, PA 19462-1308

AMEC Project#: 774850014

8 November 2012

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LIST OF ACRONYMS AND ABBREVIATIONS

AtsA	Atsion sand, 0 to 2 percent slopes
CFR	Code of Federal Regulations
CMP	Comprehensive Management Plan
CWA	Clean Water Act
Dbh	Diameter at breast height
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
GIS	Geographical Information System
JB MDL	Joint Base McGuire-Dix-Lakehurst
LakB	Lakehurst sand, 0 to 5 percent slopes
LasB	Lakewood sand, 0 to 5 percent slopes
LasC	Lakewood sand, 5 to 10 percent slopes
MODD	Disturbed area wetland
MOUT	Military Operations on Urbanized Terrain
MPMGR	Multi-Purpose Machine Gun Range
NAD83	North American Datum 1983
NHP	Natural Heritage Program
NI	No indicator
N.J.A.C.	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
N.J.S.A.	New Jersey Statutory Authority
NL	Not listed
NRCS	Natural Resource Conservation Service
NWI	National Wetland Inventory
OBL	Obligate
PEM1B	Palustrine, emergent, persistent, saturated wetland
PEM1/SS1E	Palustrine, emergent, persistent/scrub-shrub, broad leaved deciduous, seasonally flooded/saturated wetland
PSS1E	Palustrine, scrub-shrub, broad-leaved deciduous, seasonally-flooded/saturated wetland
PSS1E/4E	Palustrine, scrub-shrub, broad-leaved deciduous/needle-leaved evergreen, seasonally flooded/saturated wetland
TC	Training Circular
UPL	Upland
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
UXO	Unexploded ordinance

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1.0 Introduction

AMEC Environment & Infrastructure, Inc. (AMEC) conducted a wetland delineation and habitat survey for rare, threatened, and/or endangered species, as well as species of special concern at the Proposed Multi-Purpose Machine Gun Range (MPMGR) in the Dix area of Joint Base McGuire-Dix-Lakehurst (JB MDL). The purpose of this effort was to identify and assess the natural resources within the project area that could potentially affect or be affected the construction of the MPMGR. The U.S. Army has determined that their current Machine Gun Range does not meet the basic training requirements of a standard Army Range as codified in Training Circular (TC) 25-8 – Training Ranges (DA 2010). The proposed new MPMGR range would meet critical live-fire individual marksmanship training needs for both active and reserve component units that train on the installation.

The objective of the wetland delineation was to identify the outer boundaries of NJ Pinelands Area wetlands within and abutting the project area. The objective of the listed species habitat survey was to characterize the habitats within and around the project area, and to assess the potential presence of suitable habitat for listed species preliminarily identified using the New Jersey Department of Environmental Protection's (NJDEP) GeoWeb online Geographical Information System (GIS), and supplemented with observations and file reviews performed by AMEC and JB MDL environmental staff. Table 1-1 below presents a list of these potential listed species¹.

Table 1-1

Preliminary List of Listed Species Potentially Occurring on the Proposed MPMGR Site

Common Name	Scientific Name	State Status	Federal Status
Reptiles and Amphibians			
Northern pine snake	<i>Pituophis melanoleucus</i>	Threatened	Not listed
Timber rattlesnake	<i>Crotalus horridus</i>	Endangered	Not listed
Pine Barrens treefrog	<i>Hyla andersonii</i>	Endangered	Not listed
Birds			
Barred Owl	<i>Strix varia</i>	Threatened	Not listed
Butterflies			
Dotted skipper	<i>Hesperia attalus</i>	Special Concern	Not listed
Arogos skipper	<i>Atrytone arogos</i>	Endangered	Not listed
Georgia satyr	<i>Neonympha areolatus</i>	Special Concern	Not listed
Silver-bordered fritillary	<i>Bolaria selene myrina</i>	Threatened	Not listed
Plants			
Sickle-leaf golden aster	<i>Chrysopsis falcata</i>	NJ Pinelands listed	Not listed

¹ This list of potential listed species should be regarded as preliminary. Future assessment of listed species at this site should involve consultation with the NJDEP Natural Heritage Program (NHP) and the NJ Pinelands Commission.

New Jersey rush	<i>Juncus caesariensis</i>	Endangered	Not listed
Pine Barrens boneset	<i>Eupatorium resinosum</i>	Endangered	Not listed
Slender nut-rush	<i>Scleria minor</i>	NJ Pinelands listed	Not listed
Wand-like goldenrod	<i>Solidago stricta</i>	NJ Pinelands listed	Not listed
Slender rattlesnake root	<i>Prenanthes autumnalis</i>	NJ Pinelands listed	Not listed
Pine Barrens gentian	<i>Gentiana autumnalis</i>	NJ Pinelands listed	Not listed
Barratt's sedge	<i>Carex barratti</i>	NJ Pinelands listed	Not listed
Swamp pink	<i>Helonias bullata</i>	Endangered	Endangered

1.1 Site Description

The MPMGR site is located northwest of the intersection of Concourse Road (a.k.a. Pinehurst Road) and Hanover Furnace Manchester Road, spanning Plumstead Township to the north and Manchester Township to the south, both located within Ocean County. **Figure 1** presents a site location street map. The site is situated in the headwaters of Gaunt's Brook, within the Outer Coastal Plain Physiographic Province. The coordinates for the approximate center of the site are presented in Table 1-2 below.

Table 1-2

Coordinates for the Approximate Center of the Site

NJ State Plane (feet)	Lat/Lon (NAD83)
E(x) 509,159	39.9875
N(y) 420,606	-74.4396

The site is triangular in shape, and is bisected in a northeast-southwest direction by the headwaters of Gaunt's Brook. Areas to the east of Gaunt's Brook are largely cleared for current military training operations, although areas approaching Gaunt's Brook remain intact and relatively undisturbed. The areas to the west of Gaunt's Brook are mostly undisturbed forest. A more detailed description of the vegetation community types is presented in **Section 3** of this report.

2.0 Methods

2.1 Wetland Delineation

The Clean Water Act (CWA) defines wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR 230.3).

The primary governing regulation for freshwater wetlands in the State of New Jersey is the New Jersey Freshwater Wetlands Protection Act (N.J.S.A. 13:9B-1 et seq.) (the "Act") and to a lesser extent, the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq. The rules governing the implementation of the Freshwater Wetlands Protection Act and the Water Pollution Control Act are the New Jersey Freshwater Wetlands Protection Act Rules (the "Rules") at N.J.A.C. 7:7A. In addition, freshwater wetlands and State open waters under the jurisdiction of the NJ Pinelands Commission are also subject to the rules under N.J.A.C. 7:7A and the Pinelands Comprehensive Management Plan (CMP) at N.J.A.C. 7:50. These regulations provide more stringent regulation of activities in and around freshwater wetlands and their transition areas.

The State of New Jersey uses the 1989 Federal Interagency Committee for Wetland Delineation "Federal Manual for Identifying and Delineation Jurisdictional Wetlands" in order to field-delineate wetlands within the State of New Jersey. The manual organizes environmental characteristics of a potential wetland into three categories: hydric soils, hydrophytic vegetation, and wetland hydrology. The manual contains specific criteria for each category, and using this approach, an area that meets all three criteria is considered a wetland.

For vegetation, the criteria means that more than 50% of the composition of the dominant species from all strata must be categorized as hydrophytic or adapted to living in saturated areas. That is, the plant species must be classified as obligate, facultative wetland or facultative as defined in the *National List of Plant Species That Occur in Wetlands*, published by the United States Fish & Wildlife Service (USFWS), and where applicable, as revised by the NJ Pinelands Commission. Soils are considered hydric if they meet the criteria defined by the National Technical Committee for Hydric Soils in the most current list of hydric soils.

The first criterion, hydrophytic vegetation, is considered to be present when a predominance of the plant species present in a community is either obligate, facultative wetland, or facultative. The United States Fish and Wildlife Service (USFWS) has compiled data on the habitat characteristics of plants of the United States based on frequency of observation in various regions. This list categorizes plant species by their frequency of occurrence as follows:

Obligate Wetland Plants (OBL): Those species that occur almost exclusively in wetlands (>99 percent of the time)

Facultative Wetland Plants (FACW): Those species that usually occur in wetlands (67 - 99 percent of the time)

Facultative Plants (FAC): Those species equally likely to occur in wetland or non-wetland (34 - 66 percent of the time)

Facultative Upland Plants (FACU): Those species that usually occur in non-wetlands (67 - 99 percent of the time)

Upland Plants (UPL): Those species that occur almost exclusively in uplands (>99 percent of the time).

Excluding New Jersey, some regulatory programs assign a positive (+) or negative (-) symbol in conjunction with one of the facultative indicator classes. This designation identifies a species' preference to either the wetter or drier end of its indicator class, with the positive sign indicating a preference to the wetter end of the class. Species for which insufficient information is available for classification are listed in the USFWS list with a designation of No Indicator (NI) for regional status. A designation of Not Listed (NL) was assigned by AMEC if a species was not present on the USFWS list. According to the "1989 Manual", plants not listed are presumed to be upland species. A designation of Not Applicable (NA) was assigned by AMEC for vegetation that could not be identified to species level. Furthermore, the NJ Pinelands Commission has revised several of the USFWS indicators to more accurately reflect the probabilities of certain plant species occurring on the sandy substrates that characterize this region. These modifiers are presented in the *"NJ Pinelands Commission Manual for Identifying and Delineating Pinelands Area Wetlands"* (Zampella, 1991).

To accurately describe the vegetation at each sampling point, data on each horizontal strata or layer was collected. Vegetative strata for which dominants were determined included:

Tree ($\geq$ 5.0 inches diameter at breast height (dbh) and 20 feet or taller)

Sapling (0.4 to < 5.0 inches dbh and 20 feet or taller)

Shrub (usually 3 to 20 feet tall, including multi-stemmed, bushy shrubs and small trees and saplings)

Woody vine (determined by morphological characteristics and botanical classification)

Herb (herbaceous plants, including graminoids, forbs, ferns, fern allies, herbaceous vines, and tree seedlings)

The dominant species was determined by making visual estimates of tree, sapling, shrub, woody vine, and herb strata and by assigning one of the following cover classes, with the midpoints of each cover class in parentheses:

- T < 1 percent (0)
- 1 = 1-5 percent (3.0)
- 2 = 6-15 percent (10.5)
- 3 = 16-25 percent (20.5)
- 4 = 26-50 percent (38.0)
- 5 = 51-75 percent (63.0)
- 6 = 76-95 percent (85.5)
- 7 = 96-100 percent (98.0)

The midpoints of each species were averaged at each sample point and ranked. The dominance threshold number was calculated and used to determine dominant species. Those species composing 50 percent of the total cover were considered to be the dominants, as were additional species representing 20 percent or more of the total cover class midpoint values for each stratum. A USFWS wetland indicator or NJ Pinelands Commission indicator was assigned to each recorded species. The affinity of the dominant species to wetlands was used in determining the wetland status of each sample point.

A two-step process was used to determine the presence of hydric soils at each site. A preliminary desk-top assessment was first conducted that involved reviewing the USDA on-line GIS soil mapper, Web Soil Survey. This desk-top assessment provided a coarse-scale examination of the potential locations for hydric soils on each site, as well as providing information on historical land use.

The second step of this process was the field examination of site soils. Soil borings were collected to examine the nature of the soil below the "A" horizon. The hydric nature of soils can generally be determined by color changes resulting from the chemical reduction of soil components, which occurs because of extended periods of saturation or inundation. The Munsell Soil Color Charts were developed in order to assign values to these colors to simplify classification. The Munsell system uses three components in assigning color to a soil: hue, value, and chroma:

Hue: Related to one of the main spectral colors: red, yellow, green, blue, or purple, or various mixtures of these principal colors

Value: Refers to the degree of lightness

Chroma: Indicates the color strength or purity

In mineral soils, two or more colors may exist within the same soil. The dominant color is referred to as the matrix while the less dominant is referred to as the mottle. Mottling tends to occur under fluctuating conditions of saturation. Mineral soils are considered hydric if the matrix chroma is 2 or less when mottling is present, or when the matrix chroma is 1 or less if no mottling is present.

Other soil characteristics, such as high organic content, gleying, histic epipedons, sulfidic materials, aquic or peraquic moisture regime, root pore linings, and iron or manganese concretions, are also indicators of a hydric soil condition.

The last parameter, wetland hydrology, is present when inundation or saturation of the soil within 6 inches to 18 inches of the surface occurs for a minimum of 7 consecutive days during the growing season. In periods during which inundation or saturation is not present, field indicators are typically used to determine the presence of wetland hydrology. Wetland hydrology field indicators are grouped into two categories: primary indicators and secondary indicators. Primary indicators are typically considered to be robust indicators of wetland hydrology and include, but are not limited to, inundation and saturation (as noted above), water marks, drift lines, sediment deposits, and drainage patterns in the ground layer. Secondary indicators are relatively less robust and include, but are not limited to, the presence of a high frequency of

oxidized root channels (i.e., pore linings) near the soil surface, water-stained leaves, local soil survey hydrology data, and various environmental or ecological indicators.

A desktop survey was conducted to develop a preliminary understanding of the possible extent of the wetlands in advance of the field delineation. The desktop survey included a review of available information, including United States Geological Survey (USGS) 7.5-foot quadrangle topographic maps, USFWS National Wetlands Inventory (NWI) maps, NJDEP Freshwater Wetland Maps, USDA NRCS soils data, and aerial photographs of the Site.

In the field, wetland delineation involves determining the boundary line between the areas in which the three-wetland parameters are present and where they are not. Using perceived changes in elevation and vegetation as a guide, representative observation points were selected along the apparent border of any potential wetland areas. Soil borings were made to determine the presence of hydric soil and wetland hydrology at each of the observation points. Observations were made on both the wetland and upland sides. However, the southwestern corner of the proposed project area was not examined on-foot as this area contains unexploded ordinances (UXOs). Wetland determination in this portion of the project area was based on a desktop review supplemented with field observations made from afar using binoculars.

2.2 Listed Species Habitat Surveys

Similar to the wetland delineation task, a desktop assessment and literature review were performed prior to conducting the listed species habitat surveys. The desktop assessment reviewed the major habitat types observable from examination of USGS topographic maps, USFWS NWI maps, USDA Web Soil Survey maps, and NJDEP GeoWeb GIS data. In addition, the following resources were consulted to gain a better understanding of the habitat requirements and preferences of the listed species listed in **Table 1-1**.

- Consultation with the Environmental Department at JB MDL.
- Endangered and Threatened Wildlife of New Jersey (Beans and Niles, 2003).
- Butterflies of New Jersey (Gochfeld and Burger, 1997).
- Barred Owl Life History and Survey Protocols (Rothausser, 2011).
- Status Assessment of the Northern Pine Snake (*Pituophis m. melanoleucus*) in New Jersey: An Evaluation of Trends and Threats (Golden, et al. 2009).
- A Field Guide to the Pine Barrens of New Jersey (Boyd, 1991).
- Wildflowers of the Pine Barrens of New Jersey (Boyd, 2001).

Table 2-1 below presents a brief and generalized description of the preferred habitat types of the listed species that were considered to be potentially present at the site.

**Table 2-1
General Description of Preferred Habitat Types**

Common Name	Scientific Name	Preferred Habitat in southern New Jersey
Reptiles and Amphibians		
Northern pine snake	<i>Pituophis melanoleucus</i>	Dry pine-oak forest growing on very infertile sandy soils such as Lakehurst or Lakewood sands with openings for nesting and basking.
Timber rattlesnake	<i>Crotalus horridus</i>	Areas containing pitch pine, short-leaf pine, scrub oak, blackjack oak, and blueberry. Dens are found in cedar swamps and along stream banks.
Pine Barrens treefrog	<i>Hyla andersonii</i>	Atlantic white cedar swamps and pitch pine lowlands that are carpeted with a dense layer of <i>Sphagnum</i> moss. Temporary woodland ponds, white cedar or cranberry bogs, and seepage areas along tributaries of rivers and streams serve as breeding ponds.
Birds		
Barred Owl	<i>Strix varia</i>	Both deciduous wetland forest and Atlantic white cedar swamps.
Butterflies		
Dotted skipper	<i>Hesperia attalus</i>	Wet and dry Pineland habitats.
Arogos skipper	<i>Atrytone arogos</i>	Postburn wetland habitats dominated by Pine Barrens reed grass (<i>Calamovilfa brevipilis</i>), which serves as its host plant.
Georgia satyr	<i>Neonympha areolatus</i>	Mainly bogs but also wet savannah.
Silver-bordered fritillary	<i>Bolaria selene myrina</i>	Moist open areas such as sedge meadows, wet grasslands, and other wet areas with herbaceous growth.
Plants		
Sickle-leaf golden aster	<i>Chrysopsis falcata</i>	Dry sands and dry sandy roadsides.
New Jersey rush	<i>Juncus caesariensis</i>	Sphagnous bogs and swamps.
Pine Barrens boneset	<i>Eupatorium resinosum</i>	Bogs, swamps, open wet areas, and edges of ponds.
Slender nut-rush	<i>Scleria minor</i>	Wet, sandy, or peaty soils in pinelands or savannahs.
Wand-like goldenrod	<i>Solidago stricta</i>	Damp sandy soils.
Slender rattlesnake root	<i>Prenanthes autumnalis</i>	Open sandy areas.

Pine Barrens gentian	<i>Gentiana autumnalis</i>	Moist, open sandy barrens, and bogs.
Barratt's Sedge	<i>Carex barratti</i>	Peaty swamps, pinelands, and wet woods.
Swamp pink	<i>Helonias bullata</i>	Forested wetlands, preferentially in shady, hummock wetlands with slow-moving surface water.

In the field, the field habitat survey was performed in conjunction with the wetland delineation. As previously discussed, the wetland delineation involved the repeated traversing of the entire site (with the exception of the southwestern corner of the site) on foot in order to identify any wetlands outside of the areas mapped by the NWI and GeoWeb. Specifically for the habitat survey, the traversing of the site involved waking a zig-zag pattern throughout the site to maximize the observation of all areas by the field crew. This was performed over the two-day period of September 13-14, 2012 for a total of 27 survey hours, as summarized in **Table 2-2** below.

Table 2-2

Summary of Field Survey Effort

Date	No. of Personnel	No. Hours	No. Survey Hours
Sept. 13, 2012	3	6	18
Sept. 14, 2012	2	4.5	9
Total Survey Hours			27

As discussed above for the wetland delineation, the southwestern corner of the proposed project area was not examined on-foot as this area may contain UXOs. Habitat characterization in this portion of the project area was based on a desktop review supplemented with field observations made from afar using binoculars.

3.0 Results

This section of the report presents the results of the desktop wetland delineation and desktop habitat survey, followed by the results of the field effort. **Appendix A** presents photographs of the site.

3.1 Desktop Assessments

This section presents the results of the desktop assessment which comprised the review of USGS topographic maps, USFWS NWI maps, NJDEP wetland maps, and USDA NRCS soil maps.

3.1.1 USGS Topographic Map

A review of the USGS topographic map of the project area indicates that the central portion and the easternmost portion of the site are bisected in a northeast-southwest direction by headwater channels of Gaunt's Brook (**Figure 2**). Based on discussions with JB MDL personnel, the headwater channel depicted in the eastern portion of the site is regarded as a historical feature because of its depiction on older maps; however, this channel is not present and has not been observed by JB MDL personnel. The topographic map also indicates a large wetland complex located to the west and southwest of the project area.

3.1.2 USFWS National Wetland Inventory Map

A review of the USFWS NWI map of the project area indicates that one of headwater channels located near the central portion of the site is classified as a palustrine, scrub-shrub, broad-leaved deciduous, seasonally-flooded/saturated wetland (PSS1E) (**Figure 3**). Two additional wetland communities are mapped in the southwest corner of the project area. These two areas are classified as a palustrine, scrub-shrub, broad leaved deciduous/needle leaved evergreen, seasonally flooded/saturated wetland (PSS1E/4E) and a palustrine, emergent, persistent/scrub-shrub, broad leaved deciduous, seasonally flooded/saturated wetland (PEM1/SS1E). This is the only wetland community mapped within the project boundaries, and extends northward outside of the project limits.

3.1.3 NJDEP Wetland Map

A review of the NJDEP wetlands map of the project area indicates the headwater channels of Gaunts Brook to be classified as a palustrine, scrub-shrub, broad leaved deciduous, seasonally flooded/saturated wetland (PSS1E) and a disturbed area wetland (MODD) (**Figure 4**). The PSS1E community is coincident with the PSS1E community mapped on the USFWS NWI, whereas the MODD portion of Gaunt's Brook was not mapped on the NWI. In addition, the wetland in the southwest corner of the project area is mapped as a palustrine, emergent, persistent, saturated wetland (PEM1B).

3.1.4 USDA Soil Map

A review of the USDA soil map of the project area indicates the site to be underlain by the following four soil mapping units (**Figure 5**):

1. Atsion sand, 0 to 2 percent slopes (AtsA)
2. Lakehurst sand, 0 to 5 percent slopes (LakB)
3. Lakewood sand, 0 to 5 percent slopes (LasB)
4. Lakewood sand, 5 to 10 percent slopes (LasC)

Of these soil mapping units, the AtsA and LasB are classified by the USDA as hydric soils in Ocean County, New Jersey. The location of the AtsA mapping unit is roughly coincident with the main channel of Gaunt's Brook, and the LasB mapping unit underlies the eastern portion of the site.

3.2 Field Assessments

The results of the field assessments for the wetland delineation and the habitat survey are discussed collectively here. The assessments identified the following seven distinct community types on the site: disturbed/developed land, scrub-shrub upland, pitch pine open forest, pitch pine-scrub oak forest, Atlantic white cedar swamp, pitch pine lowlands/riparian strip, and wet meadow. **Appendix A** presents photographs of the site and **Figure 6** provides a more generalized map of vegetation community types.

3.2.1 Disturbed/Developed Land

The disturbed and developed communities comprise the easternmost portion of the project area, that which has been occupied by an Army Mobile Military Operations on Urbanized Terrain (MOUT) site. The Mobile MOUT site includes approximately 8 acres of cleared land, and approximately 40 acres of previously-cleared land that has reverted and is characterized by this study as the scrub-shrub upland (described in the following section). The approximately 8 acres of cleared land provide suitable habitat for sickle-leaf golden aster and possibly slender rattlesnake root, although neither of these species were observed during the field effort. The JB MDL environmental staff reports that sickle-leaf golden aster has been confirmed in years past along the sand road that borders the northern side of the MOUT area. Additional specimens have also been confirmed in years past within the vicinity of the project site.

3.2.2 Scrub-Shrub Upland

As described above, the scrub-shrub upland occupies approximately 40 acres of areas that were previously cleared. This community is dominated by pitch pine, scrub oak (*Quercus ilicifolia*, FACU), blackjack oak (*Quercus marilandica*, FACU), and lowbush blueberry (*Vaccinium vacillans*, NL). Although not observed during the field effort, the scrub-shrub upland may provide suitable habitat for dotted skipper and slender rattlesnake root, and with the relatively more open areas providing potential habitat for sickle-leaf golden aster.

3.2.3 Pitch Pine Open Forest / Pitch Pine Scrub Oak Forest

The upland forested communities on this site were divided into two general groups: pitch pine open forest and pitch pine-scrub oak forest. This is merely to distinguish between the distinct differences in understory density between these two areas. Pitch pine-scrub oak forest composes the majority of the forested areas on the site. This community is dominated by pitch pine in the canopy and subcanopy, and exhibits moderately dense to very dense understory of scrub oak, blackjack oak, and lowbush blueberry, with intermittent stands of black huckleberry (*Gaylussacia baccata*, FAC). In contrast, the southwestern portion of the project area exhibits a pitch pine forest with a relatively open understory, characterized primarily by lowbush blueberry. Both of these habitats provide potential habitat for the northern pine snake and timber rattlesnake, although JB MDL environmental staff report that there are no historical records of timber rattlesnake in or near the project area, nor were either of these species observed during the field effort. With regards to the northern pine snake, the environmental staff has performed northern pine snake radio-tracking studies on specimens to the east of the project area near State Route 70.

3.2.4 Wetland Areas (Atlantic White Cedar Swamp, Pitch Pine Lowland/Riparian Strip, and Wet Meadow)

Figure 7 presents a depiction of the wetland boundaries, **Appendix B** presents the wetland delineation datasheets, and **Appendix C** presents a list of plant species observed on the site. The wetlands within the site boundaries have an area of approximately 7.5 acres.

The field delineation identified the headwaters of Gaunt's Brook as a wetland that bisects the project area. The outer boundaries of this wetland are roughly coincident with the wetland areas depicted on the USFWS NWI and NJDEP wetland maps. The headwaters of Gaunt's Brook consist of a forested riparian strip that is dominated by pitch pine (*Pinus rigida*, FAC) and red maple (*Acer rubrum*, FAC) in the upper reaches where the soil surface is dry, but that transitions to a much wetter landscape farther downstream that is dominated by Atlantic white cedar (*Chamaecyparis thyoides*, OBL) and red maple (FAC). The wettest portions of this wetland system (i.e. southern portion of the project area) typically exhibited 2-3 inches of standing water in between Atlantic white cedar hummocks. *Sphagnum* moss was prevalent throughout the wet portions of this wetland. The transition between the wetland and upland habitats on this site was usually marked by a distinct shift in the understory from that of highbush blueberry (*Vaccinium corymbosum*, FACW) to lowbush blueberry (*Vaccinium vacillans*, NL) and sheep laurel (*Kalmia angustifolia*, FAC). A small wet meadow was also identified at the upgradient end of a short side channel to the east of the main channel. This wet meadow is separated from the forested riparian strip by a sand road. The wet meadow is vegetated with several non-flowering unidentifiable sedges but also contained meadow beauty (*Rhexia virginica*, OBL).

A representative data point collected from the west side of the wetland (depicted on **Figure 8**) exhibited a plant community dominated by Atlantic white cedar (OBL), pitch pine (FAC), inkberry (*Ilex glabra*, FACW), broomsedge (*Andropogon glomeratus*, FACW), tawny cotton grass (*Eriophorum virginicum*, OBL), and *Sphagnum* sp. This was underlain by a soil exhibiting a 14-inch surface horizon of 10YR 2/1 mucky loam with a 10YR 5/2 medium sand subsoil. Wetland hydrology indicators included standing water and drainage patterns in the ground layer. A

representative data point collected from the east side of the wetland exhibited a plant community dominated by pitch pine (FAC), red maple (FAC), highbush blueberry (FACW), *Sphagnum* sp., and an unidentified (non-flowering) sedge (*Carex* sp.). This community was underlain by a soil exhibiting a thick 18+-inch 10YR 2/1 mucky loam. Wetland hydrology indicators in this area included drainage patterns in the ground layer and water-stained leaves.

In contrast, a representative upland data point (see **Figure 8**) collected from the west side exhibited a scrub-shrub plant community dominated by lowbush blueberry and sheep laurel. This was underlain by a soil exhibiting a thin surface horizon of 7.5YR 3/4 fibric loam and a 7.5YR 4/2 medium to coarse sand subsoil. A representative upland data point collected from the east side exhibited a forested community dominated by pitch pine, sheep laurel, common greenbrier (*Smilax rotundifolia*, FACW), catbrier (*Smilax glauca*, FACU), and teaberry (*Gaultheria procumbens*, FAC). This community was underlain by a soil exhibiting a thin surface horizon of 10YR 2/1 fibric loam and a 10YR 6/1 (well-drained) medium sand.

Although none of the listed species were observed, these forested wetland communities may provide potential habitat for Pine Barrens treefrog, timber rattlesnake, barred owl, New Jersey rush, Pine Barrens boneset, wand-like goldenrod, Barratt's sedge, and swamp pink. Although these wetlands do not appear to provide optimal habitat for the Pine Barrens treefrog, the calls of this species were in fact noted by JB-MDL environmental staff from an off-site area to the southwest (i.e. an open-water area classified by the NWI and the NJDEP as a modified wetland).

4.0 Conclusion

The results of a wetland delineation and habitat survey performed at the MPMGR site developed the following conclusions:

1. The headwater channels of Guants Brook were identified as freshwater wetlands per the *NJ Pinelands Commission Manual for Identifying and Delineating Pinelands Area Wetlands*. In addition, wetland areas in the southwest corner of the site were identified through a desktop assessment but were not ground-truthed since this area contains UXOs. These wetland areas are roughly coincident with wetland mapped by the USFWS NWI and the NJDEP. The wetlands within the site boundaries have an area of approximately 7.5 acres.
2. The main headwater channel of Guants Brook is an Atlantic white cedar swamp in the southern portion of the site (i.e., downstream reach), transitioning to a pitch pine lowland farther upstream. A small wet meadow is also present at the upstream end of a side channel that branches off to the east. This wet meadow is separated from the side channel by a sand road. A culvert was not apparent between the side channel and the wet meadow.
3. The following rare species have the potential to be found on or within the vicinity of the site. This was determined through a review of the NJDEP GeoWeb GIS, AMEC observations, and through discussions with the JB MDL environmental staff:
 - Northern pine snake (*Pituophis melanoleucus*)
 - Timber rattlesnake (*Crotalus horridus*)
 - Pine Barrens treefrog (*Hyla andersonii*)
 - Barred owl (*Strix varia*)
 - Dotted skipper (*Hesperia attalus*) - butterfly
 - Arogos skipper (*Atrytone arogos*) - butterfly
 - Georgia satyr (*Neonympha areolatus*) – butterfly
 - Silver-bordered fritillary (*Bolaria selene myrina*) – butterfly
 - Sickie-leaf golden aster (*Chrysopsis falcata*)
 - New Jersey rush (*Juncus caesariensis*)
 - Pine Barrens boneset (*Eupatorium resinosum*)
 - Slender nut-rush (*Scleria minor*)
 - Wand-like goldenrod (*Solidago stricta*)
 - Slender rattlesnake root (*Prenanthes autumnalis*)
 - Pine Barrens gentian (*Gentiana autumnalis*)
 - Baratt's sedge (*Carex barratti*)
 - Swamp pink (*Helonias bullata*)
4. Although none of the listed species were observed during the field effort, the habitat survey identified the following distinct vegetation community types on the site, with the potential for some of the rare species to occur:

- Disturbed/developed land – Located in the easternmost portion of the site, this community provides potential habitat for slender rattlesnake root and previously-confirmed habitat for sickle-leaf golden aster.
 - Scrub-Shrub Upland – Occupying the majority of the eastern portion of the site, this community provides potential habitat for dotted skipper, slender rattlesnake root, and sickle-leaf golden aster.
 - Pitch Pine Forest (open understory and dense scrub oak understory) – Occupying the western and central portions of the site, this community provides potential habitat for northern pine snake and timber rattlesnake.
 - Wetland Areas (Atlantic white cedar swamp, pitch pine lowland, and wet meadow) – Roughly coincident with the headwater channels of Gaunt's Brook, as well as located in the southwestern corner of the site, this community provides potential habitat for Pine Barrens treefrog, timber rattlesnake, barred owl, New Jersey rush, Pine Barrens boneset, wand-like goldenrod, Barratt's sedge, and swamp pink.
5. It is important to note that the absence of the species listed above in No. 4 may also be attributed to the time of the year when the field survey was conducted, as well as the constraints of the survey (i.e. preliminary screening level field survey).

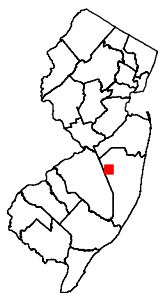
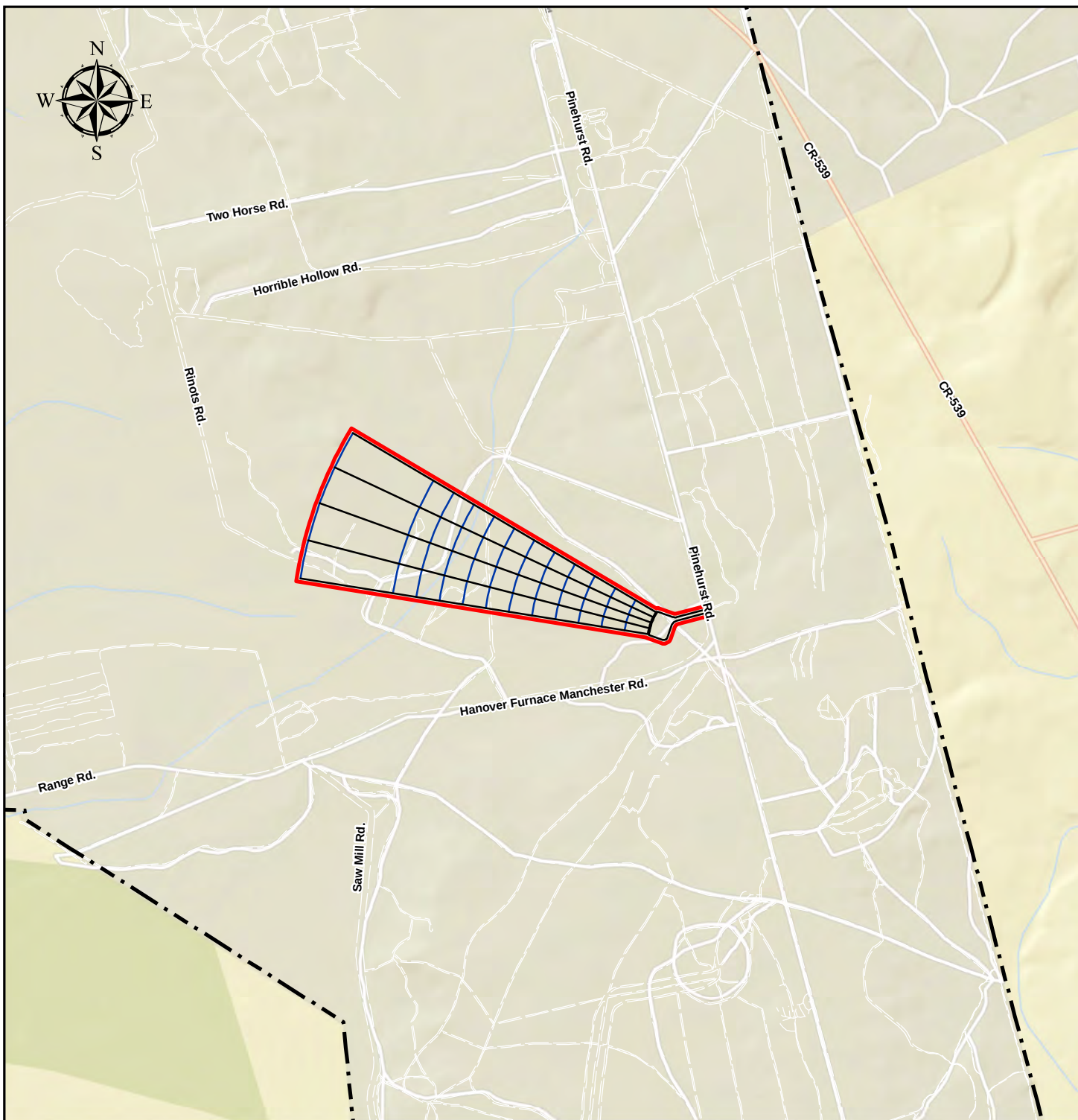
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- Rothausser, B. 2011. Barred Owl Life History and Survey Protocols. March 11, 2011.

FIGURES

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Legend

- Approximate site area
- Ft. Dix boundary

SOURCE:
USGS 7.5 minute topographic map
Whiting, NJ 1957, photorevised 1971

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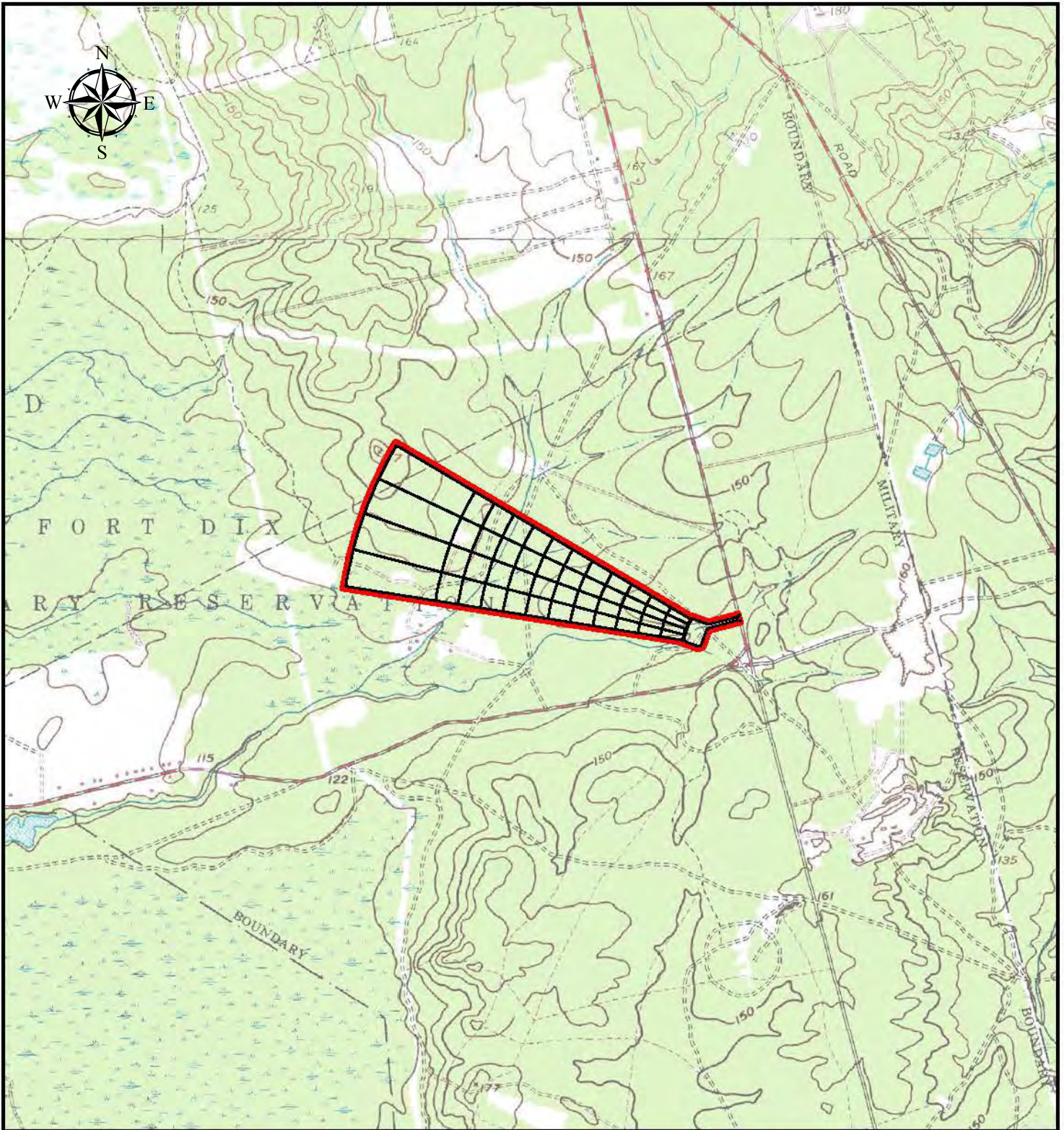
Environment & Infrastructure

Figure 1
Street Map
Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix-Lakehurst (JB MDL)
Dix Area, New Jersey

Reviewed By: PP

Contract No: 77485-0014

October 2012



Legend

Approximate site area

SOURCE:
USGS 7.5 minute topographic map
Whiting, NJ 1957, photorevised 1971

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Environment & Infrastructure

Figure 2
USGS Topographic Map
Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix-Lakehurst (JB MDL)
Dix Area, New Jersey

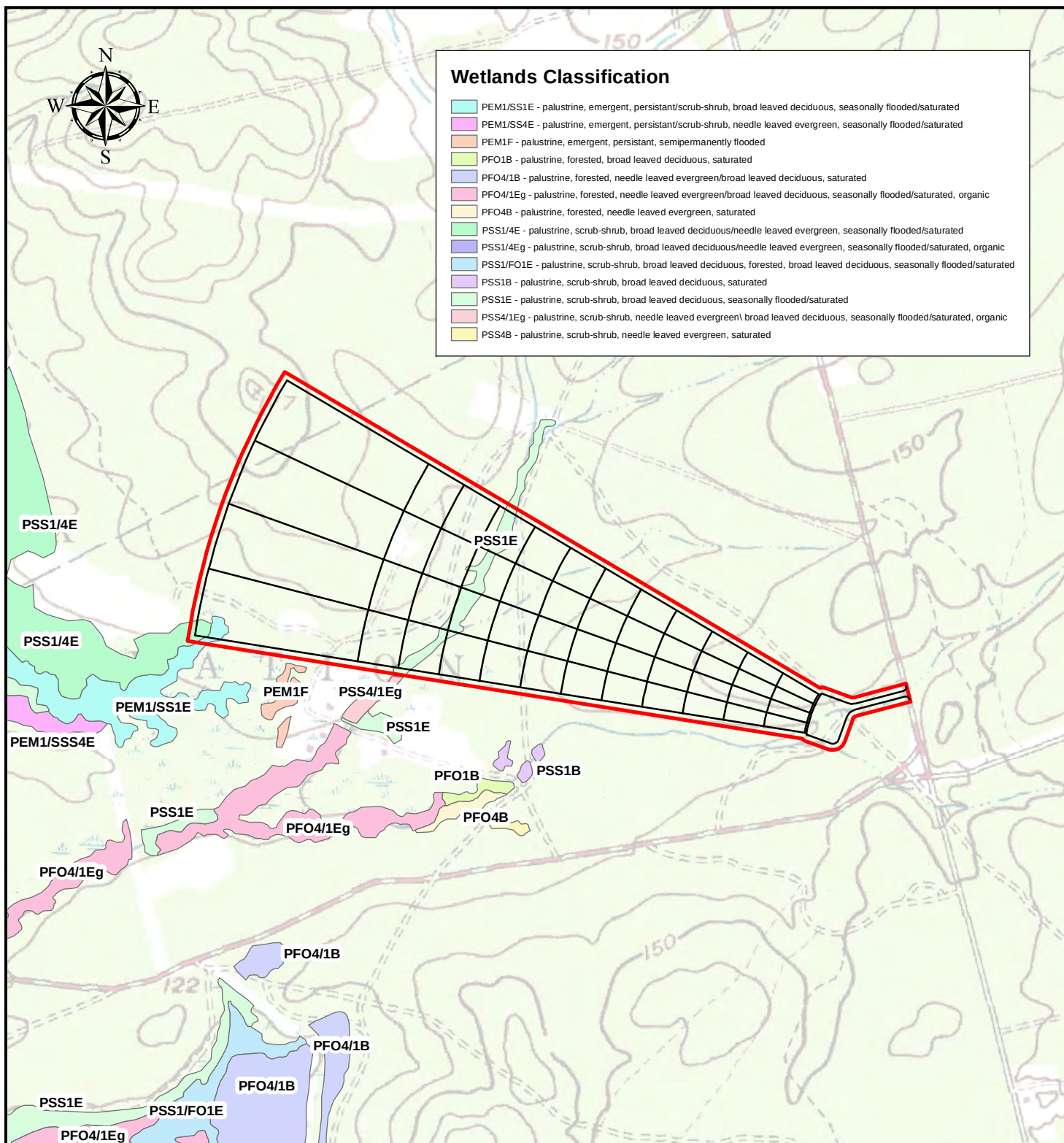
Reviewed By: PP

Contract No: 77485-0014

October 2012

Wetlands Classification

PEM1/SS1E	- palustrine, emergent, persistent/scrub-shrub, broad leaved deciduous, seasonally flooded/saturated
PEM1/SS4E	- palustrine, emergent, persistent/scrub-shrub, needle leaved evergreen, seasonally flooded/saturated
PEM1F	- palustrine, emergent, persistent, semipermanently flooded
PFO1B	- palustrine, forested, broad leaved deciduous, saturated
PFO4/1B	- palustrine, forested, needle leaved evergreen/broad leaved deciduous, saturated
PFO4/1Eg	- palustrine, forested, needle leaved evergreen/broad leaved deciduous, seasonally flooded/saturated, organic
PFO4B	- palustrine, forested, needle leaved evergreen, saturated
PSS1/4E	- palustrine, scrub-shrub, broad leaved deciduous/needle leaved evergreen, seasonally flooded/saturated
PSS1/4Eg	- palustrine, scrub-shrub, broad leaved deciduous/needle leaved evergreen, seasonally flooded/saturated, organic
PSS1/FO1E	- palustrine, scrub-shrub, broad leaved deciduous, forested, broad leaved deciduous, seasonally flooded/saturated
PSS1B	- palustrine, scrub-shrub, broad leaved deciduous, saturated
PSS1E	- palustrine, scrub-shrub, broad leaved deciduous, seasonally flooded/saturated
PSS4/1Eg	- palustrine, scrub-shrub, needle leaved evergreen/broad leaved deciduous, seasonally flooded/saturated, organic
PSS4B	- palustrine, scrub-shrub, needle leaved evergreen, saturated



Legend

Approximate site area

SOURCE:
USGS 7.5 minute topographic map
Whiting, NJ 1957, photorevised 1971
U.S. Fish and Wildlife Service, 2012
Division of Habitat and Resource Conservation
U.S. Department of the Interior
Fish and Wildlife Service, Washington, DC.

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Feet



Environment & Infrastructure

Figure 3
USFWS National Wetlands Inventory
Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix-Lakehurst (JB MDL)
Dix Area, New Jersey

Reviewed By: PP

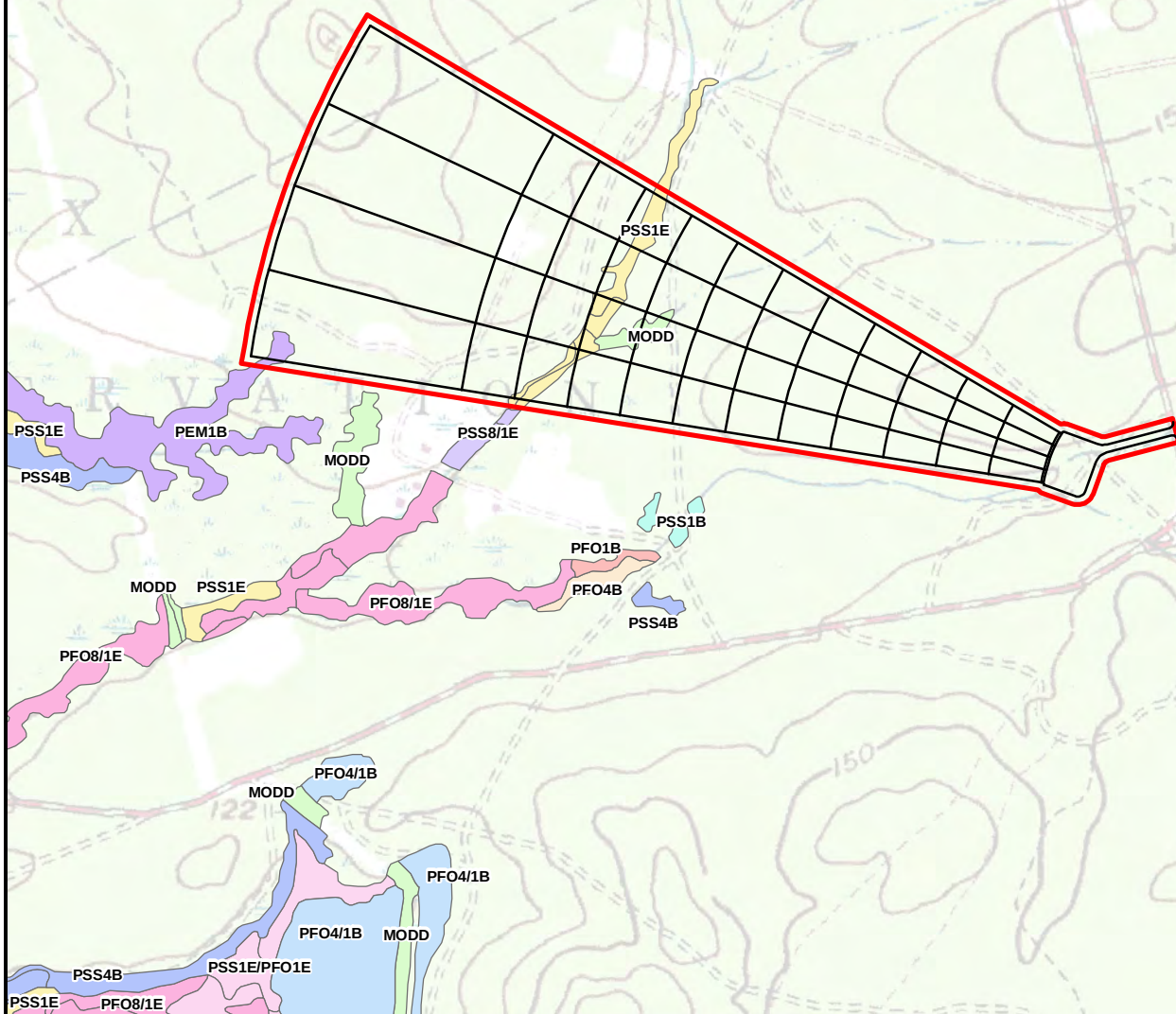
Contract No: 77485-0014

October 2012



Wetlands Classification

- MODD - disturbed areas (surface/vegetation disturbed, nature of activity not readily apparent)
- PEM1B - palustrine, emergent, persistent, saturated
- PFO1B - palustrine, forested, broad leaved deciduous, saturated
- PFO4/1B - palustrine, forested, needle leaved evergreen/broad leaved deciduous, saturated
- PFO4B - palustrine, forested, needle leaved evergreen, saturated
- PFO8/1E - palustrine, forested, Atlantic white cedar, broad leaved deciduous, seasonally flooded/saturated
- PSS1B - palustrine, scrub-shrub, broad leaved deciduous, saturated
- PSS1E - palustrine, scrub-shrub, broad leaved deciduous, seasonally flooded/saturated
- PSS1E/PFO1E - palustrine, scrub-shrub, broad leaved deciduous, forested, broad leaved deciduous, seasonally flooded/saturated
- PSS4B - palustrine, scrub-shrub, needle leaved evergreen, saturated
- PSS8/1E - palustrine, scrub-shrub, Atlantic white cedar, broad leaved deciduous, seasonally flooded/saturated



Legend

 Approximate site area

SOURCE:
USGS 7.5 minute topographic map
Whiting, NJ 1957, photorevised 1971
New Jersey Department of Environmental Protection (NJDEP)
Office of Information Resources Management (OIRM)
Bureau of Geographic Information Systems (BGIS)
NJDEP 2007 Land use/Land Cover Update
Rancocas Watershed Management Area, WMA19, 2010

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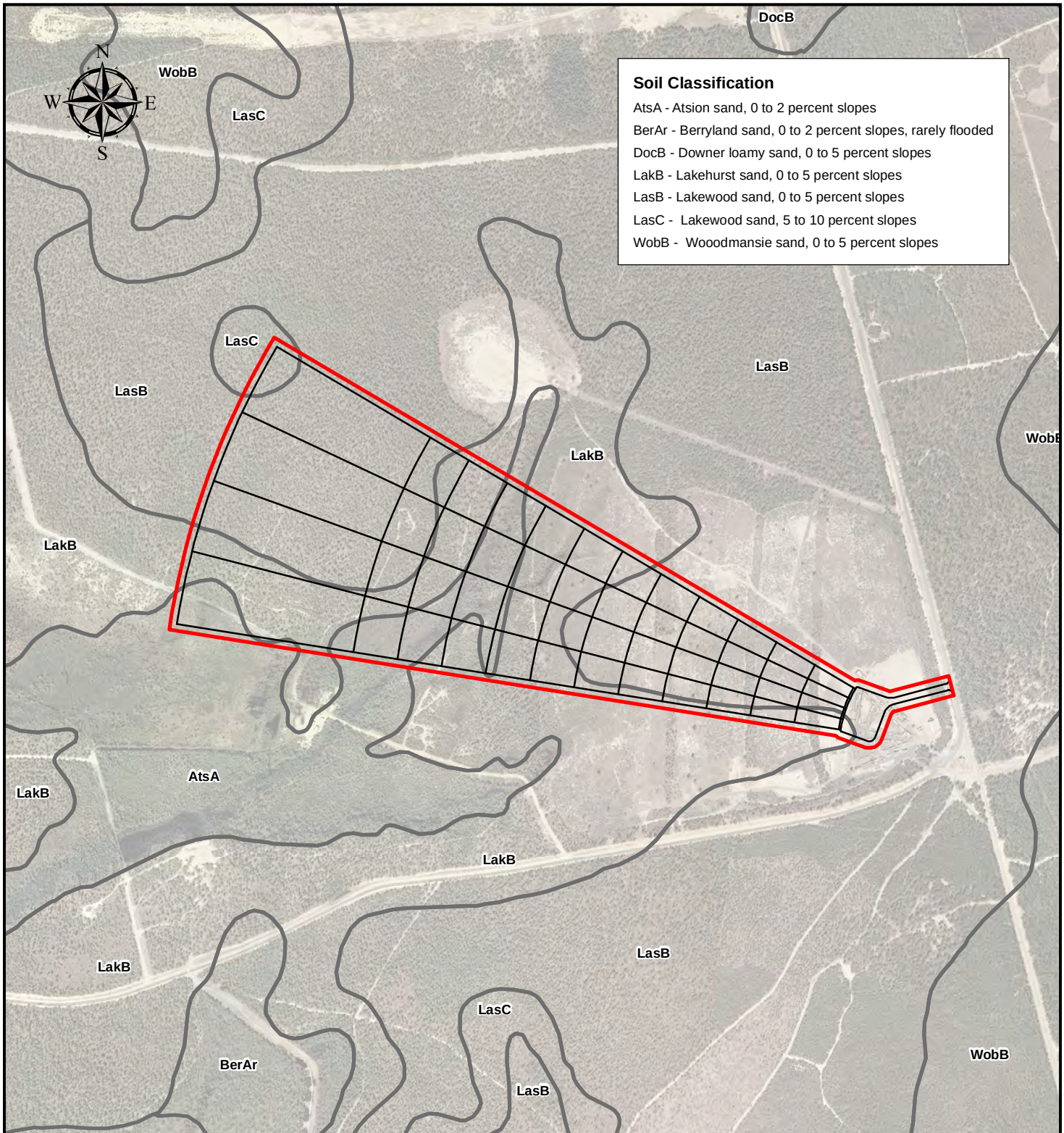
Environment & Infrastructure

Figure 4
NJDEP Wetlands Map
Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix-Lakehurst (JB MDL)
Dix Area, New Jersey

Reviewed By: PP

Contract No: 77485-0014

October 2012



Legend

Approximate site area

SOURCE:
 New Jersey 2007 - 2008 High Resolution Orthophotography
 NJ Office of Information Technology (NJ/OIT)
 Office of Geographic Information Systems (OGIS)
 U.S. Department of Agriculture
 Natural Resources Conservation Service
 Soil Survey Geographic database
 for Burlington County, New Jersey, 2006

0 500 1,000 1,500 2,000
 Feet



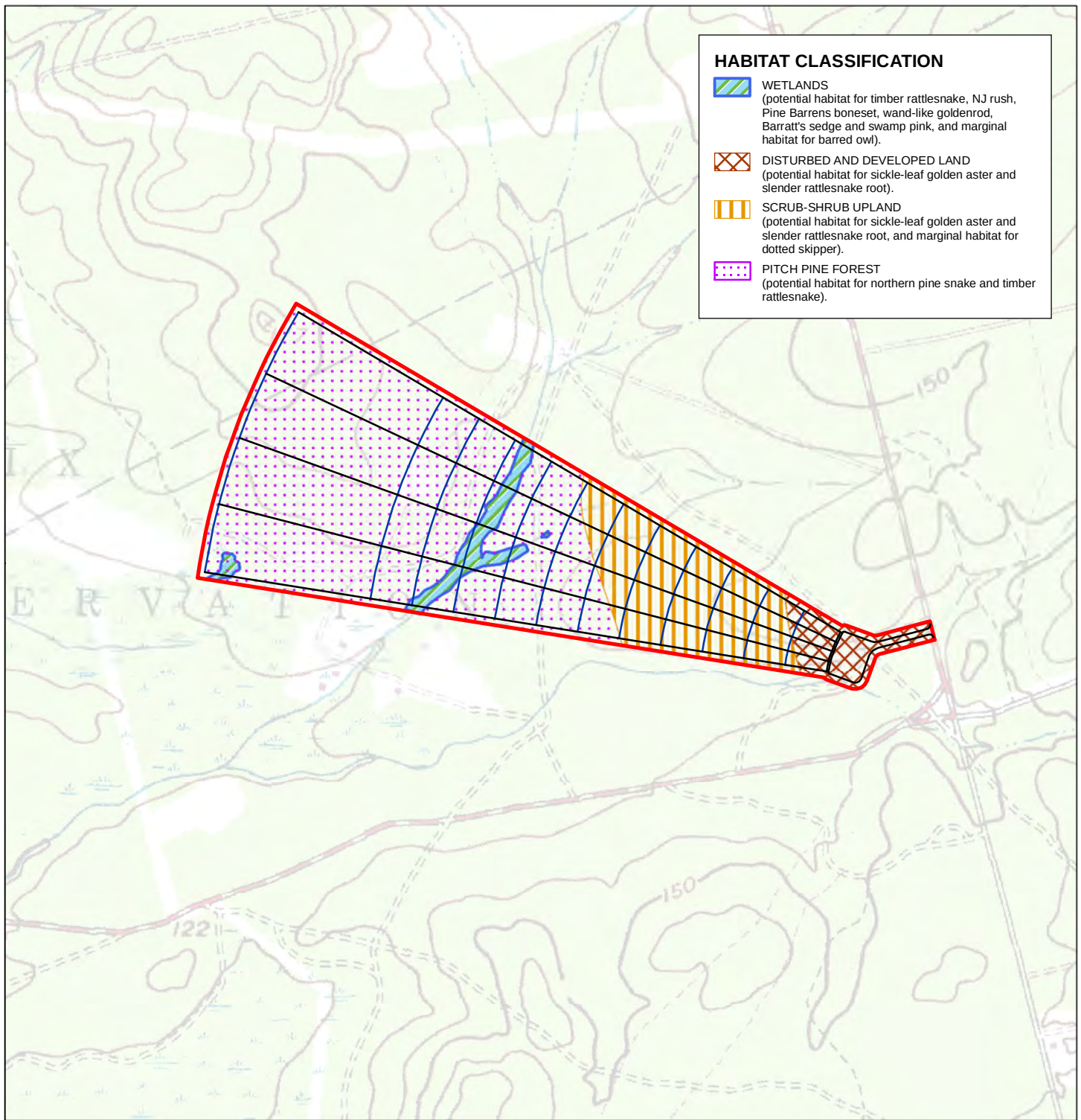
Environment & Infrastructure

Figure 5
USDA Soil Map
Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix-Lakehurst (JB MDL)
Dix Area, New Jersey

Reviewed By: PP

Contract No: 77485-0014

October 2012



Legend

Approximate site area



SOURCE: USGS 7.5 minute topographic map
Whiting, NJ 1957, photorevised 1971
AMEC wetlands field survey, 2012

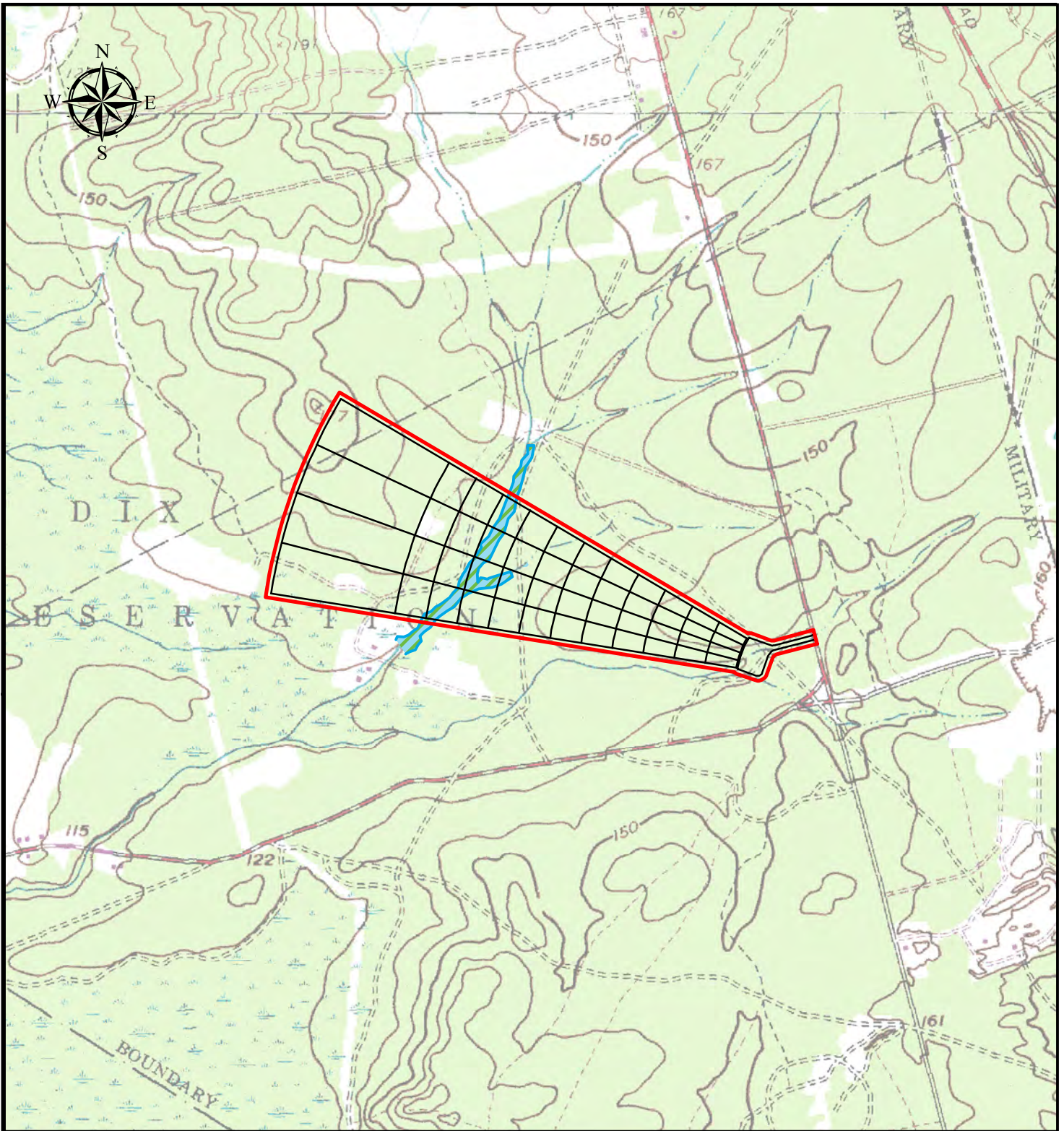
0 500 1000 1500 2000
Feet

Figure 6

Generalized Habitat Map
Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix-Lakehurst (JB MDL)
Dix Area, New Jersey
AMEC Project No. 77485.0014



Environment & Infrastructure
285 Davison Avenue, Suite 405
Somerset, NJ 08873
(732) 302-9500



Legend

- Approximate site area
- Wetlands area

SOURCE:
USGS 7.5 minute topographic map
Whiting, NJ 1957, photorevised 1971
AMEC wetlands field survey, 2012

0 500 1,000 1,500 2,000
Feet



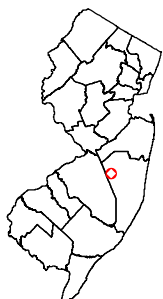
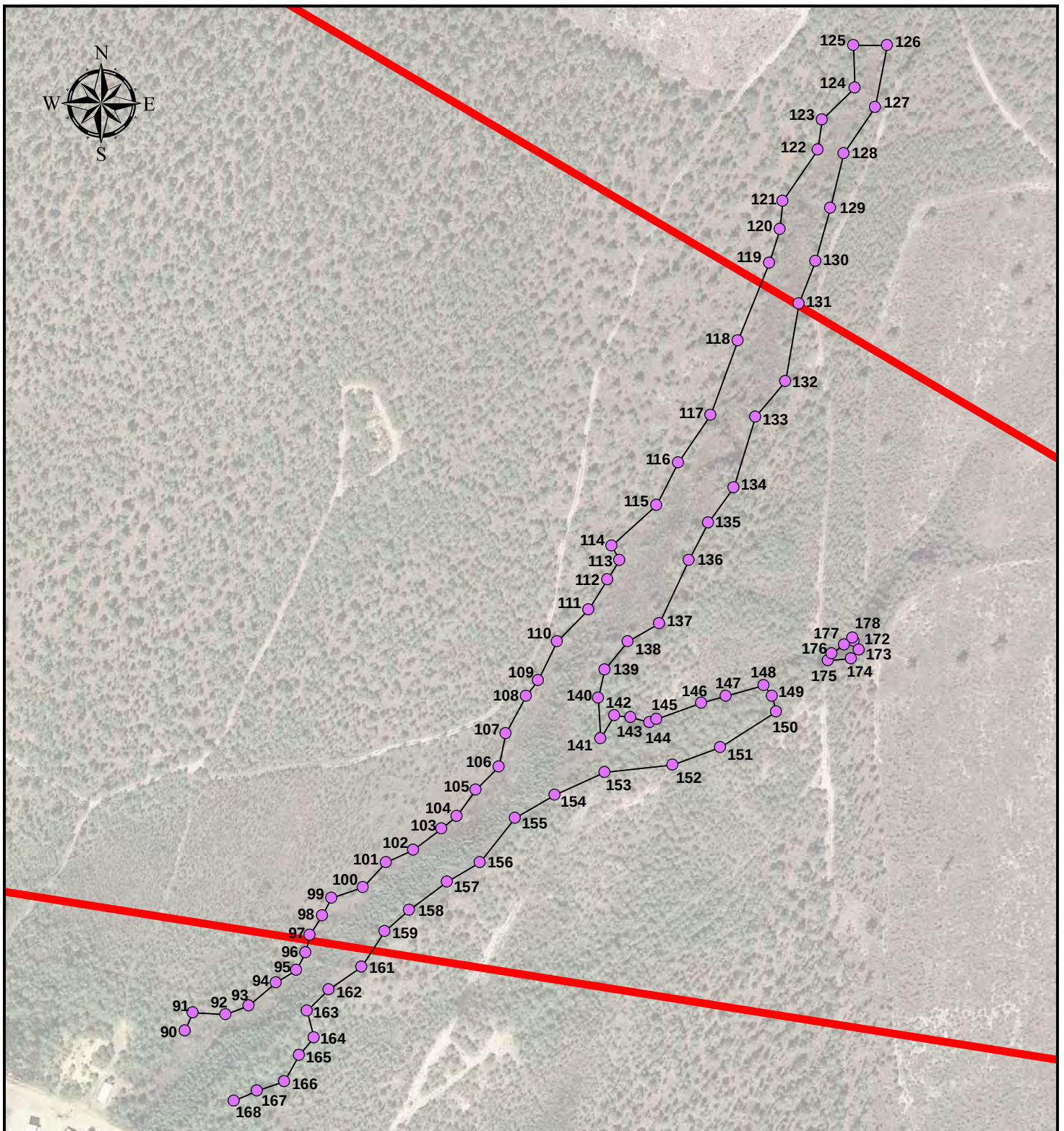
Environment & Infrastructure

Figure 7
Wetlands Delineation Boundaries
Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix-Lakehurst (JB MDL)
Dix Area, New Jersey

Reviewed By: PP

Contract No: 77485-0014

October 2012



Legend

- Approximate site area
- Wetlands delineation
- Wetland flag
- 123 Wetland flag ID

SOURCE:
USGS 7.5 minute topographic map
Whiting, NJ 1957, photorevised 1971
AMEC wetlands field survey, 2012

0 200 400 600 Feet



Environment & Infrastructure

Figure 8
Wetlands Delineation Boundaries (Zoomed-In)
Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix-Lakehurst (JB MDL)
Dix Area, New Jersey

Reviewed By: PP

Contract No: 77485-0014

October 2012

APPENDIX A

PHOTOGRAPHS OF THE SITE

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Photo 1

General view of the eastern corner of the project area.



Photo 2

General view of the eastern corner of the project area.

PHOTOGRAPHIC DOCUMENTATION

Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix—Lakehurst (JB MDL)
Dix Area, New Jersey



AMEC Environment & Infrastructure, Inc.
One Plymouth Meeting, Suite 850
Plymouth Meeting, PA 19462-1308



Photo 3

General view of the eastern corner of the project area.



Photo 4

General view of the eastern corner of the project area.

PHOTOGRAPHIC DOCUMENTATION

Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix—Lakehurst (JB MDL)
Dix Area, New Jersey



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Photo 5

Sand road that runs along the northeast half of the project area.



Photo 6

General view of the central-eastern portion of the project area.

PHOTOGRAPHIC DOCUMENTATION

Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix—Lakehurst (JB MDL)
Dix Area, New Jersey



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Plymouth Meeting, PA 19462-1308



Photo 7

General view of the central-eastern portion of the project area.



Photo 8

General view of the central-eastern portion of the project area.

PHOTOGRAPHIC DOCUMENTATION

Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix—Lakehurst (JB MDL)
Dix Area, New Jersey



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Plymouth Meeting, PA 19462-1308



Photo 9

General view of the central-eastern portion of the project area.



Photo 10

General view of the south-western portion of the project area.

PHOTOGRAPHIC DOCUMENTATION

Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix—Lakehurst (JB MDL)
Dix Area, New Jersey



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Photo 11

General view of the southwestern portion of the project area.



Photo 12

General view of the western portion of the project area.

PHOTOGRAPHIC DOCUMENTATION

Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix—Lakehurst (JB MDL)
Dix Area, New Jersey



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Photo 13

Southern portion of Gaunts Brook within the project area.



Photo 14

Riparian habitat along the western side of Gaunts Brook, viewed from the upland facing towards the wetland.

PHOTOGRAPHIC DOCUMENTATION

Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix—Lakehurst (JB MDL)
Dix Area, New Jersey



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Photo 15

Riparian habitat along the western side of Gaunts Brook, viewed from the upland facing towards the wetland.



Photo 16

Typical view of upland habitat along the western side of Gaunts Brook, viewed from the wetland facing towards the upland.

PHOTOGRAPHIC DOCUMENTATION

Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix—Lakehurst (JB MDL)
Dix Area, New Jersey



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Plymouth Meeting, PA 19462-1308



Photo 17

Northern end of Gaunts Brook.



Photo 18

Riparian habitat at the northern end of Gaunts Brook.

PHOTOGRAPHIC DOCUMENTATION

Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix—Lakehurst (JB MDL)
Dix Area, New Jersey



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Photo 19

Northern portion of Gaunts Brook.



Photo 20

Northern portion of Gaunts Brook

PHOTOGRAPHIC DOCUMENTATION

Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix—Lakehurst (JB MDL)
Dix Area, New Jersey



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Photo 21

**Wetland Data Point 1
(WDP-1).**



Photo 22

**Wetland Data Point 1
(WDP-1).**

PHOTOGRAPHIC DOCUMENTATION

Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix—Lakehurst (JB MDL)
Dix Area, New Jersey



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Photo 23

**Upland Data Point 1
(UDP-1).**



Photo 24

**Upland Data Point 1
(UDP-1).**

PHOTOGRAPHIC DOCUMENTATION

Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix—Lakehurst (JB MDL)
Dix Area, New Jersey



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Photo 25

Northern extent of Gaunts Brook spur (Wetland A300 series).



Photo 26

Northern extent of Gaunts Brook spur (Wetland A300 series).

PHOTOGRAPHIC DOCUMENTATION

Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix—Lakehurst (JB MDL)
Dix Area, New Jersey



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Photo 27

**Wetland Data Point 2
(WDP-2).**



Photo 28

**Wetland Data Point 2
(WDP-2).**

PHOTOGRAPHIC DOCUMENTATION

Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix—Lakehurst (JB MDL)
Dix Area, New Jersey



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Photo 27

**Upland Data Point 2
(UDP-2).**



Photo 28

**Upland Data Point 2
(UDP-2).**

PHOTOGRAPHIC DOCUMENTATION

Proposed Multi-Purpose Machine Gun Range (MPMGR)
Joint Base McGuire-Dix—Lakehurst (JB MDL)
Dix Area, New Jersey



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APPENDIX B

WETLAND DELINEATION DATASHEETS

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Wetland Delineation Data Form

Site: MPMGR
County/State: Ocean County, NJ
Investigator(s): Phil Perhamus, Autumn Aulicky

Date: 9/14/2012
Data Point: WDP-1

Data Point Location and Position in Landscape: N 39.98607; W 074.44197 (NAD83).
 Representative wetland data point in the approximate middle section of Gaunts Brook within the project area.

VEGETATION

Community Type: Edge of Atlantic white cedar swamp
Dominant Plant Species:

Layer	Common Name	Scientific Name	Indicator
Canopy	Atlantic white cedar	<i>Chamaecyparis thyoides</i>	OBL
Sapling	Atlantic white cedar Pitch pine	<i>Chamaecyparis thyoides</i> <i>Pinus rigida</i>	OBL FAC
Shrub & Vine	Inkberry	<i>Ilex glabra</i>	FACW
Ground	Broom sedge Sphagnum moss Tawny cotton grass	<i>Andropogon glomeratus</i> <i>Sphagnum</i> sp. <i>Eriophorum virginicum</i>	FACW NA OBL

Percent of dominant species that are OBL, FACW, or FAC (excluding FAC- and NA): 100
Remarks: None.

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake or Tide Gauge Aerial Photographs Other Depth of Surface Water: NA Depth to Free Water in Pit: 4" Depth to Saturated Soil: 4"	Field Indicators: ☐ Inundation ☒ Saturated in Upper 12" ☐ Water Marks ☐ Drift Lines ☐ Sediment Deposits ☒ Drainage Patterns in Wetlands ☐ Oxidized Root Channels in Upper 12" ☐ Water-stained Leaves ☐ Local Soil Survey Data ☐ FAC-Neutral Test ☐ Dominance by OBL ☐ Other (explain)

Remarks:

Wetland Delineation Data Form

SOIL (Data Point WDP-1)

Mapping Unit Name: Atsion sand, 0-5% slopes Drainage Class: Poorly drained

Depth (in.)	Matrix Color(s)	Mottle Color(s)	Abundance/ Contrast	Texture, Concretions, Structure, etc.
0-14	10YR 2/1	NA	NA	Mucky loam
14-24+	10YR 5/2	NA	NA	Medium sand

Hydric Soil Indicators:

☐ Histosol	☐ Concretions
☐ Histic Epipedon	☐ High Organic Content in Surface Layer in Sandy Soils
☐ Sulfidic Odor	☐ Organic Streaking in Sandy Soils
☐ Aquic Moisture Regime	☐ Listed on Local Hydric Soils List
☒ Reducing Conditions	☐ Listed on National Hydric Soils List
☒ Gleyed or Low-Chroma Colors	☐ Other (explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes ☒	No ☐
Wetland Hydrology Present?	Yes ☒	No ☐
Hydric Soils Present?	Yes ☒	No ☐

Is the Sampling Point Within a Wetland? Yes ☒ No ☐

Wetland Delineation Data Form

Site: MPMGR
 County/State: Ocean County, NJ
 Investigator(s): Phil Perhamus, Autumn Aulicky

Date: 9/14/2012
 Data Point: UDP-1

Data Point Location and Position in Landscape: N 39.98626; W 074.44209 (NAD83).
 Representative upland data point near the approximate middle section of Gaunts Brook within the project area.

VEGETATION

Community Type: Upland ericaceous scrub-shrub
 Dominant Plant Species:

Layer	Common Name	Scientific Name	Indicator
Canopy	NA	NA	NA
Sapling	NA	NA	NA
Shrub & Vine	Lowbush blueberry Sheep laurel	<i>Vaccinium vacillans</i> <i>Kalmia angustifolia</i>	FACU FAC
Ground	NA	NA	NA

Percent of dominant species that are OBL, FACW, or FAC (excluding FAC- and NA): 50
 Remarks: None.

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake or Tide Gauge Aerial Photographs Other Depth of Surface Water: NA Depth to Free Water in Pit: NA Depth to Saturated Soil: NA	Field Indicators: ☐ Inundation ☐ Saturated in Upper 12" ☐ Water Marks ☐ Drift Lines ☐ Sediment Deposits ☐ Drainage Patterns in Wetlands ☐ Oxidized Root Channels in Upper 12" ☐ Water-stained Leaves ☐ Local Soil Survey Data ☐ FAC-Neutral Test ☐ Dominance by OBL ☐ Other (explain)

Remarks:

Wetland Delineation Data Form

SOIL (Data Point UDP-1)

Mapping Unit Name: Lakehurst sand, 0-5% slopes Drainage Class: Mod. Well-drained – somewhat poorly drained

Depth (in.)	Matrix Color(s)	Mottle Color(s)	Abundance/ Contrast	Texture, Concretions, Structure, etc.
0-3	7.5YR 3/4	NA	NA	Fibric loam
3-20+	7.5YR 4.2	NA	NA	Medium to coarse sand

Hydric Soil Indicators:

☐ Histosol	☐ Concretions
☐ Histic Epipedon	☐ High Organic Content in Surface Layer in Sandy Soils
☐ Sulfidic Odor	☐ Organic Streaking in Sandy Soils
☐ Aquic Moisture Regime	☐ Listed on Local Hydric Soils List
☐ Reducing Conditions	☐ Listed on National Hydric Soils List
☐ Gleyed or Low-Chroma Colors	☐ Other (explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u> _____
Wetland Hydrology Present?	Yes _____	No <u>X</u> _____
Hydric Soils Present?	Yes _____	No <u>X</u> _____

Is the Sampling Point Within a Wetland? Yes _____ No X _____

Wetland Delineation Data Form

Site: MPMGR
County/State: Ocean County, NJ
Investigator(s): Phil Perhamus, Autumn Aulicky

Date: 9/14/2012
Data Point: WDP-2

Data Point Location and Position in Landscape: N 39.98968; W 074.43920 (NAD83).
 Representative wetland data point in the northern section of Gaunts Brook within the project area.

VEGETATION

Community Type: Pitch pine forested wetland
Dominant Plant Species:

Layer	Common Name	Scientific Name	Indicator
Canopy	Pitch pine	<i>Pinus rigida</i>	FAC
Sapling	Red maple	<i>Acer rubrum</i>	FAC
Shrub & Vine	Highbush blueberry	<i>Vaccinium corymbosum</i>	FACW
Ground	Sphagnum moss Sedge	<i>Sphagnum</i> sp. <i>Carex</i> sp.	NA NA

Percent of dominant species that are OBL, FACW, or FAC (excluding FAC- and NA): 100

Remarks: None.

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake or Tide Gauge Aerial Photographs Other Depth of Surface Water: NA Depth to Free Water in Pit: NA Depth to Saturated Soil: NA	Field Indicators: ☐ Inundation ☐ Saturated in Upper 12" ☐ Water Marks ☐ Drift Lines ☐ Sediment Deposits ☒ Drainage Patterns in Wetlands ☐ Oxidized Root Channels in Upper 12" ☒ Water-stained Leaves ☐ Local Soil Survey Data ☐ FAC-Neutral Test ☐ Dominance by OBL ☐ Other (explain)

Remarks:

Wetland Delineation Data Form

SOIL (Data Point WDP-2)

Mapping Unit Name: Atsion sand, 0-5% slopes Drainage Class: Poorly drained

Depth (in.)	Matrix Color(s)	Mottle Color(s)	Abundance/ Contrast	Texture, Concretions, Structure, etc.
0-18+	10YR 2/1	NA	NA	Mucky loam

Hydric Soil Indicators:

☐ Histosol	☐ Concretions
☐ Histic Epipedon	☐ High Organic Content in Surface Layer in Sandy Soils
☐ Sulfidic Odor	☐ Organic Streaking in Sandy Soils
☐ Aquic Moisture Regime	☐ Listed on Local Hydric Soils List
☒ Reducing Conditions	☐ Listed on National Hydric Soils List
☒ Gleyed or Low-Chroma Colors	☐ Other (explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes ☒	No ☐
Wetland Hydrology Present?	Yes ☒	No ☐
Hydric Soils Present?	Yes ☒	No ☐

Is the Sampling Point Within a Wetland? Yes ☒ No ☐

Wetland Delineation Data Form

Site: MPMGR
 County/State: Ocean County, NJ
 Investigator(s): Phil Perhamus, Autumn Aulicky

Date: 9/14/2012
 Data Point: UDP-2

Data Point Location and Position in Landscape: N 39.98967; W 074.43912 (NAD83).
 Representative upland data point in the northern section of Gaunts Brook within the project area.

VEGETATION

Community Type: Pitch pine forested upland
 Dominant Plant Species:

Layer	Common Name	Scientific Name	Indicator
Canopy	Pitch pine	<i>Pinus rigida</i>	FAC
Sapling	Pitch pine	<i>Pinus rigida</i>	FAC
Shrub & Vine	Sheep laurel	<i>Kalmia angustifolia</i>	FAC
Ground	Common greenbrier Catbrier Teaberry	<i>Smilax rotundifolia</i> <i>Smilax glauca</i> <i>Gaultheria procumbens</i>	FACW FACU FAC

Percent of dominant species that are OBL, FACW, or FAC (excluding FAC- and NA): 83
 Remarks: None.

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake or Tide Gauge Aerial Photographs Other Depth of Surface Water: NA Depth to Free Water in Pit: NA Depth to Saturated Soil: NA	Field Indicators: ☐ Inundation ☐ Saturated in Upper 12" ☐ Water Marks ☐ Drift Lines ☐ Sediment Deposits ☐ Drainage Patterns in Wetlands ☐ Oxidized Root Channels in Upper 12" ☐ Water-stained Leaves ☐ Local Soil Survey Data ☐ FAC-Neutral Test ☐ Dominance by OBL ☐ Other (explain)

Remarks:

Wetland Delineation Data Form

SOIL (Data Point UDP-2)

Mapping Unit Name: Lakehurst sand, 0-5% slopes Drainage Class: Mod. Well-drained – somewhat poorly drained

Depth (in.)	Matrix Color(s)	Mottle Color(s)	Abundance/ Contrast	Texture, Concretions, Structure, etc.
0-2	10YR 2/1	NA	NA	Fibric loam
2-18+	10YR 6/1	NA	NA	Medium sand

Hydric Soil Indicators:

☐ Histosol	☐ Concretions
☐ Histic Epipedon	☐ High Organic Content in Surface Layer in Sandy Soils
☐ Sulfidic Odor	☐ Organic Streaking in Sandy Soils
☐ Aquic Moisture Regime	☐ Listed on Local Hydric Soils List
☐ Reducing Conditions	☐ Listed on National Hydric Soils List
☐ Gleyed or Low-Chroma Colors	☐ Other (explain in Remarks)

Remarks: Excessively drained sandy soil (Chroma 1).

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u> </u>
Wetland Hydrology Present?	Yes <u> </u>	No <u>X</u>
Hydric Soils Present?	Yes <u> </u>	No <u>X</u>

Is the Sampling Point Within a Wetland? Yes No X

APPENDIX C

LIST OF PLANT SPECIES OBSERVED ON THE SITE

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**List of Plant Species Observed at the MPMGP Site
on September 13 & 14, 2012
JB MDL, Dix Area, Ocean County, New Jersey**

Scientific Name	AGCP Region	New Jersey	NJ Pinelands	Common Name
<i>Acer rubrum</i>	FAC	FAC	FAC	Red Maple
<i>Andropogon glomeratus</i>	FACW	FACW+	FACW+	Bushy Bluestem
<i>Arenaria caroliniana</i>	NL	NL	NL	Pine-Barren Sandwort
<i>Carex pensylvanica</i>	NL	NL	NL	Sedge
<i>Chamaecyparis thyoides</i>	OBL	OBL	OBL	Atlantic White-Cedar
<i>Clethra alnifolia</i>	FACW	FAC+	FACW-	Coastal Sweet-Pepperbush
<i>Comptonia peregrina</i>	NL	NL	NL	Sweetfern
<i>Eriophorum virginicum</i>	OBL	OBL	OBL	Tawny Cotton-Grass
<i>Euphorbia esula</i>	NL	NL	NL	Leafy Spurge
<i>Gaultheria procumbens</i>	FACU	FACU	FACU	Eastern Teaberry
<i>Gaylussacia baccata</i>	FACU	FACU	FAC-	Black Huckleberry
<i>Hieracium gronovii</i>	NL	NL	NL	Hairy Hawkweed
<i>Hudsonia ericoides</i>	NL	NL	FACU	Golden (Pine-Barren) Heather
<i>Hudsonia tomentosa</i>	NL	NL	NL	Beach-Heather
<i>Ilex glabra</i>	FACW	FACW-	FACW-	Inkberry
<i>Ilex verticillata</i>	FACW	FACW+	FACW+	Common Winterberry
<i>Kalmia angustifolia</i>	FAC	FAC	FAC	Sheep-Laurel
<i>Kalmia latifolia</i>	FACU	FACU	FACU	Mountain-Laurel
<i>Lyonia mariana</i>	FAC	FAC-	FAC-	Piedmont Staggerbush
<i>Magnolia virginiana</i>	FACW	FACW+	FACW+	Sweet-Bay
<i>Nuphar lutea</i>	OBL	OBL	OBL	Yellow Pond-Lily
<i>Oclemena nemoralis</i>	FACW	FACW+	FACW+	Bog Nodding-Aster
<i>Orontium aquaticum</i>	OBL	OBL	OBL	Goldenclub
<i>Panicum virgatum</i>	FAC	FAC	FAC	Wand Panic Grass
<i>Parthenocissus quinquefolia</i>	FACU	FACU	FACU	Virginia-Creeper
<i>Pinus rigida</i>	FACU	FACU	FAC	Pitch Pine
<i>Polygonella articulata</i>	NL	NL	NL	Jointweed
<i>Prunus serotina</i>	FACU	FACU	FACU	Black Cherry
<i>Pteridium aquilinum</i>	FACU	FACU	FACU	Northern Bracken Fern
<i>Quercus ilicifolia</i>	NL	NL	NL	Scrub Oak
<i>Quercus marilandica</i>	NL	NL	NL	Blackjack Oak
<i>Quercus rubra</i>	FACU	FACU-	FACU-	Northern Red Oak
<i>Quercus stellata</i>	NL	NL	NL	Post Oak
<i>Rhexia virginica</i>	FACW	OBL	OBL	Handsome-Harry
<i>Rhus copallina</i>	NL	NL	NL	Winged Sumac
<i>Sassafras albidum</i>	FACU	FACU-	FACU-	Sassafras
<i>Schizachyrium scoparium</i>	FACU	FACU	FACU-	Little False Bluestem
<i>Smilax glauca</i>	FAC	FACU	FACU	Sawbrier
<i>Smilax rotundifolia</i>	FAC	FAC	FACW-	Horsebrier
<i>Sphagnum</i> sp.	NA	NA	NA	Sphagnum moss, unspecified
<i>Toxicodendron radicans</i>	FAC	FAC	FAC	Eastern Poison-Ivy
<i>Vaccinium angustifolium</i>	FACU	FACU-	FACU	Late Lowbush Blueberry
<i>Vaccinium corymbosum</i>	FACW	FACW-	FACW+	Highbush Blueberry
<i>Verbascum thapsus</i>	FACU	NL	NL	Great Mullein

AGCP = Atlantic Gulf and Coastal Plain

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APPENDIX D

RESUMES OF FIELD INVESTIGATORS

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Phil Perhamus, P.W.S.

Senior Biologist

Professional summary

Mr. Perhamus is a biologist with over 21 years of experience in ecology, natural resources, and the environmental sciences. He specializes in wetland studies, environmental impacts assessments, and natural resource surveys. His specific capabilities include wetland delineation, permitting, mitigation/restoration, and monitoring; the development of Environmental Assessments (EA) and Environmental Impact Statements (EIS); habitat restoration through invasive plant species management and native species revegetation; aquatic and terrestrial wildlife surveys including threatened and endangered (T&E) species surveys; environmental contaminants sampling and investigation; and stream assessment and stabilization.

He has extensive experience working with various sectors of the private industry including wind energy, oil and gas, commercial development, and residential development. He also has extensive experience working with the public sector including federal, state, county, and local governments; environmental conservation groups; and environmental educators. Mr. Perhamus has worked on projects in numerous U.S. Army Corp Districts including the Pittsburgh, Philadelphia, Buffalo, New York, and Baltimore Districts. His project experience is broad spanning from ecological studies to hazardous materials investigations, and from land conservation to land development. He is a Professional Wetland Scientist (P.W.S.) as certified by the Society of Wetland Scientists (SWS), and is a Licensed Professional Wetland Delineator in the Commonwealth of Virginia.

Professional qualifications/registrations

- Professional Wetland Scientist (P.W.S.), Society of Wetland Scientists (SWS), Certification No. 1640, 2006
- Commonwealth of Virginia, Licensed Professional Wetland Delineator, Department of Professional and Occupational Regulation, License No. 3402 000063, 2006
- Certificate of Training. U.S. Army Corps of Engineers Wetland Delineator Training, 1998

Education

- Graduate Studies, Environmental Science. Rutgers University, New Brunswick, NJ. 1990 – 1996
- B.S., Ecology. Unity College, Unity, ME. 1990

Memberships/Affiliations

- Society of Wetlands Scientists (SWS)
- New York State Wetlands Forum (NYSWF)
- Interstate Technology Regulatory Council (ITRC)
- Delaware River Invasive Plants Partnership (DRIPP)
- Pennsylvania Biodiversity Partnership (PABIODIV)

Employment history

- AMEC Environment & Infrastructure, Inc., Senior Biologist, Somerset, NJ, 2003 – present
- Princeton Hydro, LLC, Senior Biologist, Ringoes, NJ, 2000 – 2003
- McLaren/Hart, Inc., Senior Associate Environmental Scientist, 1998 – 2000
- Roy F. Weston, Inc./REAC, Project Scientist, Edison, NJ, 1990 – 1998
- The Nature Conservancy, Long Island Chapter, Wildlife Intern, Shelter Island, NY, 1990
- The Massachusetts Audubon Society, Vegetation Intern, Lincoln, MA, 1989

- The Institute of Ecosystem Studies, Research Intern, Millbrook, NY, 1988
- Maine Department of Inland Fisheries and Wildlife, Wildlife Intern, Augusta, ME. 1987

Representative projects

Environmental Permitting / Environmental Impacts Assessment

Fishermen's Energy of New Jersey, Atlantic City Wind Farm, New Jersey

Permit Developer - prepared numerous state and federal permit applications and assessment reports for a proposed wind farm off the coast of New Jersey, including Department of the Army Permits (Corps Permits), NJDEP Permits, NOAA Incidental Hazard Authorization (IHA), and FAA airspace permits. This pilot wind farm consists of six 3.6 MW marinized turbines for a total of approximately 20 MW located within state waters approximately 2.8 miles offshore of Atlantic City in approximately 11 feet of water. Permit applications and assessments have included those for the main project components (wind turbines and submarine electric cables) as well as for appurtenant activities including the installation of meteorological equipment on buoys and the performance of geophysical and geotechnical surveys. This wind farm is a pilot to a subsequent project involving 200 turbines in federal waters located approximately 8 miles off the coast of NJ in over 30 feet of water. The project involved frequent coordination and meetings with the NJDEP, Corps, USFWS, NOAA NMFS, USCG, and the FAA.

Ultra Resources Marshlands Play Area, Marcellus Shale Natural Gas Development, Potter & Tioga Counties, Pennsylvania

Task Manager - managed multiple field teams performing wetland delineations, habitat characterizations, and rare species surveys; and managed multiple office teams performing report writing, graphics development, and regulatory permit application development. This project involved the identification of protected natural resources for the siting and construction of natural gas drill pads, access roads, gas pipelines, and water supply lines over a 54,194-acre project site. Wetland delineations were performed in a multitude of habitat types and landscape setting including emergent, scrub-shrub, forested, disturbed, problem areas, and atypical situations. The project locales spanned across two different U.S. Army Corp Regional Supplements (Northcentral and Northeast, and Eastern Mountains and Piedmont). Permit applications for encroachments were developed, applied for, and received from the Pennsylvania Department of Environmental Protection (PADEP) under the Joint Permit (JP) program. The majority of these applications were for activities in High-Quality (HQ) and Exceptional-Value (EV) watersheds. The project involved frequent coordination and communication with the PADEP, the PA Department of Conservation and Natural Resources (DCNR), the PA Fish and Boat Commission (FBC), the PA Game Commission (PGC), and the Susquehanna River Basin Commission (SRBC).

Sparrows Point LNG Terminal and Pipeline Project, Maryland and Pennsylvania

Task Manager - Author and co-author on various sections of a FERC-based EIS of the Sparrows Point LNG Terminal, Mid-Atlantic Express Pipeline, specifically the sections on vegetation, wildlife, threatened and endangered (T&E) species, fisheries, and Essential Fish Habitat (EFH). This terminal and pipeline is proposed to bring 1.5 billion feet per day of natural gas to serve the northeastern U.S. The terminal is proposed to be located at Sparrows Point, southeast of Baltimore in Baltimore County, MD and will be capable of unloading LNG (liquefied natural gas) ships, storing up to 480,000 cubic meters of LNG, vaporizing the LNG, and sending out the natural gas. The 30-inch pipeline will extend an estimated 88 miles, and will connect the LNG terminal with Columbia

Gas, Transco, and Texas Eastern transmission systems at an interconnection point at Eagle, Pennsylvania.

The Giving Pond Baseline Natural Resource Inventory (NRI) and Environmental Impacts Assessment (EIA), Tinicum Township and The Tinicum Conservancy, Bucks County, Pennsylvania

Project Manager for an NRI and EIA of a former sand and gravel quarry proposed to be developed into a passive recreation area. The property was acquired by the PA Department of Conservation and Natural Resources (DCNR) Delaware Canal Park System to be transformed into a State Park and Environmental Education Center. This project was co-managed with Forbes Environmental and Land Use Planning, and pulled together a large multi-disciplinary project team including various private and public sector volunteers at the local, state, and federal level, including the USFWS. The study produced a conceptual habitat management plan based on an inventory of the biological resources at the site, and an assessment of the potential impacts to those biological resources from the proposed site transformation.

Bayonne Energy Center, City of Bayonne, Hudson County, New Jersey

Team member for the development of a NJ Department of Environmental Protection (NJDEP) multiple permit application for a \$400 million 512 megawatt (MW) electric power production facility that will feed electricity to New York City through an underwater transmission cable. Siting activities included the preparation of Waterfront Development permit applications for both upland and in-water work, as well as preparation of an Environmental Impact Statement (EIS) that was filed with the City of Bayonne planning board for a local siting application.

Natural Resource Management

High School Park and Ogontz Park Ecological Master Plan, Cheltenham Township, Montgomery County, Pennsylvania

Project Manager under a grant from the Pennsylvania Department of Conservation and Natural Resources (PA DCNR), for a project team consisting of AMEC Earth & Environmental, Inc. (AMEC); Forbes Environmental and Land Use Planning (Forbes); and RETTEW Associates (RETTEW) developed an Ecological Master Plan for the High School Park and Ogontz Park, located in Cheltenham Township, Montgomery County, PA. The objective of the Ecological Master Plan was to build upon previous efforts to develop a plan for (1) establishing a native and self-sustaining plant species community, (2) stabilizing a severely eroded urban stream (Tookany Creek), and (3) improving the recreational features at the park. The Final Ecological Master Plan comprised three major elements: (1) a 10-year habitat management plan that involved invasive plant species management plan and native plant species restoration; (2) a dual-option stabilization plan for the Tookany Creek; and (3) a landscape architectural plan for public use improvements. AMEC's role focused on the first two elements of this Plan (10-year habitat management plan and stream stabilization plan).

Manasquan River Assessment, Monmouth County Board of Health, Freehold and Howell Townships, New Jersey

Project Manager for a Rosgen-based assessment of a severely-eroded reach of the upper Manasquan River and its associated developed watershed. Using the Rosgen stream classification methodology, the upper Manasquan River was examined for its severe erosion problems and subsequent elevated nutrient and fecal coliform levels and associated biological impairment. Problems stream segments were identified along the reach of the upper Manasquan, evaluated for their departure from stable conditions, and assessed for their stabilization and restoration potential.

Current New Jersey Best Management Practices (BMPs) were evaluated for incorporation into concepts of Low-Impact Design (LID) and Sustainable Drainage Systems on local and regional scales in the watershed. The results of this study were presented in a public forum at a New Jersey Department of Environmental Protection (NJDEP) Stormwater Conference and posted on the Department of Health's website.

Crosswicks Creek Natural Resource Inventory (NRI), Chesterfield Township, Burlington County, New Jersey

Project Manager for a Natural Resource Inventory of the Crosswicks Creek watershed within the boundaries of Chesterfield Township, NJ. The objective of this project was to inventory the physical and natural resources within the study area in order to evaluate and select a suitable location for a public access point to the stream. The project involved a detailed on-the-ground assessment of the entire sub-watershed, an on-water survey of the entire stream reach, and an assessment of properties abutting the stream for public access feasibility.

Roaring Rocks/Swamp Creek Biodiversity Study, Tinicum Conservancy, Tinicum Township, Bucks County, Pennsylvania

Project Manager for a biological inventory of the benthic macroinvertebrate and fishery communities of the Roaring Rocks and Swamp Creek watersheds. This effort was part of a larger comprehensive biodiversity study funded by a grant from the Pennsylvania Department of Conservation and Natural Resources (PA DCNR) involving various teams assigned to specific taxa (e.g., vegetation, herptiles, mammals, and birds), in an effort to provide the State with sufficient information to classify the streams and watershed under their Chapter 93 Water Quality Standards.

Threatened & Endangered Species Surveys / Biological Assessments

Mr. Perhamus has conducted numerous field surveys for the following rare, threatened, and/or endangered plant and animal species and their respective habitats:

- Indiana bat (*Myotis sodalis*) (Pennsylvania)
- Swamp pink (*Helonias bullata*) (New Jersey)
- Bog turtle (*Clemmys muhlenbergii*) (New Jersey, Pennsylvania)
- Timber rattlesnake (*Crotalus horridus horridus*) (New Jersey)
- Wood turtle (*Clemmys insculpta*) (Pennsylvania)
- Pine Barrens tree frog (*Hyla andersonii*) (New Jersey)
- Northern pine snake (*Pituophis melanoleucus melanoleucus*) (New Jersey)
- Knieskern's beaked rush (*Rhynchospora knieskernii*) (New Jersey)
- Blunt manna-grass (*Glyceria obtusa*) (Pennsylvania)
- Fall dropseed muhly (*Muhlenbergia uniflora*) (Pennsylvania)
- Fringe-tip closed gentian (*Gentiana andrewsii*) (Delaware)
- Sessile-leaved tick trefoil (*Desmodium sessilifolium*) (Delaware)
- Swamp white oak (*Quercus bicolor*) (Delaware)
- Swamp milkweed (*Asclepias incarnata*) (Delaware)
- Sick-leaved golden aster (*Chrysopsis falcata*) (New Jersey)
- Tall pawpaw (*Asimina triloba*) (New Jersey)
- Mountain bellwort (*Uvularia pudica*) (Pennsylvania)
- Fraser's sedge (*Cymophyllus fraseri*) (Pennsylvania)
- Yellow-fringed orchid (*Platanthera ciliata*) (Pennsylvania)
- Pickering's morning glory (*Stylisma pickeringii*) (New Jersey)
- Fog fruit (*Phyla lanceolata*) (Delaware)

Shaffer Mountain Wind, Somerset and Bedford Counties, Pennsylvania

Conducted rare species surveys on a 10,000-acre mountain site proposed for wind-energy development. Rare plant species surveyed for included mountain bellwort (*Uvularia pudica*), Fraser's sedge (*Cymophyllus fraseri*), yellow-fringed orchid (*Platanthera ciliata*), blunt manna grass (*Glyceria obtusa*), and fall dropseed muhly (*Muhlenbergia uniflora*). Several populations of yellow-fringed orchid and one population of blunt manna grass were discovered as a result of these surveys. These surveys also included a habitat survey for Indiana bat (*Myotis sodalis*) habitat and timber rattlesnake (*Crotalus horridus horridus*). The project also involved extensive wetland delineation of all project footprints and on-site meetings and review of wetland boundaries with the U.S. Army Corps of Engineers (USACOE) and the PA Department of Environmental Protection (PADEP).

Former Koppers Facility Site, City of Newport, Delaware

Conducted and provided oversight for the following rare species surveys identified in the U.S. EPA Record of Decision (ROD) as having the potential to occur on the site: swamp white oak (*Quercus bicolor*), sessile-leaved tick-trefoil (*Desmodium sessilifolium*), swamp milkweed (*Asclepias incarnata*), fringed-tip closed gentian (*Gentiana andrewsii*). A population of fringed-tip closed gentian was found on the site, verified by the State botanist as the only known occurrence in the State of Delaware.

Shorter Alabama Railroad Derailment Site, Shorter, Macon County, Alabama

Conducted a benthic macroinvertebrate and herptile survey at a train derailment site involving a large-scale acetone and methylene chloride spill and subsequent fire. The derailment occurred on October 25, 2003, numerous cross-ties were deposited into a large wetland complex, and six carloads of crossties burned. Surface water, sediment, and benthic invertebrate samples were collected from the areas of interest and an evaluation of habitat and biological communities was conducted. An Ecological Screening Level Analysis focused on the potential for long-term ecological impacts associated with the possible release of semivolatile organic compounds (SVOCs) including phenolic compounds and polycyclic aromatic hydrocarbons (PAHs) from creosote-impregnated crossties and the possible generation of PAHs by the crosstie fire. The results of the analysis indicate a potential ecological risk from exposure to some PAHs at one of the sampling locations in a wye ditch. However, the results from the surface water evaluation indicate no potential ecological risk from exposure to site constituents, and the benthic macroinvertebrate community survey corroborated this conclusion. The project was completed in 2004.

Former Brewton Crosstie Chipping Facility Site, Brewton, Escambia County, Alabama

Conducted a benthic macroinvertebrate and herptile survey at a former crosstie chipping facility for the purposes of assessing the impacts of the site operations upon the local aquatic system. This work was conducted under the Alabama Department of Environmental Management (DEM) Brownfield Redevelopment and Voluntary Cleanup Program (BRVCP). The overall project goal was to characterize potential impacts to soil, sediment, surface water and groundwater resulting from historical crosstie chipping operations at the site. Constituents of potential concern (COPC) included PAHs, lead, arsenic, and copper in soil, sediment, and surface water; and PCP, RCRA metals, vanadium, and manganese in groundwater. The results of the herptile and benthos surveys suggested that the aquatic systems on and around the Site supported a rich biological community with no visible signs of impairment, and that matched or exceeded the biological condition of the reference area. However, the results of the community metrics suggested that an on-site pond may be biologically impaired. The project was completed in 2006.

Wetlands Restoration and Monitoring

Former Lail Property Site, Gloucester County, New Jersey

Restoration Co-Manager – A site-wide restoration plan was developed and implemented for the mitigation of a 30-acre PCB-removal site in southern New Jersey. This mitigation involved the restoration of both a freshwater tidal emergent marsh and surrounding wetland and upland woods. The restoration plan was based largely on the pre-remediation species assemblage and distribution data obtained from quantitative field studies. A five-year monitoring program is currently in progress.

1.5 Mile Reach of the Housatonic River, Town of Pittsfield, Massachusetts

Ongoing project, performing qualitative and quantitative long-term (5-year) monitoring of woody and herbaceous vegetation along a stabilized and restored 1.5 mile reach of the Housatonic River. This 1.5-mile segment is a component of the larger GE Pittsfield/Housatonic River Site restoration effort. Monitoring reports are produced at the conclusion of each monitoring visit. Project dates: May 2008 to present.

Dartco Fire Pond Site, Branchburg Twp, Somerset County, New Jersey

Restoration Manager – A restoration plan was developed and implemented for the mitigation of a shoreline and upland woods along a 0.27-acre fire pond remediated for lead and cadmium contaminated sediments. This mitigation involved ecological enhancements such as the use of large woody debris (LWD), brush piles, and invasive species management. This project also involved the collection of all turtles inhabiting the pond prior to remediation. A five-year monitoring program is currently in progress.

McClees Creek Restoration, Middletown Township, Monmouth County, New Jersey

Project Manager for the development of a construction-ready wetland restoration plan for a tidal salt marsh experiencing rapid encroachment by the invasive species, common reed (*Phragmites australis*). The assessment involved an evaluation of the existing and historical environmental conditions and hydraulic modelling to determine the cause of the wetland's disturbed condition and to arrive at a sustainable remedy within a developed watershed. The plan presented a number of restoration options and estimated costs to implement each option.

St. Jones River Stabilization Project, Dover Air Force Base (AFB), Kent County, Delaware

Prepared a streambank restoration plan and a five-year monitoring plan for a 2,500-foot segment of the St. Jones River within the Dover AFB. The restoration plan included intertidal shoreline and adjacent upland riparian areas, using a variety of restoration and stabilization techniques such as green gabions and branch layering. Held on-site meetings with representatives of the Delaware Natural Resources and Environmental Control (DNREC) to discuss project objectives, suitability of restoration areas, and potential habitats for the listed plant species, fog fruit (*Phyla lanceolata*). Project dates: December 2008 to July 2009.

Afton CP Railway Stream Restoration, Village of Afton, Chenango County, New York

Prepared a streambank stabilization plan for rip-rapped areas and steep-slopes slopes on a rail construction and rehabilitation project. The stabilization plan included the technique of "joint-planting" (vegetating the voids between rip-rap stones) with the intent of reinforcing the stone, increasing the stone's capacity to dissipate energy and reduce flood flows, and to provide shade and functional habitat for the surrounding environment. The project was completed in 2006.

Chemical Leaman Tank Lines (CLTL) Superfund Site, City of Bridgeport, Gloucester County, New Jersey

Conducted long-term monitoring of a large red maple swamp to measure any potential effects of a large-scale pump-and-treat groundwater remediation system. Monitoring involved performing stem counts and aeral cover estimates for woody and herbaceous vegetation, and measurement of groundwater levels within piezometers installed in each monitoring plot. The methodology and interim results of this project were presented in a platform session at the 1999 20th Annual SETAC Meeting in Philadelphia, Pennsylvania.

Ewan Property Superfund Site, Shamong Township, Burlington County, New Jersey

Conducted long-term monitoring of a red maple - Atlantic white cedar swamp to measure any potential effects of a pump-and-treat groundwater remediation system. Monitoring involved performing stem counts and aeral cover estimates for woody and herbaceous vegetation, and measurement of groundwater levels within piezometers installed in each monitoring plot.

Publications and presentations

- "Performance Measures/Metrics and Freshwater Wetlands Restoration – Breakout Sessions." Phil Perhamus. Wildlife Habitat Council (WHC), Restoring Greenspace: Ecological Reuse of Contaminated Properties in EPA Region 4. Atlanta, GA. 2007.
- "Characterization, Design, Construction, and Monitoring of Mitigation Wetlands." Phil Perhamus. The Interstate Technology & Regulatory Council, Mitigation Wetlands Team. 2005.
- "Landscape-scale Examination of an Eroding River in a Developed Watershed." Phil Perhamus, Maureen Watson, and William Simmons. SETAC 24th Annual Meeting; Austin, TX. 2003.
- "Low Benthic Macroinvertebrate Numbers: Contaminant or Habitat?" Laurie R. Gneiding, Christy R. Calhoun, Phil K. Perhamus, and Chuck R. Harman. SETAC 24th Annual Meeting; Austin, TX. 2003.
- "An Instream Aquatic Study of a Stream Receiving Treated Groundwater from a Landfill." Laurie R. Gneiding, Christy R. Calhoun, Phil K. Perhamus, and Chuck R. Harman. SETAC 24th Annual Meeting; Austin, TX. 2003.
- "Assessment of the Manasquan River." Phil Perhamus. Final Report for the Monmouth County Health Department, on behalf of the New Jersey Watershed Management Area 12 TMDL Committee. 2002.
- "Evaluation of Potential Impacts to Wetland Systems from Groundwater Extraction Systems." Chuck R. Harman and Phil Perhamus. SETAC 20th Annual Meeting; Philadelphia, PA. 1999.
- "Applications for Approaches for Evaluating the Bioavailability of Metals in Terrestrial and Aquatic Environments." Lisa Baron, Phil Perhamus-Kim, Chuck Harman, Nancy Bonnevie. SETAC 19th Annual Meeting; Charlotte, NC. 1988.
- "The Use of Chemical, Histopathological, and Toxicity Evaluations to Investigate a Wildlife Kill." Phil Y. Kim, Paul Bovitz, Bill VanDerveer, Matt Donohue, Ken Munney, and Mark Sprenger. SETAC 15th Annual Meeting; Denver, CO. 1994.
- "The Use of Water and Sediment Toxicity Evaluations and Biological Surveys to Establish Ecological Risk and Justify Remedial Activities at a Superfund Site." Richard G. Henry, Phil Kim, Bill VanDerveer, and Mark Sprenger. SETAC 14th Annual Meeting; Houston, TX. 1993.
- "An Ecological Assessment of Aquatic and Terrestrial Habitat Impacted by a Tannery." Karen Kracko, Phil Kim, and Mark Sprenger. SETAC 13th Annual Meeting; Cincinnati, OH. 1992.
- "Evaluation of Field and Laboratory Methodologies for Use in Coastal Plain Riverine Site Monitoring Plans." William D. VanDerveer, Mark D. Sprenger, Darvene A. Adams, and Phil Kim. SETAC 12th Annual Meeting; Seattle, WA. 1991.

Autumn Aulicky

Environmental Scientist

Professional summary

Ms. Aulicky is a junior level environmental scientist with seven years experience. She has provided technical assistance in a wide variety of environmental projects for private and public sectors.

Professional qualifications

OSHA 40-Hour Hazardous Waste Operations Training, 7/2005
OSHA 8-Hour Hazardous Waste Operations Refresher Training, annual, 9/30/2010
OSHA 8-Hour Hazardous Waste Operations: Supervisor, 10/18/2007
CSX Contractor Safety Training, 10/12/2010
e-Railsafe System Badge, 5/27/2013

Education

Graduate Studies, Biology, Montclair State University, Montclair, NJ, 2008 – present
B.A., Environmental Studies, Ramapo College of New Jersey, Mahwah, NJ, 2004
A.A., Liberal Arts, Santa Fe Community College, Gainesville, FL, 2001

Continuing education

NJWEA Field Sampling Procedures and Vapour Intrusion Guidance Manuals Seminar, 10/21/2005
Vegetation Identification for Wetland Delineation – North, Rutgers University, 9/8/2005 and 9/9/2005
Methodology of Delineating Wetlands, Rutgers University, 10/12/2005 and 10/15/2005
Macro-invertebrate Identification – Stream School, Rutgers University, 9/14/2005 and 9/15/2005
EPA Rapid Bioassessment Protocol Training – The Watershed Watch Network – Rocky Bottom, 10/11/2005
New Jersey Historic Preservation Office Research Training Session, 3/1/2006
NJ Landscaped Training – NJDEP Division of Fish and Wildlife Endangered and Nongame Species Program, Brookdale Community College, 12/14/2005
Ecological Risk Assessment: Practice and Protocols, Rutgers University, 3/28/2006 and 3/29/2006
Hydric Soils, Rutgers University, 5/18/2006 and 5/19/2006
Endangered and Threatened Species of Northern New Jersey – Lecture, Rutgers University, 3/12/2007 and 3/13/2007
Endangered and Threatened Species of Northern New Jersey – Field Course, Rutgers University, 5/16/2007
Trimble Training, 6/5/2007
Pipeline Permit Training Workshop, 7/11/07 and 7/12/2007
Graduate Study/Ecology, Montclair State University, 1/2008-5/2008
Graduate Study/Environmental Geoscience, Montclair State University, 9/3/2008-12/18/2008
How to Manage the NEPA Process and Write Effective NEPA Documents, 8/12/2008-8/15/2008
Graduate Study/Conservation Biology, Montclair State University, 1/26/2009-5/4/2009
Regional Supplements to the 1987 Wetland Delineation Manual Workshop – U.S. Army Corps of Engineers, 4/8/2009
Graduate Study/Biology of Extreme Habitats, Montclair State University, 1/21/2010-5/6/2010
Graduate Study/Wetland Ecology, Montclair State University, 9/13/2010-12/20/10
Graduate Study/Graduate Colloquium, Montclair State University, 1/18/11-5/11/11

Languages

English

Employment history

AMEC Earth & Environmental, Inc., Environmental Scientist, 2005 to Present

Aqua Survey, Laboratory Technician/Summer Intern., Kingwood, NJ, /2005 to 2005

Hunterdon Human Animal Shelter, Animal Control Officer/Technician, Milford, NJ, 2002 to 2005

Representative projects

Natural Resource Projects

AMEC Paragon-AES Sparrows, AMEC Paragon, Baltimore, MD

2007. Constructed reference research on document information. Constructed tables into excel. Researched and created DEP I-MapNJ maps.

Carbondale, Beazer East Inc., Carbondale, IL

2008. Collected and processed crayfish and various species of edible and forage fish including; channel catfish (*Ictalurus punctatus*), freshwater drum (*Aplodinotus grunniens*), pumpkinseed (*Lepomis gibbosus*), bluegill (*Lepomis macrochirus*), and white bass (*Monrone chrysops*). Set up invertebrate leaf packs.

GE Capital Solutions, N Bergen PPL Metal G Water Sampling, North Bergen, NJ.

2009. Conducted two rounds of groundwater sampling for PPL-Metals via low flow purging and pumping out three volumes and sampling with a bailer.

HIS GeoTrans –WR Grace, GeoTrans Inc., Glen Burnie, MA

2008. Collected and processed blue crab species (*Callinectes sapidus*) and various invertebrate species.

Kinectrics – Detroit Edison, Kinectrics Inc., Saint Claire, MI

2006. Impingement and entrainment study: fish sampling, larvae and eggs screening procedures in accordance with 316(b) of the Clean Water Act (CWA). Assisted with fish identification.

Koppers Newport Site, Beazer East Inc., Newport, DE

2007. Conducted rare species surveys identified in the Record of Decision (ROD) as having the potential to occur on the site: swamp white Oak (*Quercus bicolour*), sessile-leaved tick-trefoil (*Desmodium sessilifolium*), swamp milkweed (*Asclepias incarnate*), fringed-tip closed gentian (*Gentiana andrewsii*), and bog turtle (*Clemmys muhlenbergii*). A small population of fringed-tip closed gentian was found on the site.

Koppers Pond, Koppers Pond RI/FS Group, NY

2008. Collected and processed various edible and forage fish by electro-shocking including largemouth bass (*Micropterus salmoides*), pumpkinseed (*Lepomis gibbosus*), bluegill (*Lepomis macrochirus*), black crappie (*Pomoxis nigromaculatus*), and white sucker (*Catostomus commersonii*).

Tinicum Township and The Tinicum Conservancy – The Giving Pond Phase 1 Baseline Natural Resource Inventory (NRI), Tinicum Twp., Bucks Co., PA

2005. A baseline Natural Resource Inventory (NRI) of a former sand and gravel quarry acquired by the PA Department of Conservation and Natural Resources (DCNR) Delaware Canal Park System for transformation into a State Park and Environmental Education Center. This project was co-managed with Forbes Environmental and Land Use Planning, and pulled together a large multi-disciplinary project team including various private and public sector volunteers at the local, state, and federal level. Assisted with the baseline identification of flora and identified the macro-invertebrates collected at the site.

Baseline Ecological Evaluation (BEE) Projects

IUOE BEE, International Union Operation Engineer, NJ

2008. Conducted a BEE of the site, which is being utilized as a training facility for large equipment.

Heritage Minerals Assessment, K Hovnanian Companies, Inc, Lake Hurst, NJ

2007. Constructed tables into excel for a BEE.

JMC Bridgeton Support, JMC Construction, Bridgeton, NJ

2009. Conducted surface water and sediment sampling at East Lake to provide support to a BEE.

Newark South Street, Bank of America, Newark, NJ

2010. Conducted a BEE of the Bank of America (former Fleet Bank) Bank branch site, situated in a mixed residential/commercial section of Newark, NJ.

Southampton Commercial Center, Bank of America, Southampton, NJ

2008. Baseline Ecological Evaluation. Conducted a BEE of the Saluga Auto Body, situated in a mixed land use area of NJ, and surround environment to determine potential impacts of site-related contaminants to nearby environmentally sensitive natural resources. This evaluation was conducted in accordance with the NJDEP Technical Requirements for Site Remediation.

South River, Bank of America, South River, NJ

2011. Conducted a BEE of the Bank of America, situated in a mixed commercial section of South River, NJ.

Receptor Evaluation (RE) Projects

The following REs were conducted in to ensure that people and ecological receptors are protected from exposure to hazardous substances at or near contaminated sites. These evaluations were conducted in accordance with the NJDEP Technical Requirements for Site Remediation.

Elizabethport Rail Yard, Norfolk Southern Corporation, Elizabeth, NJ

2011. Conducted an RE/BEE at the Elizabethport Rail Yard facility, situated in a developed commercial/industrial section of Elizabeth, NJ

Oak Island Rail Yard, CSX Transportation Inc., Newark, NJ

2011. Conducted an RE/BEE at the Elizabeth Rail Yard facility, situated in a primarily industrial section of Newark, NJ.

Strategic Consulting Support, Custom Distribution Services, Perth Amboy, NJ

2011. Conducted an RE at the Custom Distribution Services Site, situated in a primarily developed and industrial section of Perth Amboy, NJ.

Human Health and Ecological Risk Assessment/Remedial Investigation Projects

Charleston Supplemental Support, ExxonMobil Refining & Supply Company, Charleston, SC

Updated data excel tables and food chain modelling tables.

Egg Harbor Township, NJ, RI/FS, National Guard Bureau (ANG), Pomona, NJ

Constructed ecological risk assessment tables.

Former Lail Property, ExxonMobil Refining & Supply Company, Paulsboro, NJ

Technical assistance for preparation of five volume remedial investigation report. Assisted with ecological risk assessment. Prepared life histories for target receptors. Assisted in food chain modelling for federally threatened bald eagle. Assisted in the field with vegetation survey using the point-quarter sampling method and created all the data excel tables. Quantitative analysis of lab data for electronic data submittal application for NJDEP. Job safety analysis for the disposal of investigation derived waste. Conducted NJDEP file search on nearby properties. Conducted chromium post-excavation sediment sampling.

Fort Dix, Mirror Lake Site, Burlington Col, NJ

Assisted with Mirror Lake surface water sampling in accordance with NJDEP SOPs for total and dissolved metals in a public lake located down gradient of an environmental remediation project. Assisted with macro-invertebrate sorting.

Nose Creek, The City of Calgary, Calgary, Canada

2008. Constructed ecological and human health risk assessment tables.

Sauget Ecological Risk Assessment, Solutia Inc., Sauget, IL

Researched the life history and toxicological information on the pallid sturgeon to be included in an ecological risk assessment that evaluates the potential ecological impacts to aquatic resources.

White Swan, Bank of America, Sea Girt, NJ

Assisted with preliminary investigation/ field survey of threatened and endangered species. Created habitat maps from NJDEP I-map for threatened and endangered species. Researched NJDEP regulations regarding shellfish growing water classifications. Conducted two rounds of surface water and sediment sampling.

W.Haven, CT, Orange ANG'S Add'l RI/FS, National Guard Bureau, Orange and West Haven, CT.

Assisted with screening level ecological risk assessment (SLERA) for this military site in accordance with the USEPA guidance on conducting ecological risk assessments. Created data tables for the human health risk assessment.

Wetland Delineation and Permitting Projects

Bnai Tikvah GP11, Civalier Engineering & Surveying, Sewell, NJ

2006. Helped prepare an application for the NJDEP for approval of the proposed wetland boundaries by conducting a search for cultural and/or archaeological resources on or in the immediate vicinity of the property.

CSX Transportation Inc., CSXT/Manville, NJ/Siding, Manville, NJ

2000. Help prepare a wetlands buffer permit application to the NJDEP on behalf of CSX for a proposed siding project.

CSX Transportation Inc., CSXT/VRE – RF&P Subdivision, Richmond, VA

2009. Wetlands delineation and permitting for various proposed rail enhancement projects along an approximately 50-miles of railroad spanning from Richmond, VA to Hamilton, VA.

Davidson Road Wetlands, Civalier Engineering & Surveying, Woolwich, NJ

2007. Helped prepare an application for the NJDEP for approval of the proposed wetland boundaries by conducting a search for cultural and/or archaeological resources on or in the immediate vicinity of the property.

Dartco Fire Pond, Dart Industries, Inc., Neshanic Station, NJ

Assisted in the field with wetlands delineation. Assisted with the development of a NJDEP State-wide General Permit No. 4 (GP4) for an inactive fire pond proposed for remediation of cadmium and lead contaminated sediments.

Ellsworth Property, Civalier Engineering & Surveying, Monroe Twp., Gloucester Co., NJ

2008. Helped prepare an application for the NJDEP for approval of the proposed wetland boundaries by conducting a search for cultural and/or archaeological resources on or in the immediate vicinity of the property.

Former Lail Property, ExxonMobil Refining & Supply Company, Paulsboro, NJ

Assisted with wetland monitoring of plants to ensure their survivability. Planting was conducted for mitigation purposes and will be monitored over a semi-annual basis for a five year period to ensure the success of the planting activity at the site, which was an environmental remediation of contaminated materials from a man-made embayment and immediately adjacent upland areas.

Goodwin Property Site, Civalier Engineering & Surveying, Franklin Twp., Gloucester Co., NJ
2006. Assisted in the field with wetlands delineation.

Hackensack Tide Gates, 3D Mapping & Positioning Service LLC, Bergen Co., NJ
2009. Assisted in the field with wetlands delineation.

Monroe Pinelands, Civalier Engineering & Surveying, Monroe Twp., Gloucester Co., NJ
2007. Assisted in the field for the presence or absence of wetlands. Helped prepare an application for the NJDEP for approval of the proposed wetlands boundaries by conducting a search for cultural and/or archaeological resources on or in the immediate vicinity of the property.

Mount Calvary Church, Civalier Engineering & Surveying, Winslow Twp., Camden Co., NJ
2006. Helped prepare an application for the NJDEP for approval of the proposed wetland boundaries by conducting a search for cultural and/or archaeological resources on or in the immediate vicinity of the property.

Pure Energy-Bayonne, NJ, Pure Energy Resources Inc., Bayonne, NJ
2009. Helped prepare a Coastal Zone Management (CZM) Individual Permit (i.e. NJDEP Waterfront Development Permit) for the proposed development of a \$400 million, 512 megawatt (MW) electric power generating and transmission facility, in the Constable Hook region of Bayonne. The project included a submarine cable that provides electrical connection to New York City via a 345 kilovolt power transmission line. Conducted a search for cultural and/or archaeological resources on or in the immediate vicinity of the property. Composed two photo documentation logs to show the project site from different surrounding view points and another to show the view from local major receptors.

NGB-NJ-Wetland SPCP GIS-NJARNG, National Guard Bureau (ANRG), Pitman, NJ
2006. Assisted in the field with wetlands delineation in order to identify the outer boundaries of potentially regulated wetlands, state open waters, and wetland transition areas.

Wilkins Property Site, Civalier Engineering & Surveying, Harrison Twp., Gloucester Co., NJ
2006. Assisted in the field with wetlands delineation.

Other Projects

Central Jersey R & P Club, Central Jersey Rifle and Pistol Club, Jackson, NJ
Delineation program entailing sieving and sampling of soil at the margins of a series of outdoor firing ranges to determine the horizontal extent of particulate metal (i.e., lead shot, bullets and bullet fragments) deposition until the outer limits of the deposition were defined. The delineation was conducted in accordance with the Interstate Technology and Regulatory Council (2003) guidance document and the applicable portions of the NJDEP Field Sampling Procedures Manual (August 2005).

Fishermen's Energy of New Jersey LLC, Atlantic City, NJ
Permitting and environmental aspects of a proposed off-shore wind farm in state waters located ~2.8 miles off of Atlantic City, New Jersey.

Huffman Prairie, Wright-Patterson, Wright-Paterson AFB, OH
2007. Assisted with life histories of threatened and endangered species for a breeding bird survey.

Olean Historical Research, ExxonMobil Refining & Supply Company, Olean, NY
2006. Assisted with the research into the environmental conditions and history of a former refinery located in Olean, NY. The New York State Department of Environmental Conservation (NYSDEC) has identified the location as a hazardous waste site due to the results of a state sponsored remedial investigation.

Phelps Dodge Corp – Newtown Creek, Phelps Dodge Corporation, Queens/Brooklyn, NY

2007. Researched historical industries within the vicinity of the site. Conducted library research on the history of Newtown Creek.

Princeton Seminary Support, ACT Engineers, Princeton, NJ

2009. Preliminary environmental impact statement for the Princeton Theological Seminary – West Windsor Campus. The assessment provided a comprehensive description of the site's existing key natural resources and environmental features to determine how these ecosystem components may be influenced by the proposed development.

Public Services Electric & Gas (PSEG), Former Halladay Street Gas Works, Jersey City NJ

2012. Conducted air monitoring in work areas at the Site to ensure that imminent dangers to life and health (IDLH) or other dangerous conditions are identified if present. A photo-ionization detector (PID) was used to monitor breathing zone concentrations of organic vapors. A mini-Ram detector (miniRAM) was used to monitor levels of airborne dust in the breathing zone. Calibration of monitoring equipment was performed daily before start-up of work in accordance with manufacturer instructions. Conducted waste class samples at the former manufactured gas plant (MGP).

Brian P. Sariano

Senior Project Manager

Professional summary

Mr. Sariano has over 25 years of experience in the environmental consulting industry. He has worked on, managed, and has provided QA review of a wide variety of projects including NEPA Environmental Assessments and Environmental Impact Statements, threatened and endangered species surveys, cultural resources surveys, underground storage tank closures, Phase I and Phase II Environmental Site Assessments, hazardous waste site subsurface investigations, remediation system installations, cleanup of hazardous waste sites, asbestos investigations and removals, mold abatement, and PCB spill cleanups. He has performed bid and proposal preparations, cost estimation and control, contractor management, report preparation, and regulatory compliance reviews. As a Senior Project Manager, Mr. Sariano's responsibilities include the management of personnel working on projects, the control of project budgets, contractor management, extensive contact and correspondence with clients and regulatory agencies, and overall responsibility for assuring the quality of AMEC's work products. Mr. Sariano also serves as the Mid-Atlantic/Northeast Corridor Division Manager for AMEC's Amtrak program.

Mr. Sariano specializes in NEPA analysis and document preparation; environmental and military planning; and general regulatory analysis and permitting. He is intimately familiar with numerous environmental regulations, including the National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) implementing regulations, U.S. military (Army, Air Force, and Navy) environmental and military training regulations, the National Historic Preservation Act (NHPA), Federal Endangered Species Act (FESA), and Sections 401 and 404 of the Federal Clean Water Act (CWA).

Professional qualifications/registration(s)

AHERA Accredited Building Inspector

AHERA Accredited Management Planner

AHERA Accredited Project Designer

Pennsylvania Department of Labor and Industry, Certified Building Inspector/Management Planner/
and Project Designer for Asbestos Related Projects, No. 005489

City of Philadelphia Licensed Asbestos Investigator, No. 0281

OSHA Hazardous Waste Operations Training

OSHA 8-hour Annual Refresher Training

OSHA Hazardous Waste Worker Supervisory Training

Education

B.A., Geoenvironmental Science, Shippensburg University, 1987

OSHA 40-Hour HAZWOPER Training – January 1988

OSHA 8-Hour HAZWOPER Annual Refresher – 1989-2012 (taken annually)

OSHA Supervisory Training Course – June 1999

Asbestos Handler/Worker Training – December 1987

Asbestos Supervisor Training Course – December 1987

AHERA Building Inspector/Management Planner Course - April 1990

AHERA Building Inspector/Management Planner Annual Refresher – 1991-2012

AHERA Asbestos Project Designer Course – March 2012

Immunoassay Field Testing Certification Course – September 1993

Troxler Nuclear Density Probe Training – June 1988

Niton XRF Spectrum Analyzer Training – July 1998

Permit Required Confined Space Entry Training – March 1996, January 2011

DOT HM 126F Hazardous Material Regulations for Transportation Training – June 1999
Army National Guard Environmental Compliance Assessment System Training – April 2001
Implementation of the National Environmental Policy Act on Federal Lands – October 2001

Memberships/Affiliations/Awards

Pennsylvania Environmental Council
Society of American military Engineers – Philadelphia Post
Pennsylvania Meritorious Service Medal

Employment history

Senior Project Manager, AMEC Environment & Infrastructure, Inc. Plymouth Meeting, PA, December 2011 - Present
Senior Project Manager, AMEC Earth & Environmental, Inc. Plymouth Meeting, PA, November 17, 2000 – December 2011
Project Manager, Ogden Environmental and Energy Services Co, Inc., May 1, 1995 – November 16, 2000
Project Manager/Environmental Scientist, Dames & Moore, November 1987 – April 1995
Environmental Consultant, Motts USA, June 1987 – November 1987

Representative projects

Special Projects

NEPA Environmental Assessment, Hanover Lake Dam Lead Cleanup and Dam Restoration, Fort Dix, New Jersey. Project Manager responsible for the preparation of Environmental Assessment for the proposed lead clean up and dam restoration at the Hanover Lake Dam in Fort Dix, New Jersey. This project was performed pursuant to the National Environmental Protection Act (NEPA) regulations and in accordance with the National Environmental Policy Act (NEPA: 42 USC 4321 et seq.), the Council on Environmental Quality (CEQ) Regulations Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508) and U.S. Army Regulations 200-1 (32 CFR Part 651) and 200-2. Project activities included conducting site reconnaissance to evaluate site for visual evidence of existing environmental concerns or impacts and to evaluate the potential environmental concerns and/or impacts associated with the proposed action; review of existing files, plans, and drawings; identification and review of applicable, USEPA, NJDEP and New Jersey Pinelands Commission permit requirements. Projects involved wetlands delineation, threatened and endangered species surveys, and cultural resources investigations. Involved extensive client and regulatory agency contact and coordination. Prepared associated deliverables and reports. Prepared Pinelands Development Application packages, permit application packages including Stream Encroachment Permits, and Wetlands and Transitional Area Waiver Permit Applications. As Project Manager, Mr. Sariano was responsible for significant regulatory interface and coordination as part of the permitting process. This EA was completed in November 2002. Project Number 87007-0016.

New Jersey Army National Guard Environmental Assessment for the Construction and Operation of the Army Aviation Support Facility at the Lakehurst Naval Air Engineering Station, Lakehurst, New Jersey. Project Manager responsible for overseeing all aspects of NEPA EA preparation, from initial IICEP through FONSI. This project was performed pursuant to the National Environmental Protection Act (NEPA) regulations and in accordance with the National Environmental Policy Act (NEPA: 42 USC 4321 et seq.), the Council on Environmental Quality (CEQ) Regulations Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508) and U.S. Army Regulations 200-1 (32 CFR Part 651) and 200-2. This EA evaluated the potential environmental, socioeconomic, and cultural impacts associated with the construction and operation of an Army Aviation Support

Facility (AASF) at the Lakehurst Naval Air Engineering Station in Lakehurst, New Jersey. Work included air quality emissions modeling in accordance with the Army Policy for Complying with the General Conformity Rule and subsequent preparation of a Record of Non-Applicability (RONA) and extensive regulatory agency consultation to resolve potential impacts associated with the presence of wetlands and potential issues concerning the Lighter Than Air (LTA) Historic District at Lakehurst Naval Air Engineering Station. Potential safety issues, noise, wetlands, and erosion impacts were identified, but were reduced to less-than-significant levels through careful project siting and implementation of mitigation measures in association with project installation. The EA was completed and subsequent signing of the Finding of No Significant Impact occurred in May 2009. This project also involves the completion of the New Jersey Pinelands Commission (NJPC) Development Application. Mr. Sariano is presently managing the completion of the application form, which, once approved by the NJPC, will assure that the development plan is in accordance with the requirements of the New Jersey Pinelands Comprehensive Plan. Project Number 27622-5153.

The Department of the Army's Ammunition Supply Point (ASP) Construction Supplemental EA – Wastewater Treatment Revision; Fort Dix, NJ. Project Manager responsible for overseeing the preparation of the Supplemental Environmental Assessment (SEA) for installation of a wastewater treatment system in association with the new ASP at Fort Dix. The system considered in the original EA was not permitted by the NJDEP; a supplemental EA was prepared to address the potential impacts of installation of an alternative off-site septic system, associated pipelines, and on-site temporary holding tanks. Due to the rapid need for a fully functional ASP, the SEA was completed in rapid fashion to meet project construction needs. This project was completed in 2000.

Environmental Baseline Survey, Fort Dix Pemberton Parcel, Fort Dix, New Jersey. Mr. Sariano was Project Manager for an Environmental Baseline Survey to evaluate the current environmental baseline of two (2) acres of real property proposed for transfer from the Fort Dix Military Reservation in Burlington County, New Jersey to Pemberton Township, Burlington County, New Jersey. A geophysical survey and soil and groundwater sampling activities were performed for this project. The geophysical survey consisted of both electromagnetic and ground penetrating radar (GPR) surveys to evaluate the potential for buried storage tanks, drums, and other items. The sampling program consisted of the placement of fifteen (15) soil borings via a direct-push Geoprobe® sampler with disposable Macrocore acetate liners. A screenpoint sampler was driven down an additional 4 feet into each soil boring to ensure an adequate amount of groundwater from each location. The sample results were compared with a combination of the NJDEP Impact to Groundwater Soil Cleanup Criteria and the NJDEP Residential Direct Contact Soil Cleanup Criteria. The soil and groundwater samples were analyzed for the New Jersey Underground Storage Tank parameters (N.J.A.C. 7:14B). In conjunction with the EBS and EA, a Record of Non-Applicability (RONA) was developed for the project air emissions. This project was completed in 2002. Project Number 87007-0020.

APPENDIX E

NEPA Concepts and Terminology

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APPENDIX E

NEPA Concepts and Terminology

E.1 Agency and Public Involvement Process

As specified in NEPA (42 USC 4321 *et seq.*) and NEPA's implementing regulations promulgated by the CEQ (40 CFR 1500-1508), 32 CFR 651, and the guidance provided in the ARNG NEPA Manual, public participation is a significant component of the NEPA process. The following provides a listing of key public notification and participation events that would occur as part of this environmental review process:

- The USAF conducted interagency and intergovernmental coordination for environmental planning (IICEP) in November 2012, pursuant to the requirements of NEPA as required under Executive Order (EO) 12372, which has since been superseded by EO 12416 – *Intergovernmental Review of Federal Programs*, and subsequently supplemented by EO 13132. These agencies would be furnished with copies of the Draft EA for public comment.
- The USAF published an NOA in the *Burlington Times* and in the *Asbury Park Press*, the local newspaper service in the region of the JB MDL. Copies of the Draft EA and important reference documents were also available for public review at the Manchester Branch of the Ocean County Library and the Pemberton Branch of the Burlington County Library; both in the JB MDL area. Written comments regarding the Final EA and Draft FONSI/FONPA would be submitted to: Joseph Rhyner, Department of the Air Force, 87th AMC, Joint Base McGuire-Dix Lakehurst, New Jersey, 08640-550. The EA was released for a 30-day public comment period.
- The USAF conducted formal consultation with Federally-recognized Native American tribes, as required by Section 101(d)(6)(B) of the National Historic Preservation Act (NHPA). These entities have been invited to participate in the EA process as an Indian tribe or Native Hawaiian organization, per Section 101(d)(6)(B). Where applicable, these entities have been furnished with copies of the Draft EA during its public circulation.
- In order to document the availability of the Final EA and FONSI, the USAF would publish a NOA of the Final EA and FONSI in a manner similar to that described above. As the proponent, the USAF may not take any action, other than planning the proposal, until the FONSI has been signed by all appropriate officials.

E.2 Definition of Key Terms

E.2.1 Land Use

Land use includes natural conditions or human-modified conditions and activities occurring at a particular location. Human-modified land use categories include residential, commercial, industrial, transportation, communications, utilities, agricultural, institutional, recreational, and other developed use areas. Management plans and zoning regulations determine the type and extent of land use allowable in specific areas and are often intended to protect specially designated or environmentally sensitive areas.

E.2.2 Floodplains

Floodplains are generally areas of low, level ground located on one or both sides of a stream channel that are subject to either periodic or infrequent inundation by floodwaters. Floodplains

are most likely the result of the natural processes of lateral erosion and deposition that occur as a river valley widens. The porous material that composes the floodplain is conducive to retaining water that enters the soil via flooding events and elevated groundwater tables. Periodic inundation dangers associated with floodplains have prompted Federal, state, and local legislation to limit development in these areas to recreation, agriculture, and preservation activities. FEMA regulates floodplains with standards outlined in 44 CFR 60.3.

E.2.3 Wetlands

Wetlands are defined as areas that are inundated by surface or ground water with a frequency sufficient to support, and under normal circumstances do or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth/reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas, such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds.

E.2.4 Cultural Resources

Cultural resources are prehistoric and historic sites, structures, districts, or any other physical evidence of human activity considered important to a culture, subculture, or a community for scientific, traditional, and/or religious reasons. For the purposes of this EA, based on statutory requirements, the term cultural resource is defined to include:

- Historic properties, as defined in the NHPA of 1966, as amended
- Cultural items, as defined in the Native American Graves Protection and Repatriation Act (NAGPRA)
- Archaeological resources, as defined in the Archeological Resources Protection Act (ARPA)
- Historic and paleontological resources, as defined by the Antiquities Act of 1906, as amended
- Sites that are scientifically significant, as defined by the Archeological and Historic Preservation Act (AHPA)
- Sacred sites, as defined in EO 13007, to which access and use is permitted under the American Indian Religious Freedom Act (AIRFA)
- Collections, as defined in 36 CFR 79, Curation of Federally Owned and Administered Collections.

In brief, cultural resources include archaeological, architectural, and traditional resources:

- **Archaeological resources** consist of locations where prehistoric or historic activity measurably altered the earth or produced deposits of physical remains, such as arrowheads and bottles.
- **Architectural resources** include standing buildings, districts, bridges, dams, and other structures of historic or aesthetic significance. Architectural resources generally must be more than 50 years old to be considered for inclusion in the National Register of Historic Places (NRHP), an inventory of culturally significant resources identified in the United States. However, more recent structures, such as Cold War-era resources, may warrant protection if they have the potential to gain significance in the future.

Traditional resources include locations of historic occupations and events, historic and contemporary sacred and ceremonial areas, prominent topographical areas, traditional hunting and gathering areas, and other resources that Native Americans or other groups consider essential for the survival of their traditional culture.

E.2.5 Direct Versus Indirect Effects

The terms *impact* and *effect* are used synonymously in this EA. Effects may be determined to be beneficial or adverse, and may apply to the full range of natural, aesthetic, historic, cultural, and economic resources of the project study area and its environment. Definitions and examples of direct and indirect effects are used in this EA as follows:

- **Direct Impact:** A direct impact is caused by the Proposed Action, and occurs at the same time and place as the Proposed Action.
- **Indirect Impact:** An indirect impact is caused by the Proposed Action and occurs later in time, or is farther removed in distance, but is still reasonably foreseeable. Indirect effects may include induced changes in land use pattern, population density, or growth rate, and related effects on air, water, and other natural and social systems.
- **Application of Direct versus Indirect Effects:** For direct effects to occur, a resource must be present in a particular study area. For example, if vegetation resources were disturbed in a particular area, a direct impact to wildlife would occur as a result of displacement from available habitat. This displacement from habitat would indirectly affect habitat in adjacent areas by increasing the wildlife population in those areas.

E.2.6 Short-Term Versus Long-Term Effects

In addition to indicating if effects are direct or indirect, this EA differentiates between short- and long-term effects, where appropriate. In this context, “short term” and “long –term” do not refer to any rigid time period and are determined on a case-by-case basis in terms of anticipated consequences of the Proposed Action.

E.2.7 Cumulative Effects

As described in **Section 2.0**, the USAF propose to construct, operate, and maintain a MPMGR within the JB MDL Dix Range Area to train individual soldiers in the basic machine gun live-fire training tasks they require to sustain combat proficiency. **Sections 4.2** through **4.13** identify potential direct and indirect, short-term and long-term effects associated with proposed actions under each of the specific project alternatives as identified in **Section 2.0**. **Section 4.14** evaluates the cumulative impact of the Proposed Action at the one proposed alternative location combined with known existing, potential, or anticipated effects associated with other local or regional activities currently being undertaken or anticipated by other landowners and decision-making authorities.

E.2.8 Significance Criteria

The term *significance* as used in NEPA requires consideration of both the context and intensity of the impact or effect under consideration. Significance can vary in relation to the context of the Proposed Action, the context of which may include consideration of effects on a national, regional, and/or local basis. Both short- and long-term effects may be relevant. Effects are also evaluated in terms of their intensity. Factors contributing to the intensity of an impact include:

- The degree to which the action affects public health or safety

-
- The proximity of the action to resources that are legally protected by various statutes, such as wetlands; resources listed in, or eligible for, the NHRP; regulatory floodplains; and Federally listed threatened or endangered species
 - The degree to which the effects of the action on the quality of the human environment are likely to be highly uncertain or controversial
 - Whether or not the action is related to other actions with individually insignificant but cumulatively significant effects
 - Whether or not the action threatens to violate Federal, state, or local law imposed for the protection of the environment.

E.2.9 Mitigation/Management

Mitigation/Management measures are discussed for each alternative, as appropriate. Where adverse effects are identified, this document describes measures that would be used to mitigate and/or manage these effects to acceptable levels, where possible. Mitigation/ Management measures generally include:

- Avoiding the impact altogether by stopping or modifying the Proposed Action
- Minimizing the impact by limiting the degree or magnitude of the action and its implementation
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment
- Reducing or eliminating the impact over time through preservation and maintenance operations during the life of the action, such as implementation of appropriate and accepted Best Management Practices (BMPs)
- Compensating for the impact by replacing or providing substitute resources or environments.

Mitigation and/or management of adverse effects associated with alterations to the project study area are generally the responsibility of the USAF. The mitigation/management measures taken to reduce or avoid the selected alternative's adverse environmental effects are included in **Section 4** of this EA. Only those mitigation/management measures that are practicable (i.e., can be accomplished as part of the primary action) have been identified.

APPENDIX F

Conformity Determination Record of Non-Applicability

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Conformity Rule Compliance Record of Non-Applicability

Project/Action Name: Construction of the Multipurpose Machine Gun Range
At Joint Base McGuire-Dix Lakehurst, NJ

Contractor Contract #: DAHA92-01-D-0006; Delivery Order ZK01

Project/Action POC: Joseph Rhyner PE, DAFC
Chief, Environmental Element 787 CES/CEIE JB MLD

Action Duration: Permanent

Conformity under Clean Air Act, Section 176, has been evaluated for the above-described project per 40 CFR Part 51. The requirements of this rule are not applicable to this action because:

Total direct and indirect emissions increases from the proposed action have been estimated at:

Alternative 1 (Preferred Alternative)

Annual Recurring Emissions

- No additional annual recurring emissions above current emissions. No change in training frequency or intensity.

One time Construction Emissions

- 2.28 tons VOCs; and
16.25 tons of NOx.

Alternative 2 (Competing Build Alternative)

- This alternative would have the same one-time construction emissions as Alternative 1.

Alternative 3 (No Action Alternative)

- This alternative was not evaluated because there would be no change in air emissions.

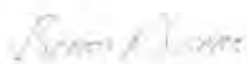
The emission increases from the proposed action are below the *de minimus* threshold established at 40 CFR 51.853(b) of 50 tpy VOCs and 100 tpy NOx, and the proposed action is not considered "regionally significant" under 40 CFR 51.853(i).

The supporting documentation and emissions estimates are:

X ATTACHED
ATTACHED TO NEPA DOCUMENT
OTHER

Prepared by:

Concurred by:



Brian Sariano
Senior Environmental Scientist
AMEC Environment & Infrastructure, Inc.
(610) 877-612



Joseph Rhyner PE, DAFC
Chief, Environmental Element
787 CES/CEIE JB MLD
(609) 754 6166

Record of Non-Applicability Supporting Documentation

Proposed Construction of the Multipurpose Machine Gun Range at Joint Base McGuire-Dix-Lakehurst, New Jersey

1.0 Summary Description of the Proposed Action (Alternative 1)

The following provides a summary of the more detailed information presented in the Environmental Assessment (EA) prepared for the proposed action. Under the Preferred Alternative (Alternative 1), Joint Base McGuire-Dix-Lakehurst (JB MDL) proposes to construct a Multi-Purpose Machine Gun Range (MPMGR) in the Dix Range Area. The range would be used to train and test individual soldiers on the skills necessary to zero in, detect, identify, engage, and defeat stationary and moving infantry targets along with stationary armor targets in a tactical array using machine guns. The proposed action is to construct, operate, and maintain a MPMGR designed to train individual soldiers in the basic machine gun live-fire training tasks they require to sustain combat proficiency. The range would feature four (4) firing lanes reaching to a distance of 1500 meters, and fully automated targets to a distance of 1000 meters. The event specific target scenario is computer driven and scored from the range operations center. The range would provide immediate performance feedback to the soldiers using the range. Operation of the range would involve both day and night time firing approximately 3-4 days per week.

The range would feature four (4) firing lanes reaching to a distance of 1500 meters, and fully automated targets to a distance of 1,000 meters. The event specific target scenario is computer driven and scored from the range operations center. The range would provide immediate performance feedback to the trainees. Operation of the range would involve both day and night time firing approximately 3-4 days per week.

In addition the proposed range would include:

- A large cleared area extending to 1,500 meters beyond the firing line and consisting of four firing lanes wide. Each firing lane is approximately 95 feet wide at the firing point and fans out to be approximately 550 feet wide at the 1,500 meter distance. The total required area is approximately 160 to 180 acres.
- Trenched communications and power lines located approximately 3 feet deep below the ground surface.
- Fully automated targets to a distance of 1,000 meters.
- Battery powered/radio controlled targets past 1,000 meters.
- One Range Control Tower.
- One 800 square-foot Operations and Storage Building.
- One 800 square-foot Classroom Facility.
- One concrete pad for placement of portable toilets.
- One 185 square-foot Ammo Breakdown Building.
- One 800 square-foot Covered Mess.
- One Bleacher Enclosure.
- Existing and new access roads to service targets.

Construction of the range would require clearing of existing vegetation. The trees in upland areas would be clear cut and grubbed to ensure ease of future maintenance. Trees in wetland areas would be cut to 3 inches or less, however the stumps and root systems would be left in place to reduce

erosion. Future maintenance actions of the wetlands would include brush clearing and sapling cutting to maintain line of site for the range.

Under the Proposed Action, the existing MPMGR at Range 11 would remain operational, but no longer used after the new MPMGR is constructed and becomes operational. There would be no expected increase in personnel, soldiers on base, or increased training operations related to the Preferred Alternative.

2.0 Overview of Considered Project Alternatives

Alternative 1, the Preferred Alternative, is to construct, operate, and maintain a MPMGR in the 178-acre “Times Square” at JB MDL – Dix Range Area.

Alternative 2, the Competing Build Alternative, is to construct, operate, and maintain a MPMGR in the 160-acre area between Range 39 and the Explosive Ordnance Disposal (EOD) Range at JB MDL – Dix Range Area.

Alternative 3, the No-Action Alternative - a new MPMGR would not be constructed and the existing sub-standard MPMGR at Range 11 would continue to be used. A total of seven locations were examined utilizing a series of applicable environmental and operational screening criteria in order to discern a facility location. Six of the seven potential sites were eliminated from further consideration because these alternatives either failed to meet the site selection screening criteria and/or failed to meet the purpose and need requirements for this project.

An additional five (5) alternatives were considered, but eliminated from further evaluation because they did not adequately meet the purpose and need for the proposed action, or were determined to be logistically infeasible. Air emission increases due to these additional alternatives were not evaluated and are not presented in this document.

3.0 Purpose of the Record of Non-Applicability (RONA)

The proposed MPMGR will be located in Ocean County, New Jersey, which is a designated moderate National Ambient Air Quality Standards (NAAQS) non-attainment area for ozone. Tropospheric ozone is created by volatile organic compounds (VOCs) and nitrogen oxides (NOx) emissions via a process known as photochemical air pollution. Therefore, VOCs and NOx emissions are regulated as a means of controlling ozone production. Alternative 1 would alter VOCs and NOx emissions within the local air shed through construction activities. In compliance with the General Conformity Rule (40 CFR Part 51, Subpart W) and the National Environmental Policy Act (NEPA; 42 USC 4321 *et seq.*), current Army and Air Force guidance dictates that a Record of Non-Applicability (RONA) be prepared in cases where the proposed increase in emissions is clearly *de minimus*. The State of New Jersey has not promulgated a General Conformity Rule, but has adopted the federal guidelines for *de minimus* threshold levels; therefore, the regulatory pollutants for this proposed action are 50 tons per year of VOCs and 100 tons per year of NOx.

4.0 Methodology

Specific guidance detailing conformity requirements and policies that were followed to prepare the RONA are found in the *Department of the Army Guide for Compliance with the General Conformity Rule Under the Clean Air Act* (USACE, 15 June 1995).

4.1 Construction

There would be a one-time direct emission increase for Alternative 1 due to the construction of the proposed MPMGR. An AMEC scientist familiar with the project estimated the construction equipment usage for the construction of the MPMGR. The emission factors for the construction equipment were taken from Table A9-8 of the *CEQA Air Quality Handbook* developed by the South Coast Air Quality Management District.

See the attachment for the one-time construction emission calculations. An example calculation for the VOCs emitted from a 500 horsepower bulldozer is: (2 Bulldozers; 500hp)*(40 hr/wk)*(8 weeks) * (0.3072 lbs of VOCs/hr)*(1 ton/2,000 lbs) = 0.098 tons of VOCs/year.

5.0 Results and Conclusions

Since the General Conformity Rule requires only analysis of emissions of criteria pollutants and their precursors for which an area is designated a non-attainment or maintenance area, emissions were calculated only for the precursors of ozone, VOCs and NO_x, as part of this RONA documentation. Calculations regarding fugitive dust were not prepared, as these are not required under the General Conformity Rule.

By applying the above methodology, the analysis revealed that the proposed action would result in a one-time increase of 2.28 tons of VOCs and 16.2593 tons of NO_x during construction activities. Because the proposed action does not involve the increase in training usage or intensity, there would be no increase in annual emissions resulting from training above those currently generated in association with training at the existing MPMGR. The increases in emissions are below the *de minimus* thresholds of 50 tons per year of VOCs and 100 tons per year of NO_x. The calculations made in reaching this determination are presented on the attached pages.

Based on the above, the proposed action at the MPMGR is expected to have total emissions well below the *de minimus* threshold levels; therefore, this RONA satisfies the General Conformity Rule. This analysis has been performed in full compliance with the *Department of the Army Guide for Compliance with the General Conformity Rule Under the Clean Air Act* (USACE, 15 June 1995). As such, this RONA documents the ARNG's decision not to prepare a written conformity determination for the proposed action. This RONA will remain on file at the JB MDL Environmental Section office.

Construction Emissions

Estimated Construction Emissions
proposed MPMGR at JB MDL

Clear and Rough Grade 160 Acres of Wooded Land/Scrub Vegetation

Equipment	Qty	horsepower	Fuel	Usage	Usage Unit	Emission Factors					CO2	CH4	E.F. Unit	# of weeks	Emissions (tons)					CO2	CH4
			Type			VOC	CO	Nox	SOx	PM					VOC	CO	Nox	SOx	PM		
Dozer	2	500	diesel	40	hr/wk	0.3072	1.3307	2.5592	0.0026	0.1058	264.8725	0.0277	lb/hr	8.0	0.098	0.426	0.819	0.001	0.034	84.759	0.009
End Dump Truck	2	175	diesel	40	hr/wk	0.1355	0.7569	0.9614	0.0014	0.0539	125.0877	0.0122	lb/hr	8.0	0.043	0.242	0.308	0.000	0.017	40.028	0.004
Wheeled Loader	2	250	diesel	40	hr/wk	0.1186	0.3553	1.0966	0.0017	0.0375	148.9767	0.0107	lb/hr	8.0	0.038	0.114	0.351	0.001	0.012	47.673	0.003
Chainsaw	2	4	gasoline	40	hr/wk								lb/hr	8.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Grader	1	175	diesel	40	hr/wk	0.1386	0.7331	1.0511	0.0014	0.0577	123.9215	0.0125	lb/hr	8.0	0.022	0.117	0.168	0.000	0.009	19.827	0.002
Roller/Compactor	1	120	diesel	40	hr/wk	0.0921	0.4030	0.5906	0.0007	0.0494	58.9887	0.0083	lb/hr	8.0	0.015	0.064	0.094	0.000	0.008	9.438	0.001
Water Truck	1	175	diesel	16	hr/wk	0.1355	0.7569	0.9614	0.0014	0.0539	125.0877	0.0122	lb/hr	8.0	0.009	0.048	0.062	0.000	0.003	8.006	0.001
Plate Vibrator	1	15	diesel	40	hr/wk	0.0050	0.0263	0.0314	0.0001	0.0012	4.3138	0.0005	lb/hr	8.0	0.001	0.004	0.005	0.000	0.000	0.690	0.000

Finish Grading 160 Acres

Equipment	Qty	horsepower	Fuel	Usage	Usage Unit	Emission Factors					CO2	CH4	E.F. Unit	# of weeks	Emissions (tons)					CO2	CH4
			Type			VOC	CO	Nox	SOx	PM					VOC	CO	Nox	SOx	PM		
Grader	1	175	diesel	40	hr/wk	0.1386	0.7331	1.0511	0.0014	0.0577	123.9215	0.0125	lb/hr	6.0	0.017	0.088	0.126	0.000	0.007	14.871	0.002
Wheeled Loader	1	250	diesel	40	hr/wk	0.1186	0.3553	1.0966	0.0017	0.0375	148.9767	0.0107	lb/hr	6.0	0.014	0.043	0.132	0.000	0.005	17.877	0.001
Dozer	1	500	diesel	40	hr/wk	0.3072	0.3072	0.3072	0.3072	0.3072	0.3072	0.3072	lb/hr	6.0	0.037	0.037	0.037	0.037	0.037	0.037	0.037
End Dump Truck	2	175	diesel	40	hr/wk	0.1355	0.7569	0.9614	0.0014	0.0539	125.0877	0.0122	lb/hr	6.0	0.033	0.182	0.231	0.000	0.013	30.021	0.003
Plate Vibrator	1	15	diesel	20	hr/wk	0.0050	0.0263	0.0314	0.0001	0.0012	4.3138	0.0005	lb/hr	6.0	0.000	0.002	0.002	0.000	0.000	0.259	0.000
Roller/Compactor	1	120	diesel	20	hr/wk	0.0921	0.4030	0.5906	0.0007	0.0494	58.9887	0.0083	lb/hr	6.0	0.006	0.024	0.035	0.000	0.003	3.539	0.000
Water Truck	1	175	diesel	5	hr/wk	0.1355	0.7569	0.9614	0.0014	0.0539	125.0877	0.0122	lb/hr	6.0	0.002	0.011	0.014	0.000	0.001	1.876	0.000

Transport of Materials

Equipment	Qty	horsepower	Fuel	Usage	Usage Unit	Emission Factors					CO2	CH4	E.F. Unit	# of weeks	Emissions (tons)					CO2	CH4
			Type			VOC	CO	Nox	SOx	PM					VOC	CO	Nox	SOx	PM		
Tractor Trailer	6	175	diesel	40	hr/wk	0.1960	0.8272	1.4624	0.0015	0.0820	130.4173	0.0177	lb/hr	30.0	0.705	2.978	5.265	0.005	0.295	469.502	0.064
5-ton Dump Trucks	6	250	diesel	40	hr/wk	0.1326	0.3761	1.1048	0.0019	0.0368	166.5454	0.0120	lb/hr	30.0	0.477	1.354	3.977	0.007	0.133	599.564	0.043

Aggregate Paved Roadways and Parking Areas

(Aggregate Paving: 138,000 SF)

Equipment	Qty	horsepower	Fuel	Usage	Usage Unit	Emission Factors					CO2	CH4	E.F. Unit	# of weeks	Emissions (tons)					CO2	CH4
			Type			VOC	CO	Nox	SOx	PM					VOC	CO	Nox	SOx	PM		
Compressor	1	50	diesel	40	hr/wk	0.0831	0.2446	0.2134	0.0003	0.0201	22.2713	0.0075	lb/hr	8.0	0.013	0.039	0.034	0.000	0.003	3.563	0.001
Tractor	1	50	diesel	40	hr/wk	0.1094	0.3164	0.2544	0.0003	0.0251	24.8796	0.0099	lb/hr	8.0	0.018	0.051	0.041	0.000	0.004	3.981	0.002
Asphalt Paving	1	120	diesel	40	hr/wk	0.1311	0.5011	0.7948	0.0008	0.0682	69.1964	0.0118	lb/hr	8.0	0.021	0.080	0.127	0.000	0.011	11.071	0.002
Roller/Compactor	3	120	diesel	40	hr/wk	0.0921	0.4030	0.5906	0.0007	0.0494	58.9887	0.0083	lb/hr	8.0	0.044	0.193	0.283	0.000	0.024	28.315	0.004
Cement Truck	2	250	diesel	10	hr/wk	0.1326	0.3761	1.1048	0.0019	0.0368	166.5454	0.0120	lb/hr	8.0	0.011	0.030	0.088	0.000	0.003	13.324	0.001
5-ton Dump Trucks	6	250	diesel	40	hr/wk	0.1326	0.3761	1.1048	0.0019	0.0368	166.5454	0.0120	lb/hr	8.0	0.127	0.361	1.061	0.002	0.035	159.884	0.011

Trenching and Covering

(2.5 miles of trenching that is 4 feet deep and 1 foot wide through sand , directional drilling under wetland areas)

Equipment	Qty	horsepower	Fuel	Usage	Usage Unit	Emission Factors					CO2	CH4	E.F. Unit	# of weeks	Emissions (tons)					CO2	CH4
			Type			VOC	CO	Nox	SOx	PM					VOC	CO	Nox	SOx	PM		
Trencher	1	120	diesel	40	hr/wk	0.1212	0.4640	0.7489	0.0008	0.0629	64.8951	0.0109	lb/hr	15.0	0.036	0.139	0.225	0.000	0.019	19.469	0.003
Tamper	3	15	diesel	40	hr/wk	0.0050	0.0263	0.0314	0.0001	0.0012	4.3138	0.0005	lb/hr	15.0	0.005	0.024	0.028	0.000	0.001	3.882	0.000
Bore/Drill Rig	1	175	diesel	40	hr/wk	0.0671	0.7539	0.6527	0.0016	0.0246	141.0764	0.0061	lb/hr	2.0	0.003	0.030	0.026	0.000	0.001	5.643	0.000
Backhoe	1	120	diesel	60	hr/wk	0.0634	0.3503	0.4252	0.0006	0.0337	51.7280	0.0057	lb/hr	15.0	0.029	0.158	0.191	0.000	0.015	23.278	0.003

Construction of Structures and Associated Items

(Range Operations and Control Building, Range Control Tower, Classroom Building, Operations/Storage Building, Bleachers, Coverd mess, Ammunition Breakdown Building)

Equipment	Qty	horsepower	Fuel	Usage	Usage Unit	Emission Factors (lb/hr)					CO2	CH4	E.F. Unit	# of weeks	Emissions (tons)					CO2	CH4
			Type			VOC	CO	Nox	SOx	PM					VOC	CO	Nox	SOx	PM		
Cement Truck	2	250	diesel	10	hr/wk	0.1326	0.3761	1.1048	0.0019	0.0368	166.5454	0.0120	lb/hr	2.0	0.003	0.008	0.022	0.000	0.001	3.331	0.000
Tractor Trailer	2	175	diesel	40	hr/wk	0.1960	0.8272	1.4624	0.0015	0.0820	130.4173	0.0177	lb/hr	31.0	0.243	1.026	1.813	0.002	0.102	161.717	0.022
Compressor	2	50	diesel	40	hr/wk	0.0831	0.2446	0.2134	0.0003	0.0201	22.2713	0.0075	lb/hr	31.0	0.103	0.303	0.265	0.000	0.025	27.616	0.009
Forklift	2	120	diesel	10	hr/wk	0.0390	0.2158	0.2571	0.0004	0.0206	31.2	0.0035	lb/hr	31.0	0.012	0.067	0.080	0.000	0.006	9.680	0.001
Generator	2	50	diesel	40	hr/wk	0.0785	0.2545	0.2731	0.0004	0.0213	30.6	0.0071	lb/hr	31.0	0.097	0.316	0.339	0.000	0.026	37.972	0.009
Hand Tamper	2	15	gasoline	20	hr/wk	0.0050	0.0263	0.0314	0.0001	0.0012	4.3138	0.0005	lb/hr	2.0	0.000	0.001	0.001	0.000	0.000	0.173	0.000

Estimated Total Construction Emissions (tons) 2.281 8.560 16.250 0.058 0.854 1860.866 0.239

**Total Direct and Indirect Emissions
Proposed MPMGR at JB MDL**

**Total Direct and Indirect Emissions for the
Proposed Multi-Purpose Machine Gun Range**

Alternative 1 One-time Direct Emissions - Construction	VOC (tons/yr)	CO (tons/yr)	Nox (tons/yr)	SOx (tons/yr)	PM (tons/yr)	CO2 (tons/yr)	CH4 (tons/yr)
Construction Equip. Emissions	2.280991108	8.5597736	16.2502	0.057868	0.853532	1860.866	0.239343