NOTICE OF PROJECT CHANGE

Multi-Purpose Machine Gun (MPMG) Range at the Known Distance (KD) Range

Camp Edwards
Joint Base Cape Cod
Sandwich, Barnstable County, Massachusetts

EOEEA #5834

Prepared For:

Massachusetts Army National Guard

Joint Force Headquarters

Hanscom Air Force Base, MA 01731

31 January 2020

DEPARTMENTS OF THE ARMY AND THE AIR FORCE
JOINT FORCE HEADQUARTERS
MASSACHUSETTS NATIONAL GUARD
OFFICE OF THE ADJUTANT GENERAL
2 RANDOLPH ROAD
HANSCOM AFB, MA 01731-3001

31 January 2020

Ms. Tori Kim, MEPA Director
Executive Office of Energy and Environmental Affairs
MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Notice of Project Change - EOEEA #5834
Multi-Purpose Machine Gun (MPMG) Range
Camp Edwards, Joint Base Cape Cod, Sandwich, Massachusetts

Dear Ms. Kim:

The Massachusetts Army National Guard (MAARNG) is pleased to present one original and one copy of a Notice of Project Change (NPC) for the Massachusetts Military Reservation Final Area-Wide Environmental Impact Report (EIR) of the Small Arms Range Improvement Project (SAR-IP). This NPC is being submitted for construction of the proposed Multi-Purpose Machine Gun (MPMG) Range which will allow the MAARNG to efficiently attain required training and weapons qualifications requirements within Massachusetts and provide Soldiers and units the necessary modernized training capabilities to be effective in contemporary and future operating environments. This NPC was prepared in accordance with the Secretary's Certificate dated 16 July 2001 which is included in the NPC. Certain projects and activities at Camp Edwards are subject to a Special Review Procedure (SRP) created and jointly executed by Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) and the MAARNG so that the process under MEPA could be used more efficiently for the long-term use of Camp Edwards.

Given the importance of the MPMG Range to the future operation and viability of the base, the MAARNG has taken its responsibilities under Massachusetts regulations extremely seriously. Therefore, the MAARNG has been working in close cooperation over the past two years with the Massachusetts Natural Heritage and Endangered Species Program (NHESP) to determine mitigation of rare species habitat impacts as a result of the MPMG Range project. In addition, MAARNG has been in communication with the Massachusetts Department of Environmental Protection (MassDEP), Environmental Management Commission (EMC), and United States Environmental Protection Agency (USEPA) relative to this project.

The MAARNG has established a mutually respectful relationships with these agencies and the four towns in which Camp Edwards resides (Bourne, Falmouth, Mashpee, Sandwich). The MAARNG meets regularly with the EMC and its two supporting councils, the Science Advisory Council (SAC) and the Community Advisory Council (CAC) including pre-application meetings, development of presentations, public meeting facilitation, outreach, and informal and formal consultations. Documentation of agency coordination and meetings is detailed in the NPC.

The MAARNG is proposing to construct and operate a MPMG Range (the Project) to be constructed at the existing 600-yard Known Distance (KD) Range that was previously used for training activities. The proposed Project change consists of design plans for the MPMG Range. This NPC is being submitted to satisfy the requirements of MEPA review to document a material change to a project. The MAARNG asserts that the MPMG Range project does not represent a significant change. As greater than 50 acres will be altered for this project, an Environmental Impact Report (EIR) will be required. We are requesting a Single EIR for this NPC.

Initial planning for improvements to the KD Range and the proposed MPMG Range can be traced back to the 1990s and the Project was included in the Massachusetts Military Reservation (MMR[1]) Master Plan Final Report dated 8 September 1998 and has been included in subsequent MEPA filings; most recently in the Supplemental EIR for the SAR-IP in 2012. The MPMG Range has been consistently included in MEPA filings as Phase III of the SAR-IP.

A Greenhouse Gas (GHG) analysis has been prepared in accordance with the EOEEA GHG Policy and Protocol (last revised May 5, 2010) as over 50 acres is proposed to be altered for the construction of the MPMG Range. The GHG analysis includes calculations of the project baseline, estimation of emissions associated with the Preferred Alternative and two other alternatives as well as outlining and committing to a series of mitigation measures that will help to reduce GHG emissions from the Project.

The NPC will be filed with MEPA on 31 January 2020 in paper and electronic formats. The NPC will be made available for public review as well as mailed to an extensive circulation list including local stakeholders and agencies. The NPC will also be available on line on the MAARNG Environmental and Readiness Center (E&RC) publications page at https://www.massnationalguard.org and copies will be on file at the Bourne, Sandwich, Falmouth, and Mashpee public libraries. Additional copies of the NPC can be obtained by emailing Ms. Kathryn Barnicle of AECOM at Kathryn.barnicle@aecom.com or by calling Katie at 508-833-6953.

Sincerely,

Keith J. Driscoll
NEPA/MEPA Manager
Massachusetts Army National Guard
Keith.j.driscoll.nfg@mail.mil
339-202-3980

[1] The MMR was renamed the JBCC in 2013.

For Office Use Only *Executive Office of Environmental Affairs*
MEPA Analyst:
Phone: 617-626-

The information requested on this form must be

Notice of Project Change

completed to begin MEPA Review of a NPC in accordance with the provisions of the Massachusetts Environmental Policy Act and its implementing regulations (see 301 CMR 11.10(1)).

EEA #5834		
Project Name: Multi-Purpose Machine Gun (MPMG) Range		
Street Address: Joint Base Cape Cod (JBCC) Camp Edwards		
Municipality: Sandwich	Watershed: Cape Cod	
Universal Transverse Mercator Coordinates: 372318.60 4616331.66	Latitude: 41.688526 Longitude: -70.534237	
Estimated commencement date: Spring 2020	Estimated completion date: Spring 2022	
Project Type: Military	Status of project design: 95 %complete	
Proponent: Massachusetts Army National Guard (MAARNG)		
Street Address: Joint Force Headquarters, 2 Randolph Road		
Municipality: Hanscom Air Force Base	State: MA	Zip Code: 01731
Name of Contact Person: Keith J. Driscoll		
Firm/Agency: MAARNG	Street Address: 2 Randolph Road	
Municipality: Hanscom Air Force Base	State: MA	Zip Code: 01731
Phone: 339-202-3980	Fax:	E-mail: keith.j.driscoll@mail.mil

With this Notice of Project Change, are you requesting:

a Single EIR? (see 301 CMR 11.06(8))	☒ Yes	☐ No
a Special Review Procedure? (see 301 CMR 11.09)	☒ Yes	☐ No
a Waiver of mandatory EIR? (see 301 CMR 11.11)	☐ Yes	☒ No
a Phase I Waiver? (see 301 CMR 11.11)	☐ Yes	☒ No

Which MEPA review threshold(s) does the project meet or exceed (see 301 CMR 11.03)?

- (1)(a)1. (Land) Direct alternation of 50 or more acres of land.
- (2)(b)2. (Rare Species) Greater than two acres of disturbance in designated priority habitat that results in a take of state-listed endangered or threatened species of species of special concern.

Under Camp Edwards Environmental Performance Standards

- New buildings that exceed 500 s.f.
- Clearing of at least two acres of vegetation

Which State Agency Permits will the project require?

- Conservation and Management Permit from Massachusetts Natural Heritage and Endangered Species Program (NHESP)

Identify any financial assistance or land transfer from an Agency of the Commonwealth, including the Agency name and the amount of funding or land area in acres:

Proponent is an Agency of the Commonwealth.

PROJECT INFORMATION

In 25 words or less, what is the project change? The project change involves . . .

The construction and operation of a Multi-Purpose Machine Gun (MPMG) Range required in order to meet qualification and pre-validation of deploying units.

See full project change description beginning on page 3.

Date of publication of availability of the ENF in the Environmental Monitor: (Date: January 1986)

Was an EIR required?	☒Yes		☐No; if yes,	
was a Draft EIR filed?	☒Yes	(Date: December 1996)	☐No	
was a Final EIR filed?	☒Yes	(Date: June 2001)	☐No	
was a Single EIR filed?	☐Yes	(Date:)	☒No	

Have other NPCs been filed? ☒Yes (Date(s):) ☐No

15 February 2006, 15 September 2006, 9 July 2007, 23 December 2009, 6 April 2011, and 15 January 2013

If this is a NPC solely for lapse of time (see 301 CMR 11.10(2)) proceed directly to **ATTACHMENTS & SIGNATURES**.

PERMITS / FINANCIAL ASSISTANCE / LAND TRANSFER

List or describe all new or modified state permits, financial assistance, or land transfers not previously reviewed: **dd w/ list of State Agency Actions (e.g., Agency Project, Financial Assistance, Land Transfer, List of Permits)**

Conservation and Management Permit from NHESP

Are you requesting a finding that this project change is insignificant? A change in a Project is ordinarily insignificant if it results solely in an increase in square footage, linear footage, height, depth or other relevant measures of the physical dimensions of the Project of less than 10% over estimates previously reviewed, provided the increase does not meet or exceed any review thresholds. A change in a Project is also ordinarily insignificant if it results solely in an increase in impacts of less than 25% of the level specified in any review threshold, provided that cumulative impacts of the Project do not meet or exceed any review thresholds that were not previously met or exceeded. (see 301 CMR 11.10(6)) ☐**Yes** ☒**No; if yes, provide an explanation of this request in the Project Change Description below.**

Project is subject to a Special Review Procedure.

FOR PROJECTS SUBJECT TO AN EIR

If the project requires the submission of an EIR, are you requesting that a Scope in a previously issued Certificate be rescinded?
☐**Yes** ☒**No; if yes, provide an explanation of this request**_____.

If the project requires the submission of an EIR, are you requesting a change to a Scope in a previously issued Certificate?
☐**Yes** ☒**No; if yes, provide an explanation of this request**_____.

SUMMARY OF PROJECT CHANGE PARAMETERS AND IMPACTS

Summary of Project Size & Environmental Impacts	Previously reviewed	Net Change	Currently Proposed
LAND			
Total site acreage	38.5	+160.5	209.0
Acres of land altered	38.5	+160.5	209.0
Acres of impervious area	0.9	-0.8	0.1
Square feet of bordering vegetated wetlands alteration	NA	NA	NA
Square feet of other wetland alteration	NA	NA	NA
Acres of non-water dependent use of tidelands or waterways	NA	NA	NA
STRUCTURES			
Gross square footage	585 s.f.	+3,010 s.f.	~3,595 s.f. total (six buildings)
Number of housing units	NA	NA	NA
Maximum height (in feet)	20' (existing Range Control Tower)	7'	27' (Range Control Tower)
TRANSPORTATION			
Vehicle trips per day	NA	NA	NA
Parking spaces	NA	NA	NA
WATER/WASTEWATER			
Gallons/day (GPD) of water use	NA	NA	NA
GPD water withdrawal	NA	NA	NA
GPD wastewater generation/ treatment	NA	NA	NA
Length of water/sewer mains (in miles)	NA	NA	NA

Does the project change involve any <u>new or modified</u>:

1. conversion of public parkland or other Article 97 public natural resources to any purpose not in accordance with Article 97? ☐**Yes** ☒**No**
2. release of any conservation restriction, preservation restriction, agricultural preservation restriction, or watershed preservation restriction? ☐**Yes** ☒**No**
3. impacts on Rare Species**?** ☒**Yes** ☐**No**
4. demolition of all or part of any structure, site or district listed in the State Register of Historic Place or the inventory of Historic and Archaeological Assets of the Commonwealth? ☐**Yes** ☒**No**
5. impact upon an Area of Critical Environmental Concern? ☐**Yes** ☒**No**

If you answered 'Yes' to any of these 5 questions, explain below:

Within the MPMG Range footprint, the work will result in the disturbance of approximately 170.5 acres of pine barrens habitat that include Pitch Pine Oak Forest (PPOF), Pitch Pine Scrub Oak (PPSO), and Scrub Oak Shrubland (SOS). NHESP has determined that, as a result of the construction and operation of the MPMG Range, there will be a "take" of several State-listed lepidopterans (moths and butterfly) species identified on the site, and that there could potentially be a "take" of Eastern Box Turtle (*Terrapene carolina*), Eastern Whip-poor-will (*Caprimulgus vociferus*), and sandplain grassland bird species.

PROJECT CHANGE DESCRIPTION (attach additional pages as necessary). The project change description should include:

(a) a brief description of the project as most recently reviewed
(b) a description of material changes to the project as previously reviewed,
(c) if applicable, the significance of the proposed changes, with specific reference to the factors listed 301 CMR 11.10(6), and
(d) measures that the project is taking to avoid damage to the environment or to minimize and mitigate unavoidable environmental impacts. If the change will involve modification of any previously issued Section 61 Finding, include a draft of the modified Section 61 Finding (or it will be required in a Supplemental EIR).

This document serves as the Notice of Project Change (NPC) under the Massachusetts Environmental Policy Act (MEPA) for the construction of a Multi-Purpose Machine Gun (MPMG) Range project at Camp Edwards, Joint Base Cape Cod (JBCC), Sandwich, Massachusetts (see **Figure 1.1)** proposed by the Massachusetts Army National Guard (MAARNG). Certain projects and activities at Camp Edwards are subject to a Special Review Procedure (SRP) created and jointly executed by Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) and the MAARNG so that the process under MEPA could be used more efficiently for the long-term use of Camp Edwards. Implementation of the MPMG Range project would allow the MAARNG to fulfill their mission by meeting their weapons qualifications standards and training requirements using in-State facilities, and to maintain their readiness posture. Specifically, it would train and test Soldiers on the skills necessary to zero, detect, identify, engage, and defeat targets. It would further permit Camp Edwards to fulfill its mission by providing mission-required training.

The MPMG Range is proposed to be constructed at the existing location of a Known Distance (KD) Range (38.5 acres) which is located within mapped rare species habitat (see **Figures 1.2** to **1.5**). The KD Range was previously used for past ranges and training including disturbed areas that due to inactivity of the range are comprised of grassland habitat and immature pitch pine. The existing KD Range is not presently used for live fire training but is used for other training operations like unmanned aerial systems (UAS) training.

The proposed Project change consists of design plans for the MPMG Range proposed at the KD Range. This NPC is being submitted to satisfy the requirements of MEPA review to document a material change to a project. The MAARNG asserts that the MPMG Range project does not represent a significant change. As greater than 50 acres will be altered for this project, an Environmental Impact Report (EIR) will be required. We are requesting a Single EIR for this NPC. In addition, a Greenhouse Gas (GHG) Analysis is included in the NPC.

Initial planning for improvements to the KD Range and the proposed MPMG Range can be traced back to the 1980s and the Project was included in the Massachusetts Military Reservation (MMR[1]) Master Plan Final Report dated 8 September 1998 and has been included in subsequent MEPA filings; most recently in the Supplemental EIR for the Small Arms Range (SAR) Improvement Project (IP) in 2012. The MPMG Range has been consistently included in MEPA filings as Phase III of the SAR-IP.

The entire project site is located in mapped Priority Habitat as shown on **Figure 1.2**. The MAARNG has been working in close cooperation over the past two years with the Massachusetts Natural Heritage and Endangered Species Program (NHESP) to determine mitigation of rare species habitat impacts as a result of the MPMG Range project. In addition, MAARNG has been in communication regarding this Project with the Massachusetts

[1] The MMR was renamed the JBCC in 2013.

Department of Environmental Protection (MassDEP), the Environmental Management Commission (EMC), and the US Environmental Protection Agency (USEPA) as described within this NPC.

Other Permitting

The Project is regulated by other State and Federal agencies including the following: the EMC (see below), the MassDEP under the Massachusetts Contingency Plan (MCP), the USEPA for consistency with the Administrative Orders under the Safe Drinking Water Act, the US Fish and Wildlife Service (USFWS) under the Endangered Species Act (ESA), and by the NHESP under the Massachusetts Endangered Species Act (MESA). The MAARNG will coordinate with the Impact Area Groundwater Study Program (IAGWSP) to ensure the proposed MPMG Range construction and activities do not interfere with ongoing site investigations, restorations, and monitoring activities. Nonetheless, only one State permit is required; the Conservation and management Permit (CMP) from NHESP.

Environmental Management Commission

The EMC was created within the EOEEA by Chapter 47 of the Acts of 2002 and Executive Order (EO) 443. The purpose of the EMC is to provide permanent protection of the drinking water supply and wildlife habitat of the Upper Cape Water Supply Reserve (the Reserve), created as public conservation land by Chapter 47 of the Acts of 2002, by oversight, monitoring and evaluation of all military and other activities on the reserve to ensure they are consistent with this purpose. The Camp Edwards training ranges are co-located with and are within the Reserve.

The MAARNG has presented information regarding the proposed MPMG Range location and design to the EMC and its advisory councils, the Science Advisory Council (SAC) and the Community Advisory Council (CAC). The CAC assists the EMC by providing advice on issues related to the protection of the water supply and wildlife habitat on the reserve; and the SAC assists the EMC by providing scientific and technical advice relating to the protection of the drinking water supply and wildlife habitat on the Reserve. Finally, the EMC has participated in meetings with the MAARNG and MassWildlife to establish a mitigation bank and overall strategy to facilitate implementation of long-term planning efforts including modernization of the Camp Edwards range complex and infrastructure. EMC approval of the Project will be required.

Annual Reports

The MAARNG is required by MEPA to file annual "State of the Reservation" reports which presents information on special management and mitigation actions, total training utilization, coordination with other projects and programs including the IAGWSP, and the results of the environmental management programs compared against the standards listed in the EPS. These reports are made available to state environmental agencies, the EMC, SAC, and CAC and a notice of the availability is published in the Environmental Monitoring and posted on the MAARNG Environmental and Readiness Center (E&RC) website.

Project Description

The Project involves the construction of an eight lane MPMG Range with six lanes 800 meters long with a width of 25 meters at the firing line and a width of 100 meters at a distance of 800 meters. The two middle lanes (Lanes 5 and 6) will extend an additional 700 meters to a distance of 1,500 meters long to accommodate .50 caliber rifles. The proposed MPMG Range is depicted on **Figures 1.3** and **1.4**. Photographs are provided in **Figure 1.5**. The footprint of the Project would be 199 acres which includes improving the existing 600-yard KD Range comprised of approximately 38.5 acres and approximately 160.5 acres of additional ground disturbance and vegetation clearing. The range consists of three primary components: (1) the physical range footprint, consisting of the firing positions, targetry, (2) Range Operations Control Area (ROCA) support structures which includes a Range Control Tower, Ammunition Storage Building, Covered Bleachers, and other support features, and (3) the Surface Danger Zones (SDZs) and (4) firebreaks which are a critical component of the MPMG Range and are being developed as part of a Camp Edwards-wide firebreak and management plan.

Alternatives Analysis

The MAARNG developed and applied 13 criteria to screen and evaluate possible alternatives for the Project as

described in **Section 3.0**. The selection criteria were applied to available alternatives to determine which alternative(s) would fulfill the purpose and need for action including the No Action Alternative to assess any environmental consequences that may occur if the Project is not implemented. The alternatives analysis provides a description of the following alternatives

- Preferred Alternative (Project)
- Reduced-Scale Alternative
- Full Build Alternative
- No Action Alternative

The Preferred Alternative will be constructed in two phases. Phase 1 will be the Reduced-Scale Alternative, that is, eight lanes constructed at 800 meters in length. Phase 2 will add the extension of two lanes to a length of 1,500 meters to accommodate 0.50 caliber training. The acreages and estimated rare species impacts are provided below by phase. The Project is being phased to correspond with the MILCON (Military Construction) funding.

Impacts by Alternative

Alternative	800 meter lanes	1500 meter lanes	MPMG Range (acres)	Firebreak (acres)	Total Footprint (acres)	Tree clearing (acres)
Full Standard Build	10	4	294	12	306	267.5
Preferred Alternative	8	2	199	10	209	170.5
Reduced-Scale Alternative	8	0	128	10	138	99.5

** Without action, there will be an incremental loss of scrub oak shrubland habitat as described in **Section 4.6.1.3**.

Rare Species Impacts

Within the MPMG Range footprint, the work will result in the disturbance of approximately 170.5 acres of pine barrens habitat that include Pitch Pine Oak Forest (PPOF), Pitch Pine Scrub Oak (PPSO), and Scrub Oak Shrubland (SOS) natural communities as well as approximately 36 acres of existing Managed Grassland (MG) habitat within the KD Range footprint. NHESP has determined that, as a result of the construction and operation of the MPMG Range, there will be a "take" of several State-listed lepidopterans (moths and butterfly) species identified on the Site, and that there could potentially be a "take" of Eastern Box Turtle (*Terrapene carolina*), Eastern Whip-poor-will (*Caprimulgus vociferus*), and sandplain grassland bird species.

Accordingly, in order to provide a long-term net benefit to the impacted species for any MAARNG projects within Camp Edwards (including the MPMG Range project), the MAARNG proposes to use a combination of land transfers (i.e., "land protection") and establishment of a mitigation bank comprised of approximately 3,400 acres for pine barrens habitat, approximately 1,180 acres for forest cover retention, and approximately 250 acres for potential sandplain grassland creation. Mitigation specific to the MPMG Range includes the land transfer of 133 acres, the preservation of 177 acres of land within Camp Edwards, management of habitat within Camp Edwards, monitoring and research of rare species and associated habitat, and funding as described in **Section 6.7** and the draft CMP Application included as **Appendix B**.

Conservation and Management Plan

The MAARNG is preparing the CMP Application for submittal to NHESP for the MPMG Range. The CMP will also include the framework for future mitigation of other MAARNG projects at Camp Edwards in addition to the MPMG Range project. A part of the CMP Application is the Conservation and Management Plan (Plan) which outlines how impacts from the MPMG Range project will be mitigated with the actions described above. A copy of the draft CMP Application is provided as **Appendix B**.

ATTACHMENTS & SIGNATURES

Attachments:

1. Secretary's most recent Certificate on this project (see **Appendix A**)
2. Plan showing most recent previously-reviewed proposed build condition (see **Figure 1.3**)
3. Plan showing currently proposed build condition (see **Figure 1.4**)
4. Original U.S.G.S. map or good quality color copy (8-1/2 x 11 inches or larger) indicating the project location and boundaries (see **Figure 1.1**)
5. List of all agencies and persons to whom the proponent circulated the NPC, in accordance with 301 CMR 11.10(7) (see **Section 10.0**)

Signatures:

1.31.20		1/31/20	Katie Barnicle
Date	Signature of Responsible Officer or Proponent	Date	Signature of person preparing NPC (if different from above)

Keith J. Driscoll	Kathryn S. Barnicle, PWS
Name (print or type)	Name (print or type)
MAARNG	AECOM
Firm/Agency	Firm/Agency
Joint Force Headquarters	9 Jonathan Bourne Drive
Street	Street
Hanscom Air Force Base, MA 01731	Pocasset, MA 02559
Municipality/State/Zip	Municipality/State/Zip
339-202-3980	508-833-6953
Phone	Phone

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Acronyms

AFCEC ..... Air Force Civil Engineer Center
ANG ..... Air National Guard
ANGB..... Air National Guard Base
AO ..... Administrative Order
APE ..... Area of Potential Effect
AQCR..... Air Quality Control Region
ARF ..... Automatic Record Fire
ARNG..... Army National Guard
ARRM ..... Army Range Requirement Model
ASP..... Ammunition Supply Point
AT/FP ..... Antiterrorism and Force Protection
BOMARC..... Boeing and Michigan Aeronautical Research Center
BRAC ..... Base Realignment and Closure
CAA..... Clean Air Act
CAC..... Community Advisory Council
CACI ..... Clean Air Construction Initiative
Camp Edwards Camp Edwards Training Area
CEQ ..... Council on Environmental Quality
CERCLA ..... Comprehensive Environmental Response, Compensation and Liability
CFR ..... Code of Federal Regulations
CMP..... Conservation and Management Permit
CMR ..... Code of Massachusetts Regulations
CO ..... Carbon monoxide
CWG..... Citizens Working Group
MassDCR ..... Department of Conservation and Recreation
DoD ..... Department of Defense
DPF..... Diesel particulate filters
E..... Endangered
E&RC ..... Environmental & Readiness Center
EA..... Environmental Assessment
ECOP..... Environmental Condition of Property
EOEEA..... Executive Office of Energy and Environmental Affairs
EIR..... Environmental Impact Report
EIS ..... Environmental Impact Statement
EMC ..... Environmental Management Commission
EO..... Executive Order
EPS ..... Environmental Performance Standards
ESA ..... Federal Endangered Species Act
FCRA..... Forest Canopy Reserve Areas
FFA..... Federal Facility Agreement
FPPA ..... Farmland Protection Policy Act
FY ..... Fiscal Year
GHG ..... Greenhouse Gas
GW ..... Groundwater
IAGWSP..... Impact Area Groundwater Study Program
ICRMP..... Integrated Cultural Resources Management Plan
IICEP ..... Interagency and Intergovernmental Coordination for Environmental Planning
INRMP ..... Integrated Natural Resources Management Plan
ITAM..... Integrated Training Area Management
IWFMP..... Integrated Wildland Fire Management Plan
JBCC ..... Joint Base Cape Cod
KD ..... Known Distance
LSD ..... Low sulfur diesel
LUZ ..... Land Use Zone
MA ANG..... Massachusetts Air National Guard
MAARNG ..... Massachusetts Army National Guard
MassDEP ..... Massachusetts Department of Environmental Protection
MassWildlife .. Massachusetts Division of Fisheries and Wildlife
MA UASTC.... Massachusetts Unmanned Aircraft Systems Test Center
MCP..... Massachusetts Contingency Plan
MEC ..... Munitions and Explosives of Concern
MEPA..... Massachusetts Environmental Policy Act
MFR..... Memorandum For Record
MG..... Managed Grassland
MGL ..... Massachusetts General Laws
MHC..... Massachusetts Historical Commission
MILCON ..... Military Construction
MMR ..... Massachusetts Military Reservation
MOA..... Memorandum of Agreement

MOU..... Memorandum of Understanding
MPMG..... Multi-Purpose Machine Gun
MRF..... Modified Record Fire
MSL..... Mean Sea Level
NAAQS ..... National Ambient Air Quality Standards
NEPA..... National Environmental Policy Act
NGB..... National Guard Bureau
NGVD ..... National Geodetic Vertical Datum
NHESP ..... Natural Heritage and Endangered Species Program
NHPA ..... National Historic Preservation Act
NLEB..... Northern Long-Eared Bat
NPC ..... Notice of Project Change
OANGB..... Otis Air National Guard Base
OHM..... Oil and Hazardous Material
OMMP..... Operations, Maintenance, and Monitoring Plan
OTR..... Ozone Transport Region
PAL ..... Public Archaeological Lab
PCA ..... Pre-Construction Assessment
PM ..... Particulate Matter
PNF..... Project Notification Form
PPOF ..... Pitch Pine Oak Forest
PPSO ..... Pitch Pine Scrub Oak
ROCA..... Range Operations Control Area
ROI ..... Region of Influence
RRA..... Rapid Response Action
RTLA..... Range and Training Land Assessment
RTN..... Reporting Tracking Number
SAAQS..... State Ambient Air Quality Standards
SAC ..... Science Advisory Council
SAIA..... Sikes Act Improvement Act
SAR ..... Small Arms Range
SAR-IP ..... Small Arms Range-Improvement Plan
SARNAM..... Small Arms Range Noise Assessment Model
SC ..... Special Concern
SDZs..... Surface Danger Zones
SHPO..... State Historical Preservation Office
SIP ..... State Implementation Plan
SMRC..... Special Military Reservation Commission
SONMP ..... Statewide Operational Noise Management Plan
SOP..... Standard Operating Procedures
SOS..... Scrub Oak Shrubland
SOW ..... Statement of Work
SPCC ..... Spill Prevention Control and Countermeasure Plan
SR/ES ..... Source Registration Emissions Statement
SRA ..... Sustainable Range Awareness
SRP..... Special Review Procedure
STEP..... Status Tools for Environmental Program
SVL ..... Solider Validation Lane
SDWA ..... Safe Water Drinking Act
T..... Threatened
TAG..... The Adjutant General
TBD..... To Be Determined
The Reserve.... Upper Cape Water Supply Reserve
TRI..... Training Requirements Integration
TY..... Training Year
UAS..... Unmanned Aircraft Systems
USAF..... US Air Force
USAPHC ..... US Army Public Health Center
USC ..... US Code
USCG ..... US Coast Guard
USEPA ..... US. Environmental Protection Agency
USFWS..... US. Fish and Wildlife Service
UTES..... Unit Training Equipment Site
UXO ..... Unexploded Ordnance
VA ..... Veterans Administration
WL..... Watch List
XCTC ..... eXportable Combat Training Capability

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Summary Table and Definitions

Terms	Acres	Description
Joint Base Cape Cod (JBCC)	20,554	Full scale, joint-use base home to five military commands training for missions at home and overseas, conducting airborne search and rescue missions, and intelligence command and control.
Camp Edwards	15,000	Camp Edwards makes up the majority of JBCC and includes multiple training areas most of which is located within the Upper Cape Water Supply Reserve.
Camp Edwards Northern Training Area	14,410	Major training area for National Guard Soldiers in the northeast where they practice maneuvering exercises, bivouacking, and use the small arms ranges.
Upper Cape Water Supply Reserve	13,352	Established by Chapter 47 of the Acts of 2002 as public conservation land dedicated to: water supply and wildlife habitat protection; the development and construction of public water supply systems, and, use and training of military forces of the Commonwealth; provided that, military use and training is compatible with natural resource purposes of water supply and wildlife habitat protection..
Cantonment Area	5,000	The southern developed area of the JBCC with roads, utilities, office and classroom buildings, training support areas, and housing. Numerous Federal, State, and county entities are located here as well as the airfield.
Impact Area	2,200	Formal off-limits designation due to unexploded ordnance safety regulations. Area surrounds the Central Impact Area (below). An additional 1,600 acres are off-limits due to ordnance hazard, but not officially designated Impact Area.
Central Impact Area	330	This areas is located within the Impact Area and was the primary target area for artillery, mortar, and other firing activities from the early 1900s to 1997.
KD Range	38.5	Existing inactive range where the MPMG Range is proposed comprised of 36.0 acres of Managed Grasslands (previous mitigation for rare species impacts from another project) and 2.5 acres of ROCA.
MPMG Range Footprint	199.0	MPMG Range including 800 meter and 1,500 meter lanes and the ROCA.
MPMG Range-Specific Firebreak Footprint	10.0	Firebreaks to be constructed associated with the MPMG Range; including new roads and expansion of existing roads.
Project Footprint	209.0	MPMG Range Footprint plus MPMG Range-Specific Firebreak Footprint
Range Operations Control Area (ROCA)	2.5	Contains the Range Control Tower, Ammunition Storage Building, Covered Bleachers, and other support features (included in MPMG Range Footprint).
MPMG Range Rare Species Take Footprint	206.5	Project Footprint minus the ROCA acreage • 36.0 acres (existing) Managed Grassland at KD Range • 170.5 acres of Pine Barrens to be cleared (includes firebreaks)
Acres of Trees to be Cleared	170.5	Includes pine barrens and firebreaks.

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1.0 Project Summary

1.1 Project Information

Project Name: Multi-Purpose Machine Gun Range

EOEEA File No. 5834

Project Location: Existing KD Range, Camp Edwards, Joint Base Cape Cod, Sandwich, Massachusetts

Project Proponent: Massachusetts Army National Guard

This document serves as the Notice of Project Change (NPC) under the Massachusetts Environmental Policy Act (MEPA) for the construction of a Multi-Purpose Machine Gun (MPMG) Range Project at Camp Edwards, Joint Base Cape Cod (JBCC), Sandwich, Massachusetts (see **Figure 1.1)** proposed by the Massachusetts Army National Guard (MAARNG). Certain projects and activities at Camp Edwards are subject to a Special Review Procedure (SRP) created and jointly executed by Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) and the MAARNG so that the process under MEPA could be used more efficiently for the long-term use of Camp Edwards.

The MAARNG is proposing to construct and operate a MPMG Range (the Project) to be constructed at the existing 600-yard Known Distance (KD) Range that was previously used for training activities. The proposed Project change consists of design plans for the MPMG Range. This NPC is being submitted to satisfy the requirements of MEPA review to document a material change to a project. The MAARNG asserts that the MPMG Range Project does not represent a significant change. Since greater than 50 acres will be altered for this Project, an Environmental Impact Report (EIR) will be required. We are requesting a Single EIR for this NPC. In addition, a Greenhouse Gas (GHG) Analysis has been completed and is included in this NPC.

Initial planning for improvements to the KD Range and the proposed MPMG Range can be traced back to the 1980s and the Project was included in the Massachusetts Military Reservation (MMR[1]) Master Plan Final Report dated 8 September 1998 and has been included in subsequent MEPA filings; most recently in the Supplemental EIR for the SAR Improvement Plan (SAR-IP) in 2012. The MPMG Range has been consistently included in MEPA filings as Phase III of the SAR-IP.

Given the importance of the MPMG Range to the future operation and viability of the base, the MAARNG has taken its responsibilities under Massachusetts regulations extremely seriously. Therefore, the MAARNG has been working in close cooperation over the past two years with the Massachusetts Natural Heritage and Endangered Species Program (NHESP) to determine mitigation of rare species habitat impacts as a result of the MPMG Range Project. Camp Edwards is home the largest continuous pine barrens ecosystem outside of the New Jersey pine barrens and as such is home to numerous rare species and habitats.

[1] The MMR was renamed the JBCC in 2013.

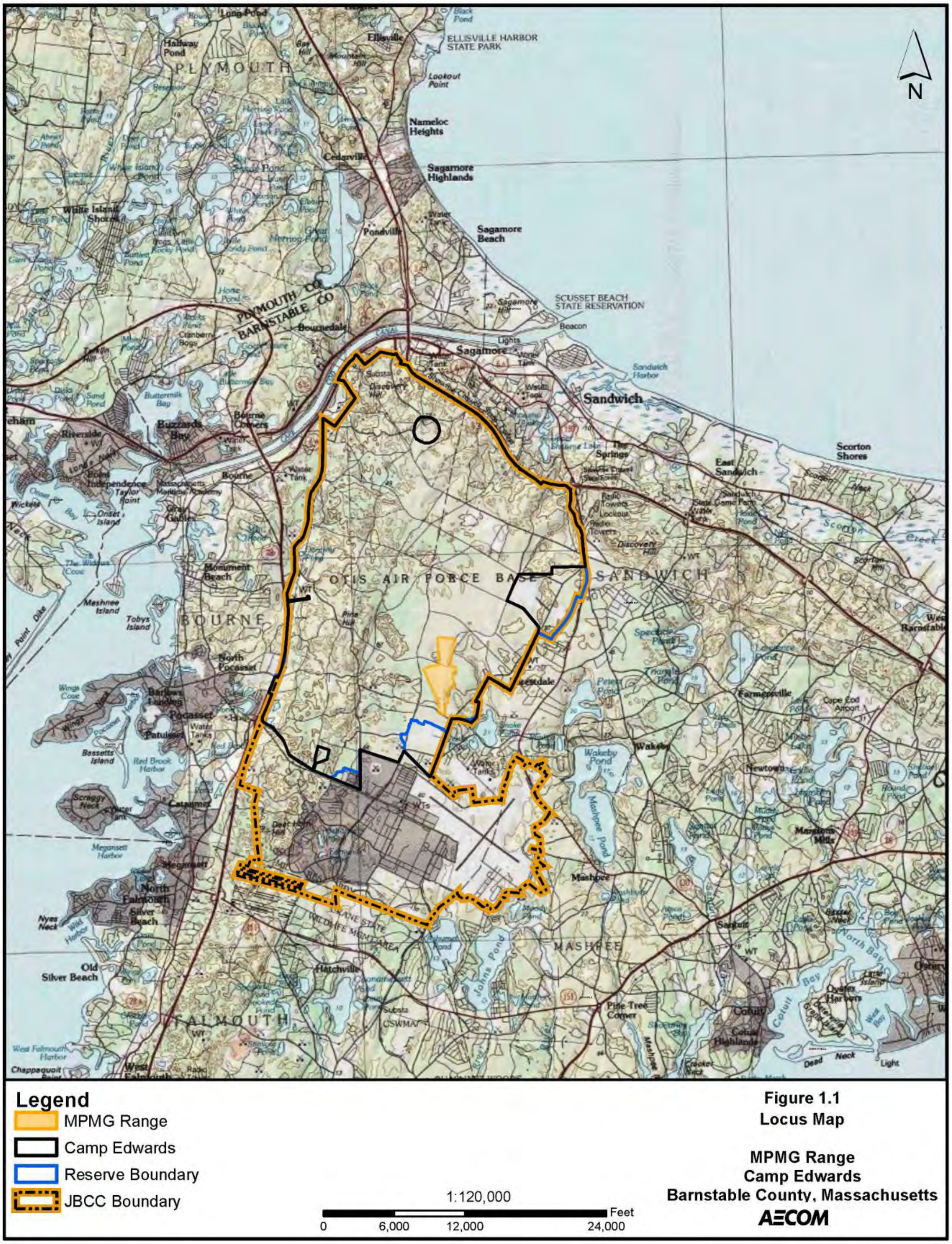


Figure 1.1
Locus Map

MPMG Range
Camp Edwards
Barnstable County, Massachusetts

In addition, MAARNG has been in communication with the Massachusetts Department of Environmental Protection (MassDEP), Environmental Management Commission (EMC), and U.S. Environmental Protection Agency (USEPA) relative to this Project.

The MAARNG has established a mutually respectful relationships with these agencies and the four towns in which Camp Edwards resides (Bourne, Falmouth, Mashpee, Sandwich). The MAARNG meets regularly with the EMC and its two supporting councils, the Science Advisory Council (SAC) and the Community Advisory Council (CAC) including pre-application meetings, development of presentations, public meeting facilitation, outreach, and informal and formal consultations. Documentation of agency coordination and meetings is detailed in **Section 1.3.7**.

1.2 Project Overview

The MAARNG is proposing to construct and operate a MPMG Range (the Project) to be constructed at the existing 600-yard Known Distance (KD) Range that was previously used for training activities. The KD Range was used between 1966 until 1997 when live (lead) ammunition and training activities at Camp Edwards were suspended by USEPA due to potential groundwater contamination concerns. Since 2006, the MAARNG has been actively planning and redeveloping various ranges at Camp Edwards for live-fire training exercises through the Small Arms Range Improvement Plan (SAR-IP) which incorporates Best Management Practices (BMPs) into any range development for pollution prevention and environmental protection. The existing KD Range is not presently used for live-fire training but is used for other training operations such as unmanned aircraft systems (UAS).

The entire Project Site is located in mapped Priority Habitat as shown on **Figure 1.2**. The MAARNG has been working in close cooperation over the past two years with NHESP to determine mitigation of rare species habitat impacts as a result of the MPMG Range Project. NHESP has determined that, as a result of the construction and operation of the MPMG Range, there will be a take of several State-listed lepidopterans (moths and butterfly) species identified on the Site, and that there could potentially be a take of Eastern Box Turtle (*Terrapene carolina*), Eastern Whip-poor-will (*Caprimulgus vociferus*), and sandplain grassland bird species.

1.3 Purpose and Need

The purpose of the Project is to provide the MAARNG with a mission required MPMG Range to allow the MAARNG to efficiently attain required training and weapons qualifications requirements within Massachusetts. The MPMG Range will provide Soldiers and units the necessary modernized training capabilities to be effective in contemporary and future operating environments. A priority for the MAARNG at Camp Edwards is the continued use and development of live-fire ranges to meet the requirement that all Soldiers qualify with their primary weapon systems annually.

The three closest MPMG ranges include Camp Ethan Allen in Jericho, Vermont located over 270 miles away, Fort Dix in Ocean County, New Jersey located over 300 miles away, and Fort Drum located in Jefferson County, New York located over 370 miles away (see **Figure 1.3**).

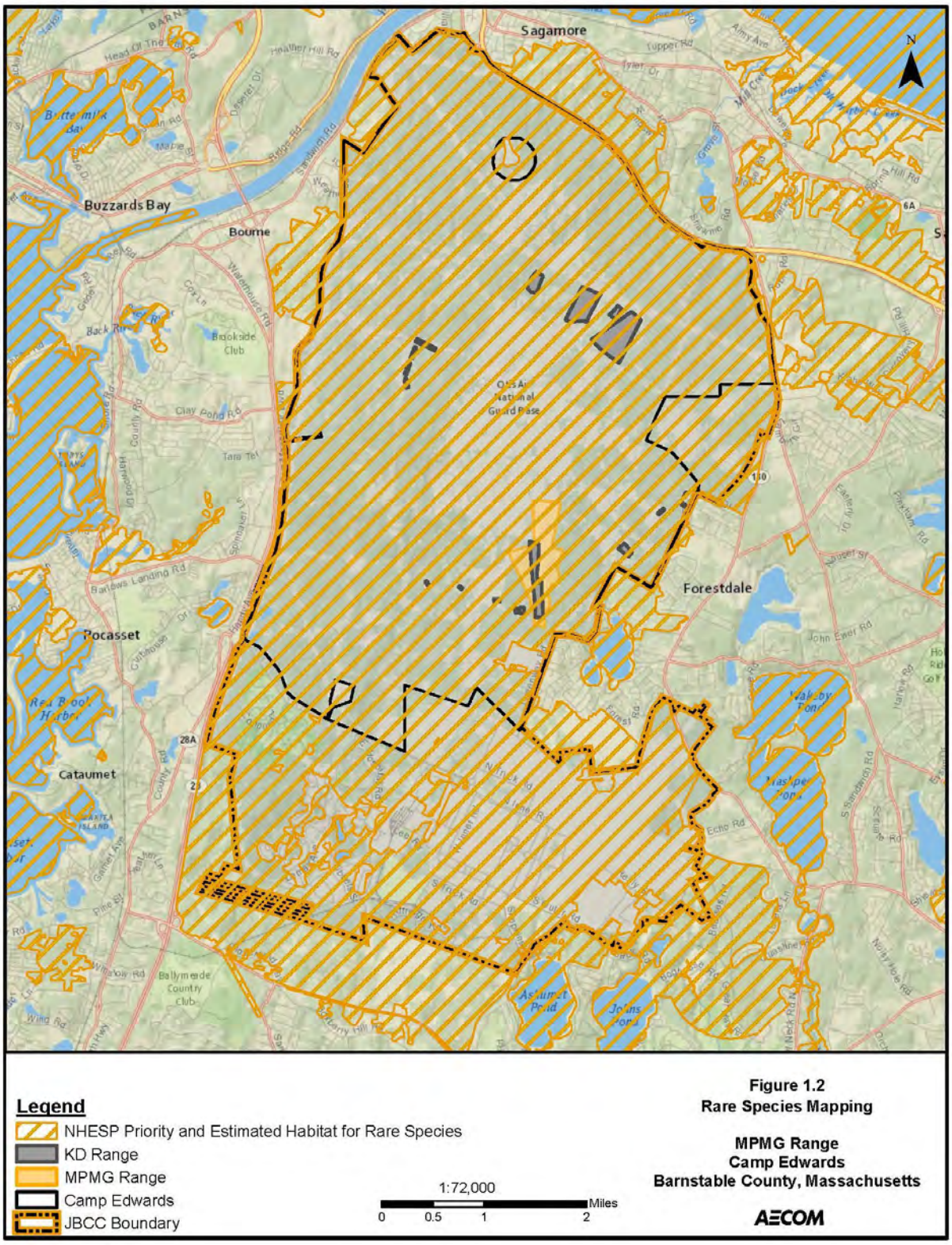

Sagamore
Buzzards Bay
Bourne
Forestdale
Pocasset
Cataumet
Brookside Club
Ballymeade Country Club
Otis Air National Guard Base
Clay Pond Rd
Barlows Landing Rd
John Ewer Rd
Echo Rd
Legend
NHESP Priority and Estimated Habitat for Rare Species
KD Range
MPMG Range
Camp Edwards
JBCC Boundary
1:72,000
0 0.5 1 2 Miles
Figure 1.2
Rare Species Mapping
MPMG Range
Camp Edwards
Barnstable County, Massachusetts
AECOM

Figure 1.3
Camps of the Northeast

MPMG Range
Camp Edwards
Barnstable County, Massachusetts

AECOM

The Project is needed to address shortfalls, based on force structure, in required small arms training facilities and capabilities within Massachusetts for units to train in-State and to meet mission training objectives in accordance with Federal laws, regulations, policies, and training guidelines. The Project is needed to allow multiple units to attain required weapons qualification levels simultaneously and efficiently. The Project would ensure the MAARNG provides a complete, sustainable, and viable training facility for its Soldiers to attain and maintain a full readiness posture. Implementation of the Project would support higher quality, mission-essential training activities at Camp Edwards, while limiting the need for travel to out-of-state training sites that cause the loss of critical training time and resources.

Camp Edwards encompasses approximately 15,000 acres of the approximately 20,554-acre Joint Base Cape Cod (JBCC) (see **Figure 1.1**) formerly called the Massachusetts Military Reservation or MMR. Within the JBCC are five military commands including: the MAARNG at Camp Edwards; the Massachusetts Air National Guard (MA ANG) at Otis Air National Guard Base; the U.S. Air Force (USAF) at Cape Cod Air Force Station; and the U.S. Coast Guard (USCG) at Air Station Cape Cod. Although the JBCC is situated within four towns, Bourne, Sandwich, Falmouth, and Mashpee, Camp Edwards lies only within the boundaries of Bourne and Sandwich.

The land that currently comprises Camp Edwards is owned by the Commonwealth of Massachusetts and is in custody of Massachusetts Department of Fish and Game, Division of Fisheries and Wildlife, which has leased the property to the Department of the Army. In turn, the Army licensed the land to the MAARNG for training. The current lease held by the Army expires in the year 2051. The proposed MPMG Range will be constructed on State-owned land leased to the Federal government.

JBCC is divided into two major sections. The southern section is comprised of approximately 5,000 acres of Cantonment Area, which is the industrialized portion of the JBCC where administrative buildings, barracks, vehicle and equipment maintenance shops, housing, and runways are located. The northern training area encompasses approximately 14,410 acres and is a largely wooded area with rolling topography, trails, and paved roads and includes training areas and ranges where small arms firing and maneuver training occur. The Impact Area is a 2,200-acre area that has a formal off-limits designation due to unexploded ordnance (UXO) safety regulations. It includes the 330-acre Central Impact Area which was the primary target area for artillery, mortar, and other firing activities from the early 1900s to 1997. In the northern portion of the Camp Edwards Training Area, 13,352 acres has been identified as the Upper Cape Water Supply Reserve (the Reserve) created by Chapter 47, Acts of 2002. Chapter 47 also transferred the care, custody, and control of the Reserve from the Special Military Reservation Commission (SMRC) to the Division of Fisheries and Wildlife.

1.4 Statutory and Regulatory Standards and Requirements

This section describes the various State and Federal environmental requirements including Camp Edwards-specific requirements and a history of MEPA reviews and actions at Camp Edwards.

1.4.1 Massachusetts Environmental Policy Act

The Project exceeds the following MEPA thresholds:

- 301 CMR 11.03(1)(a)1. (Land) Direct alteration of 50 or more acres of land.
- 301 CMR 11.03(2)(b)2. (Rare Species) Greater than two acres of disturbance in designated priority habitat that results in a take of State-listed Endangered or Threatened species or Species of Special Concern.
- 301 CMR 11.01(2)(a)2. The MAARNG is an Agency of the Commonwealth. As such, MEPA jurisdiction is broad as the Project will be undertaken by an Agency of the Commonwealth in accordance with 301 CMR 11.01(2)(a)1. In addition, Camp Edwards is located on State-owned land leased to the Federal government and licensed back to the MAARNG.

One State permit is required for the Project: Conservation and Management Permit (CMP) from NHESP

1.4.1.1 MEPA Special Review Procedure

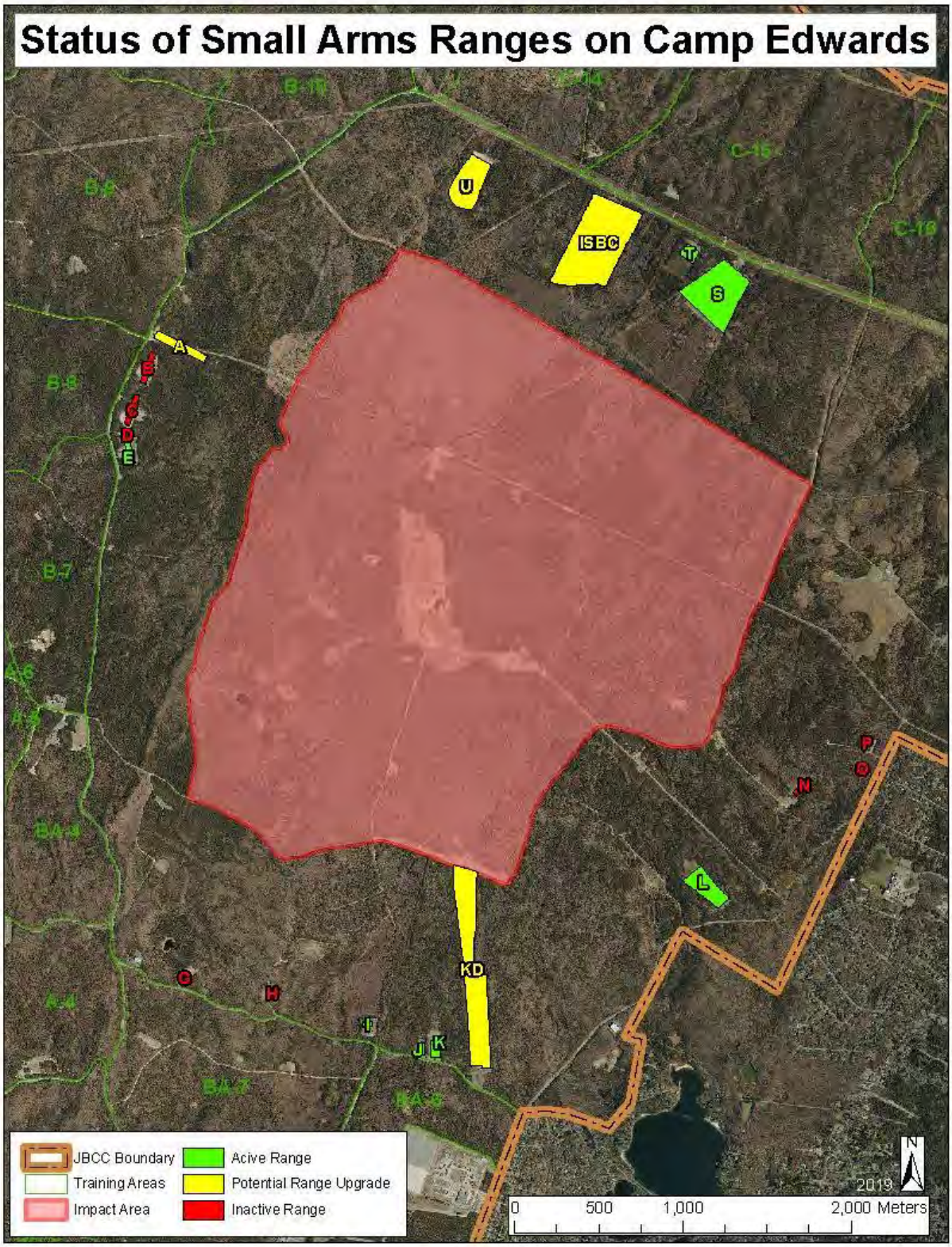
Certain project and activities at Camp Edwards are subject to a SRP created and jointly executed by EOEEA and MAARNG so that the process under MEPA could be used more efficiently for the long-term use of Camp Edwards. This NPC is being submitted in accordance with the requirements of the Certificate on the Final Area-Wide Environmental Impact Report (EIR) for the MMR Master Plan issued by MEPA on 16 July 2001 (see **Appendix A**).

As part of the MMR Master Plan, Camp Edwards was set aside for permanent protection of water supplies, wildlife habitat, and open space, while allowing compatible military training. The MMR Master Plan was submitted to MEPA as a NPC in 1997 and subsequently work at MMR was designated as a "major and complicated" project. The SRP was further detailed in the Certificate on the NPC and the Major and Complicated Procedure issued on 10 July 1997 (See **Appendix A**) and in other Certificates as noted below.

For MAARNG projects at Camp Edwards, the SRP includes "lowered thresholds" for MEPA reviews (in addition to the stand-alone MEPA thresholds at 301 CMR 11.03) including impervious areas (more than 0.5 acres), vegetative clearing (more than two acres), and any new building or structure (more than 500 s.f.) The Project, as proposed, does not exceed the lowered threshold for impervious area as approximately 0.9 acres of impervious areas presently exists at the KD Range and the proposed MPMG Range will have approximately 0.8 acres of impervious areas, a reduction of 0.1 acres. The Project, as proposed, does exceed the lowered threshold for vegetative clearing (approximately 170.5 acres of clearing is proposed), and new buildings and structures of more than 500 s.f. (six structures are proposed, five of which are greater than 500 s.f., totaling approximately 3,595 s.f. of new construction). In addition to the lowered thresholds, the SRP allows proposed actions to be reviewed using NPCs to be submitted under EOEEA #5834 and also provides expedited time frames.

1.4.1.2 MEPA Review History

Initial planning for improvements to the KD Range and the construction of the proposed MPMG Range can be traced back to the 1990s as it was included in the November 1996 Draft Environmental Impact Statement (EIS) and EIR for the MMR Facilities Upgrade. Master Planning submitted through MEPA extends as far back as 1986. The Project was included in the MMR Master Plan Final Report dated 8 September 1998 and has been mentioned in subsequent MEPA filings; most recently in the Supplemental EIR for the SAR-IP in 2012. See **Figure 1.4** for location of the small arms ranges at Camp Edwards.


Status of Small Arms Ranges on Camp Edwards
U
ISBC
T
S
A
B
C
D
E
KD
L
N
P
Q
G
H
I
J
K
JBCC Boundary
Training Areas
Impact Area
Acive Range
Potential Range Upgrade
Inactive Range
N
2019
0
500
1,000
2,000 Meters

Through the SRP, EOEEA required the creation of the Community Working Group (CWG) with members to include representatives from each town where JBCC resides (Falmouth, Mashpee, Sandwich, and Bourne), the Cape Cod Commission, various branches of the military stationed at the then MMR, and at-large members representing the Cape Cod public, who were tasked with developing a land use plan for the then MMR. After a lengthy, comprehensive, and open public process, in September 1998, the CWG issued and adopted its MMR Master Plan Final Report which divided the MMR into two primary land use zones: the Upper Cape Water Supply Reserve and the Cantonment Area. The Upper Cape Water Supply Reserve (or Reserve) composes the northern portion of the JBCC with a land area of 13,352 acres. The Cantonment Area composes the southern 5,000 acres of the JBCC.

The Final Area-Wide EIR for the MMR Master Plan Final Report proposed a set of Environmental Performance Standards (EPS) that included a prohibition on the use of lead-bullet ammunition at all Camp Edwards training areas. The Certificate on this Final EIR (issued on 16 July 2001) required MEPA review for future projects within the Camp Edwards Training Area that exceeded the stand-alone MEPA thresholds and the "lowered thresholds" specific for Camp Edwards for activities involving any new impervious area, vegetative clearing or other land alteration as detailed in the Informational Supplement to the Final EIR, submitted to MEPA on 15 August 2001. A copy of the 16 July 2001 MEPA Certificate (see **Attachment A**) outlines the SRP. The following is a description of the various NPCs submitted under this Certificate to date:

- On 15 February 2006, the MAARNG submitted a NPC to MEPA proposing upgrades at Bravo, Echo and Sierra Ranges (B, E, and S Ranges). On 24 March 2006, MEPA issued a Certificate indicating that the NPC would not require an EIR.
- On 15 September 2006, the MAARNG submitted a NPC to MEPA that described the SAR-IP designed to resume small arms weapons training at Camp Edwards using lead-bullet ammunition (which required the modification of one of the EPS), proposed bullet capture and containment systems, and proposed BMPs in a three-phased approach by range: I) Tango and Echo Ranges; II) SE/SW Range and A, J, and K Ranges; and III) KD Range and ISBC Range. On 9 November 2006, MEPA issued a Certificate allowing State permitting to proceed for the Tango and Echo Ranges and required the MAARNG prepare a Supplemental EIR to provide additional information on baseline conditions, pollution prevention plans, on-site remedial investigations of specific small arm ranges and an analysis of ammunition alternatives. The Supplemental EIR was filed on 15 August 2012 (as described below).
- On 9 July 2007, the MAARNG submitted a NPC to MEPA proposing a change of sequencing for range upgrades including upgrades to J and K Ranges under the SAP-IP. This work included installing bullet containment systems along with the resumption of firing lead-bullet ammunition. On 10 August 2007, MEPA issued a Certificate allowing State permitting to proceed for the J and K Range upgrades prior to the completion of the Supplemental EIR. The Supplemental EIR was filed on 15 August 2012 (as described below).
- On 23 December 2009, the MAARNG submitted a NPC to MEPA proposing a temporary installation of an eXportable Combat Training Capability (XCTC) System which consisted of installation of ten areas to simulate realistic conditions with 10,400 s.f. of structures. On 22 January 2010, MEPA issued a Certificate indicating that the NPC would not require the preparation of a Supplemental EIR.
- On 6 April 2011, the MAARNG submitted a NPC to MEPA proposing Solider Validation Lane

(SVL) training activities which included the placement of portable containers totaling 60,000 s.f. which would be modified to set up mock villages for realistic training. On 6 May 2011, MEPA issued a Certificate indicating that the NPC would not require preparation of a Supplemental EIR.

- On 15 August 2012, the MAARNG submitted the Supplemental EIR to MEPA that provided a detailed description of the MAARNG's proposed three-phase small arms range development program, and included a Pollution Prevention Plan (P2 Plan), range design plans, range rehabilitation/reuse plans, range management plans, and an overall environmental management strategy for the use of small arms ranges at Camp Edwards including the MPMG Range. The P2 Plan also included a selection of the most appropriate BMPs and an Operations, Maintenance and Monitoring (OMMP) Plan for individual small arms ranges for firing lead core ammunition. The Supplemental EIR provided the results of the MAARNG's lead fate and transport study, remedial investigations of SAR ranges, and an analysis of ammunition alternatives. On 29 September 2012, MEPA issued a Certificate which determined the Supplemental EIR to be adequate.
- On 15 January 2013, a NPC was filed by MAARNG for a change of site for the construction of a Unit Training Equipment Site (UTES) from the 3600 Area to the western portion of the BOMARC (Boeing and Michigan Aeronautical Research Center) site. On 22 February 2013, MEPA issued a Certificate indicating the NPC would not require the preparation of an EIR.

1.4.2 Massachusetts Endangered Species Act

State-listed rare species are protected under the Massachusetts Endangered Species Act (MESA) (MGL c. 131A) and implementing regulations (321 Code of Massachusetts Regulations [CMR] 10.00) which prevents a loss or take of State-listed rare species. The NHESP manages the State-listed species and implements the MESA regulations. As approximately 98% of Camp Edwards is located within mapped Priority Habitat (see **Figure 1.2**), all Projects need to be coordinated with the NHESP to ensure that there will be no take of any State-listed species. A CMP is being applied for pursuant to MESA and addresses mitigation for State-listed rare species as a result of possible impacts on pine barrens habitat and other future MAARNG projects. A copy of the Draft CMP Application is included as **Appendix B**.

The MAARNG is presently working with NHESP on developing a mitigation plan specifically for the MPMG Range Project through the pending submittal of the CMP Application. MAARNG has committed to a system of mitigation actions and strategies as outlined in **Section 6.7** which includes land preservation, management of rare species habitat, monitoring and research, and fire management. The mitigation strategies outlined in the CMP Application are not only for the MPMG Range but intended also as framework for mitigation to be used for other projects within Camp Edwards so as to manage the entirety of Camp Edwards for the net benefit of rare species.

1.4.3 Camp Edwards Regulations

As a result of the significance of Camp Edwards and the Reserve relative to groundwater protection, land area, rare species, military use, and soil and groundwater contamination, there are multi-layers of regulations specific to Camp Edwards. In addition to State regulations, projects and activities at Camp Edwards are subject to orders, acts, agreements, and Federal regulations including, but not limited to, the following described in greater detail in the sections below:

- Executive Orders (EO), Acts, Memorandums of Agreement (MOA)
- Camp Edwards Range Regulations and Standard Operating Procedures (SOPs)
- Oversight by EMC
- Camp Edwards Environmental Performance Standards (EPS)
- JBCC Groundwater Protection Policy
- National Environmental Policy Act (NEPA)
- Other Federal guidelines

1.4.3.1 Executive Orders, Acts, and Memorandums of Agreement

The following EO, Acts, and MOAs have been promulgated relative to the JBCC:

- EO 414 was approved by the Governor of Massachusetts in October 1999 which established the Upper Cape Water Supply Reserve within the northern 15,000 acres of the then MMR.
- Chapter 352 of the Acts of 2000 approved by the Commonwealth of Massachusetts created the Upper Cape Regional Water Supply Cooperative for the four towns to establish a supplementary supply of water from sources within the then MMR.
- Memorandum of Agreement (MOA) was signed on 4 October 2001 between the Commonwealth of Massachusetts and the U.S. Army and National Guard Bureau and established a long-term management structure for the northern 15,000 acres in order to ensure the "permanent protection of the drinking water supply and the wildlife habitat, and to ensure that military and other activities are compatible with protection of the drinking water supply and the wildlife habitat." This MOA also established the EMC and is included in **Appendix A**.
- EO 433 was approved by the Governor of Massachusetts in 5 October 2001 and further established the EMC.
- Chapter 47 of the Acts of 2002 created the Upper Cape Water Supply Reserve area as a public conservation land dedicated to the natural resource purposes of water supply and wildlife habitat protection and the development and construction of public water supply systems, and the use and training of the military forces of the Commonwealth; provided that, such military use and training is compatible with the natural resource purposes of water supply and wildlife habitat protection. This Act formally approved the EPS provided in the 2001 Final Area-Wide EIR.

1.4.3.2 Camp Edwards Range Regulations and Standard Operating Procedures

Range regulations provide guidance for the MAARNG for combat readiness training and establish uniform policies and procedures for facilities and training areas including, but not limited to, the following:.

- Range Regulation 350-1 (Training and Training Support)
- Range Regulation 385-1 (Range Safety)
- Camp Edwards Training Site 210-5 Range Control SOP (range operations and training activities)
- Camp Edwards Range Regulation 350-2 (Camp Edwards Operations and Training Requirements)

1.4.3.3 Environmental Management Commission

The EMC was created within the EOEEA by EO 443 and Chapter 47 of the Acts of 2002. The purpose of the EMC is to provide permanent protection of the drinking water supply and wildlife habitat of the Upper Cape Water Supply Reserve, created as public conservation land, by oversight, monitoring and evaluation

of all military and other activities on the Reserve. The Camp Edwards training ranges are co-located with and are within the Reserve.

The MAARNG has presented information regarding the proposed MPMG Range location and design to the EMC and its advisory councils, the Science Advisory Council (SAC) and the Community Advisory Council (CAC). The CAC assists the EMC by providing advice on issues related to the protection of the water supply and wildlife habitat on the reserve; and the SAC assists the EMC by providing scientific and technical advice relating to the protection of the drinking water supply and wildlife habitat on the Reserve. The EMC has participated in meetings with the MAARNG and MassWildlife to establish a mitigation bank for rare species and overall strategy to facilitate implementation of long-term planning efforts including modernization of the Camp Edwards range complex and infrastructure. EMC approval of the MPMG Range Project will be required.

The EMC consists of three members including the Commissioner of the Massachusetts Department of Fish and Game (DFG), the Commissioner of the Massachusetts Department of Conservation and Recreation (DCR); and the Commissioner of the MassDEP. The CAC and SAC hold public meetings and report to the EMC with their review of proposed projects.

The CAC assists the EMC on issues related to protection of the water supply and wildlife habitat in the Reserve. The 15-member CAC consists of one representative from each of the surrounding towns (Bourne, Falmouth, Mashpee, and Sandwich), one resident of base housing, two representatives from the military, one representative from the Cape Cod Commission, one representative from the Upper Cape Regional Water Supply Cooperative[2], one representative from the Wampanoag Tribe, and five other members appointed by the Governor. Meetings are held two times per year or as needed.

The SAC assists the EMC by providing scientific and technical assistance to the EMC as it relates to protection of natural resources of the Reserve. The SAC, appointed by the Governor, consists of scientists and engineers recognized for their expertise in the areas of public health, water protection, wildlife habitat management, and land use management. Meetings are held two to three times per year.

1.4.3.4 Camp Edwards Environmental Performance Standards

The EPS are standards for performance, that guide both military and civilian users (all users) in the protection of Camp Edwards' natural and cultural resources and the groundwater beneath the Reserve during compatible military training and civilian use activities, such as hunting. These standards apply to MAARNG properties at JBCC. The EPS were established in 2001 under EO 443 and Chapter 47, Acts of 2002. The 19 EPSs that, under the oversight of the EMC, regulate and guide training in the Reserve, include the following. Detailed analysis of the EPS relative to the Project is provided in **Section 7.3**.

1. Groundwater
2. Wetlands and Surface Water
3. Rare Species
4. Soil Conservation

[2] The Upper Cape Regional Drinking Water Supply Cooperative consists of three groundwater supply wells located in Sandwich on the Massachusetts Military Reservation. A Board of Managers representing four-member public water supply systems manages the Cooperative. http://www.falmouthmass.us/DocumentCenter/View/1237/2015-Upper-Cape-Cooperative-Water-Supply-PDF?bidId

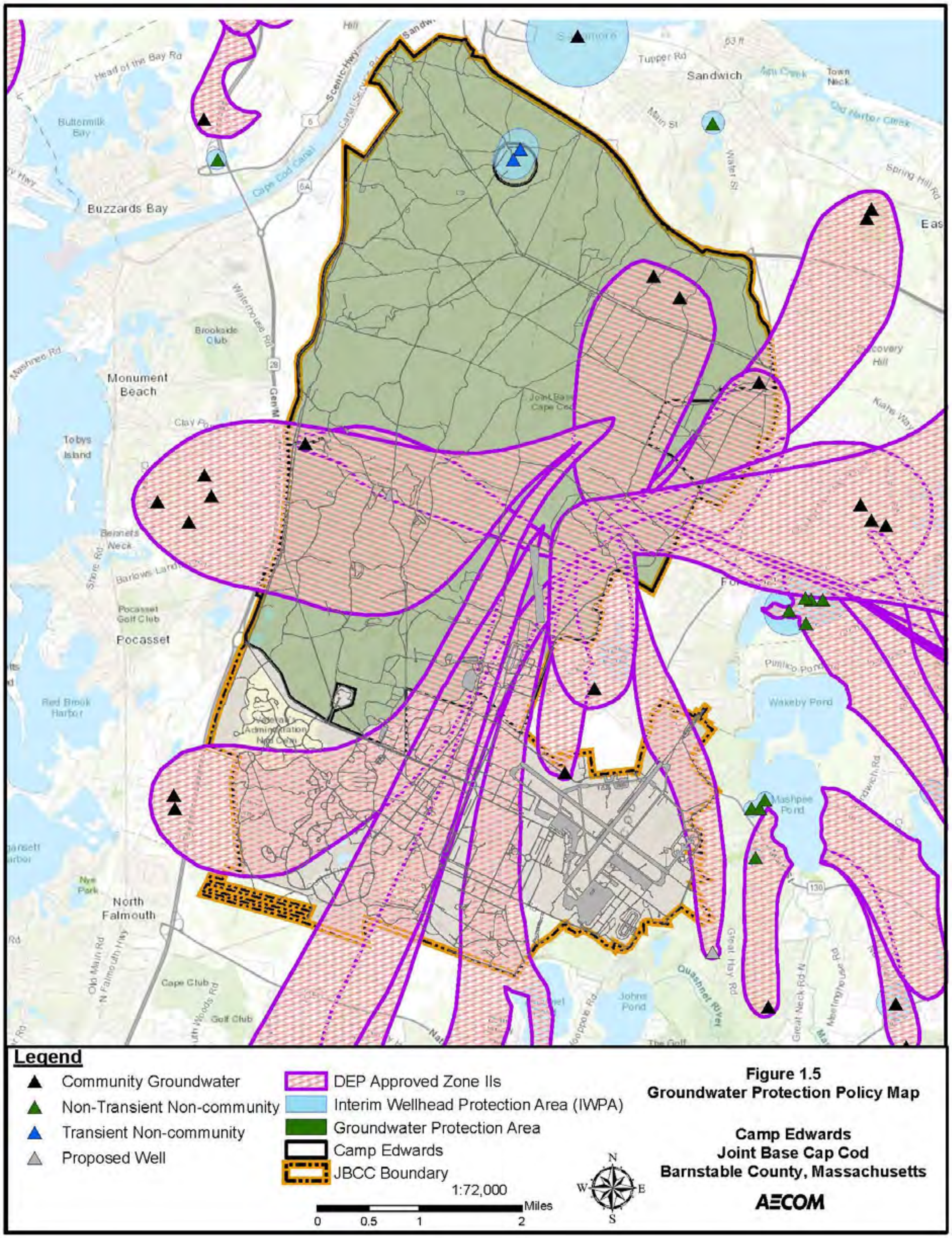
5. Vegetation Management
6. Habitat Management
7. Wildlife Management
8. Air Quality
9. Noise Management
10. Pest Management
11. Fire Management
12. Stormwater Management
13. Wastewater
14. Solid Waste
15. Oil and Hazardous Material
16. Hazardous Waste
17. Vehicle
18. General Use and Access
19. Range Performance Standards

1.4.3.5 JBCC Groundwater Protection Policy

The JBCC Groundwater Protection Policy was approved in January 2015 through a MOA between the MAARNG, MA ANG, USAF, and USCG to protect future and existing water supplies, control land use within Groundwater Protection Areas (i.e., Zone IIs and Interim Wellhead Protection Areas), to preserve the ecological integrity of water resources interconnected with groundwater beneath the JBCC, and to prevent temporary and permanent contamination of the subsurface environment. All users of the Camp Edwards Training Area must comply with the provisions of the Groundwater Protection Policy and any future amendments or revisions to the restrictions and requirements. These will apply to all uses and activities within the overlays relative to Wellhead Protection, Zone II's within the Cantonment Area, and the Camp Edwards Training Areas (see **Figure 1.5)**.

1.4.4 National Environmental Policy Act

MAARNG has developed an Environmental Assessment (EA) prepared under the provisions of, and in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [USC] 4321 et seq.), the Council on Environmental Quality (CEQ) Regulations Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and 32 CFR 651 (Environmental Analysis of Army Actions, Final Rule, 29 March 2002). This EA will facilitate the decision-making process regarding the Project and its alternatives considered by the MAARNG through input from Federal agencies and the National Guard Bureau. This includes consultations with the U.S. Fish and Wildlife Service (USFWS) for Federally-listed species.


Legend
Community Groundwater
Non-Transient Non-community
Transient Non-community
Proposed Well
DEP Approved Zone IIs
Interim Wellhead Protection Area (IWPA)
Groundwater Protection Area
Camp Edwards
JBCC Boundary
1:72,000
Miles
0
0.5
1
2
N
W
E
S
Figure 1.5
Groundwater Protection Policy Map
Camp Edwards
Joint Base Cap Cod
Barnstable County, Massachusetts
AECOM
Buzzards Bay
Sandwich
Monument Beach
Pocasset
North Falmouth
Wakeby Pond
Mashpee Pond
Cape Cod Canal

1.4.5 Sikes Act Improvement Act

The Sikes Act Improvement Act (SAIA) of 1997, 16 USC §670a *et seq.*, as amended, requires Federal military installations and State-owned National Guard facilities with adequate wildlife habitat to develop a long-range Integrated Natural Resource Management Plan (INRMP) and implement cooperative agreements with other agencies. The INRMP is the primary guidance document and tool for managing natural resources at Camp Edwards. This INRMP integrates all aspects of natural resources management with the rest of MAARNG's mission, and therefore becomes the primary tool for managing the ecosystems and habitats at Camp Edwards while ensuring the successful accomplishment of the military mission at the highest possible levels of efficiency. The INRMP is presently being updated.

1.4.6 Other Federal Guidelines

Project and activities at Camp Edwards are subject to Federal laws, regulations, executive orders, policies, and guidance including, but not limited to, the following:

Table 1-1: Federal Laws, Regulations, and Guidance

EO 12372 (Intergovernmental Review of Federal Programs) EO 13175 (Consultations and Coordination with Indian Tribal Governments) 10 USC 10501 16 USC 1452 32 CFR 190 – Appendix-Integrated Natural Resources Management 32 CFR 651 – Environmental Effects of Army Actions 40 CFR 1500.2a 40 CFR 1501 40 CFR 1502.14 42 USC 4331 (NEPA) AR 200-1 – Environmental Protection and Enhancement AR 210-9 – Use of Off-Road Vehicles on Army Lands AR 315-19 – The Army Sustainable Range Program AR 385-63 - Range Safety AR 405-80 – Granting Use of Real Estate AR 415-15 – Army Military Construction	AR 420-40 – Fire and Emergency Services AR 420-40 – Historic Preservation DA PAM 200-4 – Cultural Resources Management DA PAM 350-38 – Standards in Training Commission, STRAC DA PAM 385-63 – Range Safety DA PAM 415-12 – Army National Guard Facilities DoD 5105.77 DoDI 4710.02 – DoD Interactions with Federally Recognized Tribes DoDI 4715.03 – Environmental Conservation Program DoDI 6055.6 – DoD Fire and Emergency Service Program NGR 385-63 (Range Safety) NGR 5-3 – Management of Army National Guard Training Centers TC 25-1 (Training Land) TC 25-8 (Training Ranges) UFC 4-010-01 – DoD Minimum Antiterrorism Standards for Buildings

The Project is regulated by other State and Federal agencies including the following: the EMC (see below), the MassDEP under the Massachusetts Contingency Plan (on call MCP), the US Fish and Wildlife Service (USFWS) under the Endangered Species Act (ESA), and by the NHESP under the Massachusetts Endangered Species Act (MESA). The MAARNG will coordinate with the Impact Area Groundwater Study Program (IAGWSP) to ensure the proposed MPMG Range construction and activities do not interfere with ongoing site investigations, restorations, and monitoring activities. The IAGWSP began in 1997 following an Administrative Order from the USEPA to cleanup groundwater contamination at Camp Edwards including the removal of potential contamination sources and UXO.

1.4.7 Agency Coordination

The following is a tabulation of the agency coordination that has occurred within the past few years regarding the MPMG Range. This is not an exhaustive list and there are likely additional meetings and correspondence not captured here. This list highlights show the extensive efforts and thorough pre-planning the MAARNG has had with local, State, and Federal agencies and with community groups. This pre-planning has been in addition to the long-term planning that has occurred for the MPMG Range dating back to the 1980s within the MEPA process. Communication and coordination between MAARNG and these State agencies continues regarding the MPMG Range Project. The MAARNG has established mutually respectful relationships with these agencies and the four towns in which Camp Edwards resides (Bourne, Falmouth, Mashpee, Sandwich). The MAARNG meets regularly with the EMC, the SAC and the CAC including pre-application meetings, development of presentations, public meeting facilitation, outreach, and informal and formal consultations as described below. This list provides a summary of the type of reporting, discussions, or actions that involved the MPMG Range. MEPA documents involving the MPMG Range are listed in **Section 1.4.1**.

Annual State of the Reservation Reports

In accordance with the provisions of the final MEPA certificate issued on 16 July 2001, the Camp Edwards Environmental & Readiness Center (E&RC) publishes an Annual State of the Reservation Report for each training year. As required by Chapter 47, Acts of 2002, copies of the report have been provided to the EMC, SAC, and CAC. Copies are made available at the town libraries in Bourne, Sandwich, Mashpee, and Falmouth. A notice of availability is published in the Environmental Monitor annually.

Community Advisory Council (CAC)

The 15-member CAC consists of one representative from each of the surrounding towns (Bourne, Falmouth, Mashpee, and Sandwich), one resident of base housing, two representatives from the military, one representative from the Cape Cod Commission, one representative from the Upper Cape Regional Water Supply Cooperative, one representative from the Wampanoag Tribe, and five other members appointed by the Governor.

- Minutes of Meeting 2 May 2018
- Minutes of Meeting 4 October 2018

Science Advisory Council (SAC)

The SAC assists the EMC by providing scientific and technical assistance to the EMC as it relates to protection of natural resources of the Reserve. The SAC, appointed by the Governor, consists of scientists and engineers recognized for their expertise in the areas of public health, water protection, wildlife habitat management, and land use management.

- Minutes of Meeting 2012 September
- Minutes of Meeting 18 May 2017
- Minutes of Meeting 10 May 2018
- Minutes of Meeting 20 September 2018

Environmental Management Commission (EMC)

The EMC was created within the EOEEA by EO 443 and Chapter 47 of the Acts of 2002. The purpose of the EMC is to provide permanent protection of the drinking water supply and wildlife habitat of the Upper Cape Water Supply Reserve, created as public conservation land, by oversight, monitoring and evaluation of all military and other activities on the Reserve. EMC has reviewed the MPMG Range plans at the 20%, 30%, and 65% design stages.

- Minutes of Meeting 8 June 2016
- Minutes of Meeting 25 October 2018
- Minutes of Meeting 23 May 2019

NHESP

The NHESP implements MESA and has been working closely with the MAARNG to develop a comprehensive rare species mitigation plan for the MPMG Range for the net benefit of the species at Camp Edwards.

- Conference Call 26 February 2019
- Updated Species List 16 August 2019
- Conference Call 17 December 2019
- Upcoming Meeting 5 February 2020

Massachusetts Historical Commission (MHC)

A Project Notification Form (PNF) was submitted to MHC for comment on 23 October 2019. No comments were received and a Memorandum For Record (MFR) is included in **Appendix E** documenting this correspondence.

State Agency Site Visit

Recently, on 8 August 2019, the MAARNG hosted a site visit for State agencies to view the proposed MPMG Range site and rare species mitigation areas within Camp Edwards. In attendance were representatives from the EMC, MEPA, and NHESP.

- MEPA, EMC, NHESP 8 August 2019

Neighborhood Mailings

Camp Edwards conducted a test fire at KD Range in August 2015, to simulate noise from the proposed MPMG range in the Southern Location Alternative. A mailing was sent to neighbors identifying the time and date that the noise test was to take place and requested comments regarding the test any noises heard.

- Noise Test mailing to 700 neighbors (14 responses) 2015

Interagency and Intergovernmental Coordination for Environmental Planning (IICEP)

IICEP is required as part of the Federal NEPA process in order to request information from local, State, and Federal Agencies, and other interested parties for input in the preparation of the EA. Letters were sent on 7 August 2019 to the following agencies. Only three comment letters were received from the EMC, USEPA, and the MassDCR. The comment letters received were used to assist in the preparation of this NPC. Comment letters are provided in **Appendix E**. Response to the comment letters is provided in **Section 8.0.**

- Cape Cod Commission
- Cape Cod Conservation District
- EMC
- EOEEA
- MassDCR
- MassDEP
- MHC
- NHESP
- Town of Bourne
- Town of Falmouth
- Town of Mashpee
- Town of Sandwich
- University of Massachusetts Amherst
- U.S. Army Corps of Engineers
- U.S. Department of Agriculture
- USEPA
- USFWS

Native American Consultation (NAC)

A separate but similar process to the IICEP occurred under the Native American Consultation (NAC). Letters were sent on 7 August 2019. No comment letters have been received.

- Mashpee Wampanoag Tribe
- Wampanoag Tribe of Gay Head (Aquinnah)
- Stockbridge-Munsee Community, Band of Mohican Indians of Wisconsin

Special Military Reservation Commission (SMRC)

The MMR (now JBCC) was established by the Massachusetts legislature in Chapter 196 of the Acts of 1935, which created the Special Military Reservation Commission and authorized it to acquire certain lands in the towns of Sandwich, Bourne, Falmouth and Mashpee for military purposes.

- Meeting 10 April 2019
    - The SMRC voted on this date to transfer SMRC Tracts 1-4 (128 acres) to the Massachusetts Department of Fish and Wildlife. he transfer of these parcels along with the previously transferred Parcel 5 (135 acres) is an integral part of the mitigation strategy for the MPMG.

Impact Area Groundwater Study Program (IAGWSP)

The MAARNG is coordinating with the IAGWSP regarding any UXO removal and to ensure the proposed MPMG Range construction and activities do not interfere with ongoing site investigations, restorations, and monitoring activities.

1.5 Summary of Alternatives Analysis

The MAARNG developed and applied 13 criteria to screen and evaluate possible alternatives for the Project as described in **Section 3.0**. The selection criteria were applied to available alternatives to determine which alternative(s) would fulfill the purpose and need for action including the No Action Alternative to assess any environmental consequences that may occur if the Project is not implemented. The alternatives analysis provides a description of the following alternatives

- Preferred Alternative (Project)
- Reduced-Scale Alternative
- Full Build Alternative
- No Action Alternative

The Preferred Alternative will be constructed in two phases. Phase 1 will be the Reduced-Scale Alternative, that is, eight lanes constructed at 800 meters in length. Phase 2 will add the extension of two lanes to a length of 1,500 meters to accommodate 0.50 caliber training. The acreages and estimated rare species impacts are provided below by phase. The Project is being phased to correspond with the MILCON (Military Construction) funding.

Table 1-2: MPMG Range Phased Construction

Phase	Alternative	800 Meter Lanes	1,500 Meter Lanes	Total Acreage *	Rare Species Impacts
Phase 1	Reduced-Scale Alternative	8	0	133.0	94.5
Phase 2	Construction of 1,500 Meter Lanes	0	2	76.0	76.0
TOTAL	**Preferred Alternative (Project)**	**8**	**2**	**209.0**	**170.5**

* With approximately 5.0 acres of firebreaks included in each phase

1.6 Summary of Mitigation Measures

Mitigation measures proposed for the MPMG Range construction and operation fall into the following categories as described in **Section 6.0**. The following bullets refer to those environmental resources where mitigation is proposed.

- Greenhouse Gas
- Noise
- Biological Resources
- Endangered, Threatened, and Rare Species

- Oil and Hazardous Materials
- Construction Phasing
- Best Management Practices

The mitigation proposed for the rare species is identified below and is presently being discussed with NHESP. These measures will also provide mitigation for other impacts areas including GHG emissions.

- Approximately 133 acres within the 15,000-acres Camp Edwards will be preserved in perpetuity as open space through the transfer of land to MassWildlife. The land is identified as the 133-acre Tract 5 located within the towns of Falmouth, Bourne, and Sandwich along the JBCC and abuts the Crane Wildlife Management Area.
- Approximately 177 acres of land has been identified by MAARNG to set aside for land preservation with management of vegetation for rare species. This land is identified as a Forest Canopy Reserve Area.
- Approximately 36 acres of has been identified for grassland management for rare species. This land is identified as a Grassland Mitigation Focal Area.
- The proponent will monitor the MPMG Range construction area prior to, and during construction, to remove Eastern Box Turtles from the construction areas.
- MAARNG will provide construction staff with information and materials about the likely presence of State-listed species and appropriate responses to any sightings
- MAARNG will implement a Turtle Protection Plan during the construction phase of the project Eastern Box Turtles.
- MAARNG will restore grassland habitat in an acreage to be determined in the CMP in order to optimize conditions for grassland species.
- MAARNG will monitor Eastern Box Turtles and other species to be determined for a period to be determined after the construction of the project to assess the effectiveness of mitigation measures.
- MAARNG will implement a long term monitoring and management plan to maintain habitat quality within the pine barrens.
- The schedule for implementing mitigation efforts began in 2019 and will continue through to 2025 and beyond.
- The cost of the mitigation is more fully detailed in the draft CMP Application. Financial resources are budgeted for the proposed actions through Federal (Army, National Guard Bureau) funding.
- Mitigation funding for range MILCON projects is through the environmental budget of Army National Guard (ARNG) while facilities projects are through a combination of environmental (e.g., staff) and installation funding. Environmental funding is entered through the Status Tool for Environmental Programs (STEP) and is maintained with a seven-year budget.
- The MAARNG will be funding the various habitat management actions proposed as described in the plan.
- Monitoring and research funding is also detailed more fully in the CMP Application which identifies actions and associated costs through to 2025.

2.0 Project Description

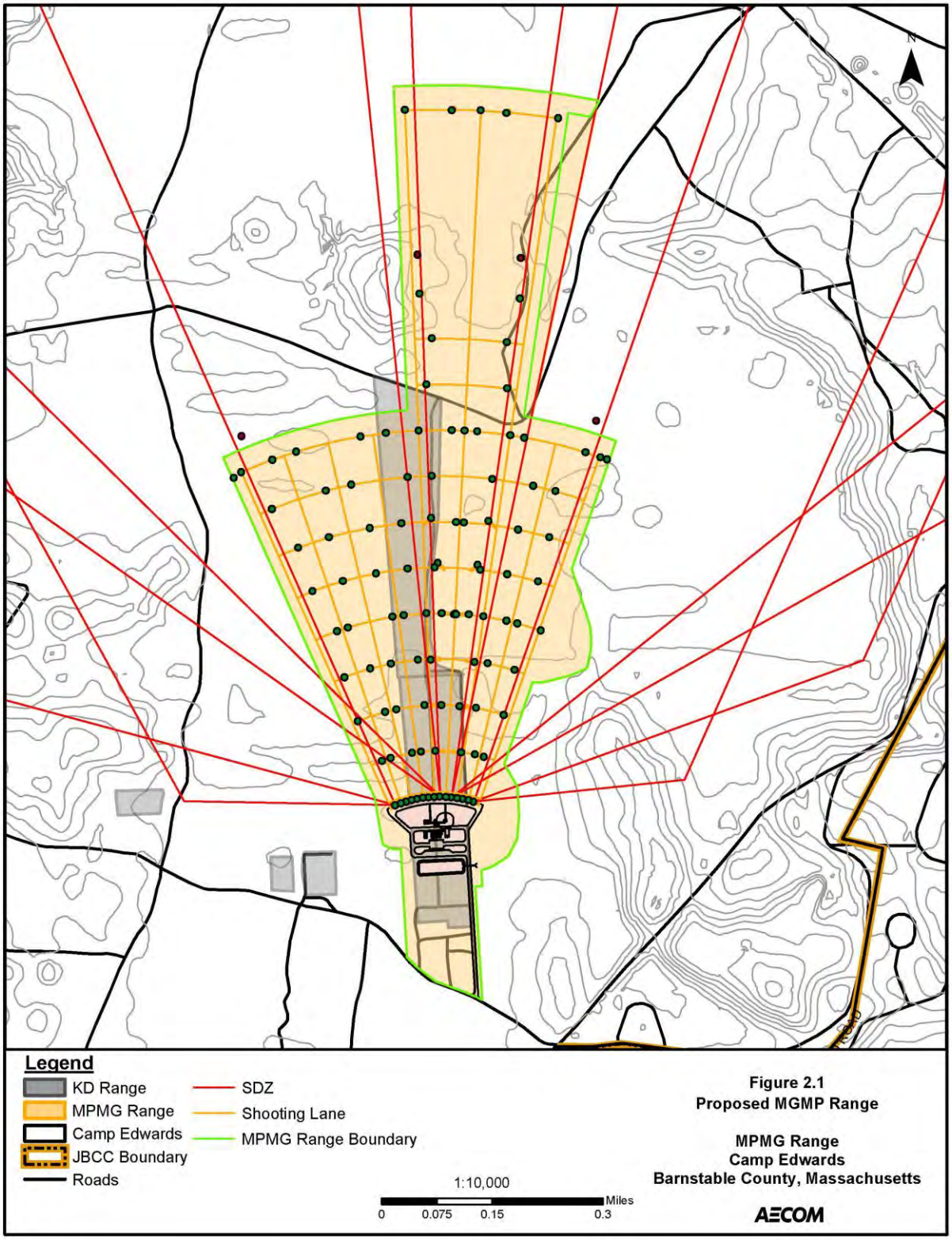
The Project involves the construction of an eight lane MPMG Range with six lanes 800 meters long with a width of 25 meters at the firing line and a width of 100 meters at a distance of 800 meters. The two middle lanes (Lanes 5 and 6) will extend an additional 700 meters to a distance of 1,500 meters long to accommodate .50 caliber rifles. The proposed MPMG Range is depicted on **Figure 2-1**. The footprint of the Project is 199.0 acres which includes improving the existing 600-yard KD Range comprised of approximately 38.5 acres (36.0 acres managed grasslands, 2.5 acres existing range control area) and approximately 170.5 acres of vegetation clearing for range construction and firebreaks. The range consists of four primary components: (1) the physical range footprint, consisting of the firing positions, targetry (see **Section 2.1**), (2) Range Operations Control Area (ROCA) support structures (i.e., as specified in TC 25-8); which includes a Range Control Tower, Ammunition Storage Building, Covered Bleachers, and other support features (see **Section 2.2**), (3) the Surface Danger Zones (SDZs) (see **Section 2.3**), and (4) firebreaks (see **Section 2.4**).

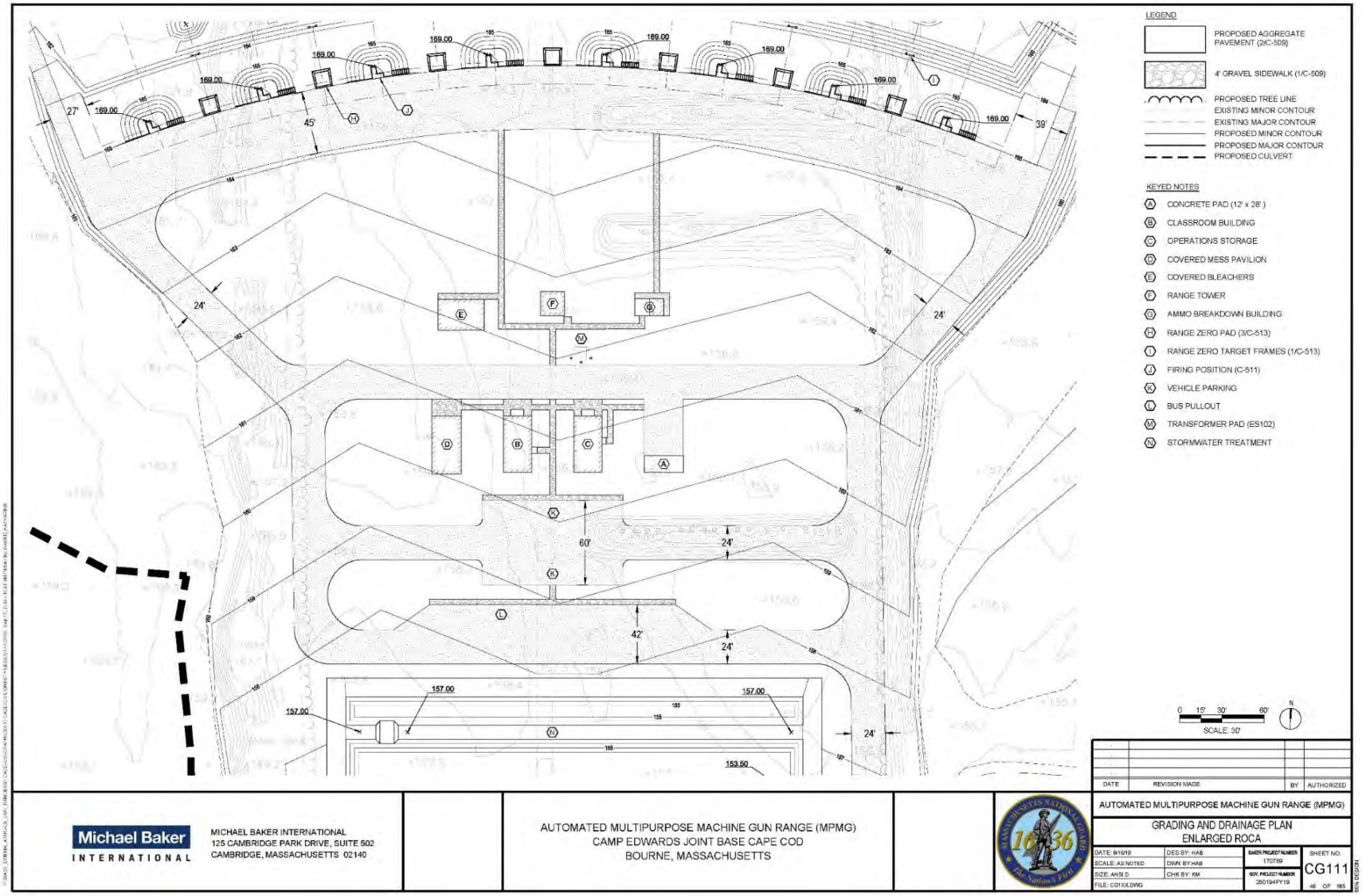
Implementation of the Project would allow the MAARNG to fulfill their mission by meeting their weapons qualifications standards and training requirements using in-State facilities, and to maintain their readiness posture. Specifically, it would train and test Soldiers on the skills necessary to zero, detect, identify, engage, and defeat targets. Range Area

The firing line of the proposed Project has been designed approximately 100 meters north of the existing firing line. Stationary Infantry Targets (SITs) would be emplaced at approximately 100-meter intervals from the firing position at 100, 200, and 300 meters from the firing line. Moving Infantry Targets (MITs) would be emplaced in the center lanes between 100 and 600 meters. Widened Stationary Infantry Targets (WSITs) and Double Target Arms (DTAs) would be emplaced at between 400 and 800 meters. Individual Movement Techniques (IMTs) would be emplaced between 800 and 900 meters. Stationary Armor Targets (SATs) would be emplaced between 1,000 and 1,500 meters from the firing line within the two extended lanes. This range configuration is shown on **Figure 2.1**. Design plans are provided in **Appendix C**.

2.1 Range Operations and Control Areas

The ROCA is the center for overall control and operation of the range, training exercises, administrative services, and support facilities. The ROCA includes the area for target control, range safety, and training evaluation, generally the Range Control Tower. There is an area for range maintenance, centered at the Operations and Storage Facility. There is an area for pre- and post-training instruction, centered at the Classroom or After-Action Review (AAR) and the Bleacher Enclosure. Ranges also have areas for non-training support including the Covered Mess Shelter. ROCA facilities that directly support the live-fire function of the range include the Ammunition Breakdown Building, the unit staging area, and the vehicle instrumentation doc. The ROCA at the proposed MPMG Range will be comprised of the following primary facilities and associated square footages (s.f.), as shown on **Figure 2.2**:


N
Legend
KD Range
MPMG Range
Camp Edwards
JBCC Boundary
Roads
SDZ
Shooting Lane
MPMG Range Boundary
1:10,000
0 0.075 0.15 0.3
Miles
Figure 2.1
Proposed MGMP Range
MPMG Range
Camp Edwards
Barnstable County, Massachusetts
AECOM


LEGEND
PROPOSED AGGREGATE PAVEMENT (2/C-509)
4' GRAVEL SIDEWALK (1/C-509)
PROPOSED TREE LINE
EXISTING MINOR CONTOUR
EXISTING MAJOR CONTOUR
PROPOSED MINOR CONTOUR
PROPOSED MAJOR CONTOUR
PROPOSED CULVERT
KEYED NOTES
A CONCRETE PAD (12' x 28')
B CLASSROOM BUILDING
C OPERATIONS STORAGE
D COVERED MESS PAVILION
E COVERED BLEACHERS
F RANGE TOWER
G AMMO BREAKDOWN BUILDING
H RANGE ZERO PAD (3/C-513)
I RANGE ZERO TARGET FRAMES (1/C-513)
J FIRING POSITION (C-511)
K VEHICLE PARKING
L BUS PULLOUT
M TRANSFORMER PAD (ES102)
N STORMWATER TREATMENT
SCALE: 30'
DATE REVISION MADE BY AUTHORIZED
Michael Baker INTERNATIONAL
MICHAEL BAKER INTERNATIONAL
125 CAMBRIDGE PARK DRIVE, SUITE 502
CAMBRIDGE, MASSACHUSETTS 02140
AUTOMATED MULTIPURPOSE MACHINE GUN RANGE (MPMG)
CAMP EDWARDS JOINT BASE CAPE COD
BOURNE, MASSACHUSETTS
AUTOMATED MULTIPURPOSE MACHINE GUN RANGE (MPMG)
GRADING AND DRAINAGE PLAN
ENLARGED ROCA
SHEET NO.
CG111

- Range Control Tower (657 s.f.)
- Range Operations and Storage Facility (800 s.f.)
- Ammunition Breakdown Building (185 s.f.)
- Bleacher Enclosure (726 s.f.)
- Range Classroom Building (800 s.f.)
- Covered Mess Shelter (800 s.f.)

In addition to the main design features as described above, these additional features and components would be constructed:

- Antiterrorism and force protection (AT/FP) measures in accordance with the Department of Defense (DoD) minimum.
- Range signage will be provided.
- Fire detection and alarm systems would be provided in all buildings.

2.1.1 Utilities

Electricity is supplied to Camp Edwards by Eversource. In order to accommodate the MPMG Range, an aboveground power line (5 kV or 15 kV) with electrical and communication feeds will be connected from the closest power source which is located at the H Range located on the Forestdale-Pocasset Road and run east approximately half-mile to the MPMG Range. Tree clearing is not anticipated as the line would keep to the existing roadways when possible.

The MPMG Range would require utility extensions for electricity and data out to all of the targets from the ROCA throughout. Data service would also be provided at every automated range. Phone service would also be provided. Buried electrical wire would be placed in conduit running the entire length of the range. The use of an above ground liquid propane gas is proposed for heating ROCA structures.

Portable toilet facilities will be provided as latrines are not allowed in accordance with EPS Standards 1.2. Wastewater and sewage from MAARNG training activities at Camp Edwards is pumped from portable toilet facilities and hauled off-base for disposal at licensed disposal facilities.

2.1.2 Storm Drainage Site Improvements

Stormwater (water from precipitation events) is an important component of surface water systems because of its potential to introduce sediments and other contaminates that could degrade surface waters. Proper stormwater flow management, which can be intensified by high proportions of impervious surfaces associated with buildings, roads, and parking lots, is important to the management of surface water quality and natural flow characteristics. Stormwater management systems are typically designed to contain runoff on-site during construction, and to maintain predevelopment stormwater flow characteristics following development through either the application of infiltration or retention practices. These roads would be designed to meet site-specific engineering requirements as part of the formal range design process. The Proposed Project will reduce impervious surface from 0.9 acres to 0.8 acres. Stormwater management would be provided for runoff from the impervious surfaces. Stormwater is presently not managed at the KD Range due to the flat topography and sandy soils. The proposed MPMG Range will have an onsite stormwater management area to the south of the ROCA as shown in **Figure 2.2** and on the plans provided

in **Appendix C**. Although there are no wetlands or surface water resources within or near to the Project footprint, all stormwater measures will be designed to meet Massachusetts Stormwater Standards.

2.1.3 Lighting

Temporary and permanent lighting proposed for the Project would be designed and installed so as not to interfere with State-listed species, specifically moths. This range would be available for limited night fire operations in accordance with existing Camp Edwards Range Regulations. Lighting would be designed to minimize the potential for lighting adjacent off-range areas and contained within the confines of the MPMG Range by directing light onto the range and minimize uplighting. Sodium lights or lights within the yellow/red range (3000 Kelvin) are proposed as moths are more attracted to lights in the blue range (i.e., mercury vapor lights) which will be avoided. Additional light impact reduction will be based on behavior controls in range use SOPs (e.g., lights off when range not in use). Control of the flood lighting would be via manual switching which is typically located at the control building and would not be used during live-fire exercises. Flood lighting would be used for pre- and post- live firing operations to assist with set up and breakdown activities. In addition to the flood lighting, the site will also require red night lighting that is used to provide low level lighting for night live-fire exercises when the Soldiers are using night vision equipment.

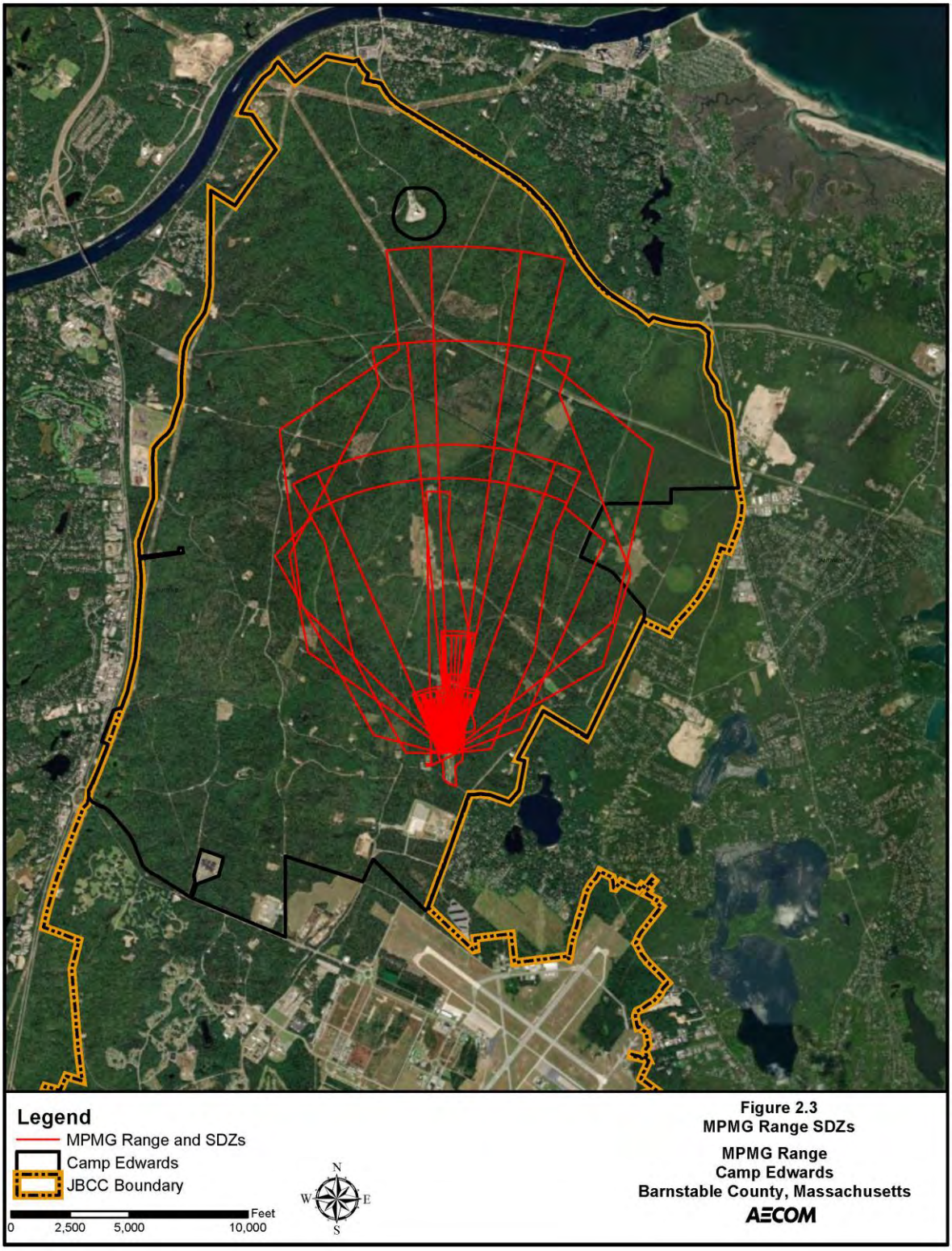
2.1.4 Access and Maintenance Roads

Access to the existing KD Range is provided through the existing paved Pocasset-Forestdale Road. The existing KD Range has paved parking, and dirt access and maintenance roads. The Project within the ROCA will result in reconfigured access and parking areas to be surfaced with aggregate pavement. Sidewalks would be constructed of gravel and would connect the Covered Bleachers, Range Tower, and Ammunition Breakdown Building. Within the Range, compacted gravel access roads will be constructed every 100 meters and along the eastern and western exteriors of the limit of construction as shown on **Figure 2.1** to access target emplacements and for installation and maintenance operations. Firebreaks are described in **Section 2.4**.

2.2 Surface Danger Zones

A SDZ is a mathematically-predicted area that a projectile will impact upon return to earth, either by direct fire or ricochet. The SDZ is the area extending from a firing point to a distance downrange based on the projectiles fired and weapon system used. The SDZ has specific dimensions for the expected caliber or the weapon being fired, so that all projectile fragments are contained in this area. The SDZ for a range must be contained within the controlled boundaries of a training site for the range to be considered buildable and usable without a special waiver from regulations. The MAARNG proposes to configure ranges to allow common SDZs as much as possible without causing training conflicts (i.e., to allow all proposed ranges to be used simultaneously, to the maximum extent possible).

The SDZs would collectively require 5,197 acres for the MPMG Range. SDZs are defined by the DA PAM 385-63 (Range Safety), as “that portion of the earth and the air above in which personnel and/or equipment may be endangered by ground weapon firing or demolition activities.” The existing KD Range is not presently used for live-fire training but is used for other training operations like UAS. The proposed MPMG Range SDZs for the Project are illustrated in **Figure 2-1** and **Figure 2-3**. No land alterations or disturbance is proposed within the range SDZs other than firebreak construction and maintenance.


Legend
MPMG Range and SDZs
Camp Edwards
JBCC Boundary
0
2,500
5,000
10,000
Feet
N
W
E
S
Figure 2.3
MPMG Range SDZs
MPMG Range
Camp Edwards
Barnstable County, Massachusetts
AECOM

2.3 Firebreaks

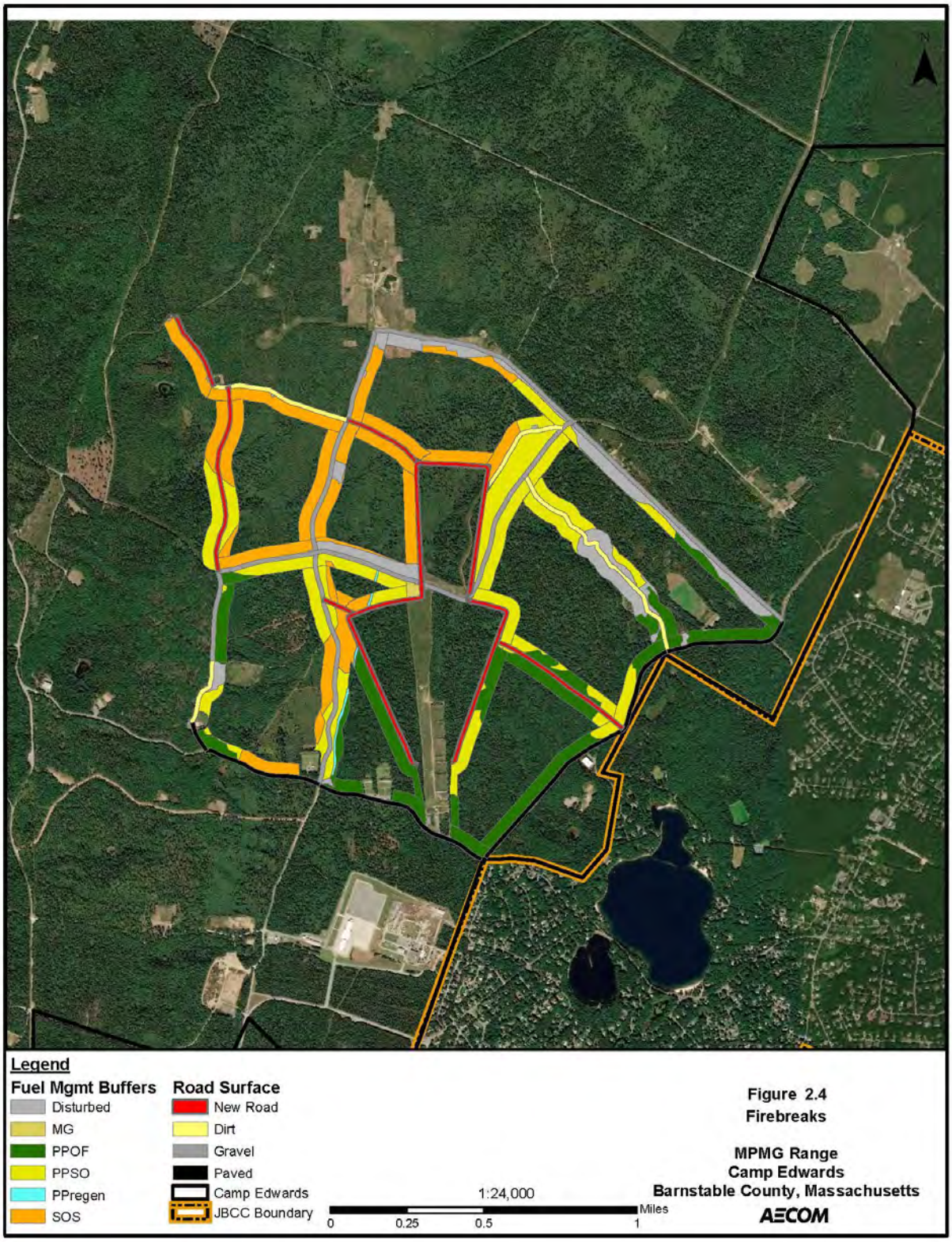
Strategic firebreaks are proposed to be constructed along the exterior of the MPMG Range pursuant to the Camp Edwards INRMP and IWFMP (see **Figure 2.4**). Approximately 10.0 acres of land will be cleared for this effort. This work will be performed as part of the firebreak project involving the construction and maintenance of firebreaks throughout Camp Edwards to reduce the risk of a large wildfire and assist in managing the fighting of fires. Firebreak and fuels management involves the alteration of fuels to reduce the likelihood of a fire starting or to reduce its effects if one does start. These techniques may improve access for fire apparatus, increase water resources available on-site, adjust target placement, and provide buffer or safety zones. Range use at Camp Edwards introduces significant wildfire hazard into unmanaged and high risk fuels conditions through the use of tracers and ammunition. Tracers are forms of ammunition that include a small pyrotechnic charge which makes the trajectory of the ammunition visible in the day time and night time. Natural communities within the Camp Edwards, such as pitch pine and scrub oak communities, are fire-dependent systems shaped over thousands of years. With Euro-American influence, the natural fire regime has mostly been suppressed and replaced with infrequent human induced catastrophic fires creating a severe wildland urban interface. It is imperative that the MAARNG and the surrounding communities address and plan for wildland fire.

Firebreaks will be located along existing roads where feasible. The firebreak planning standard is a 15-foot gravel road with 30-feet of winter mowed grass/forb/low shrub on each side and a 200-foot fuel management buffer beyond that on each side with understory mowing (initial) and mechanical tree thinning to 20-40 foot spacing. Firebreak work associated with the MPMG Range is proposed to involve 10.0 acres of new road (roughly 4.5 miles of new road) and 77.0 acres of mowed firebreak edge (overall habitat benefit from mowing). Most or all species anticipated to benefit from combination of direct habitat management (e.g., fuel management buffers, prescribed fire) and the indirect habitat management made possible through range development, fire management support (e.g., new or improved firebreaks), and ordnance remediation. Locations of the firebreaks and associated roadways are presently being analyzed. The firebreak work associated with the MPMG Range (10.0 acres) will be considered a take by NHESP. The mowed firebreak edges and prescribed burns are not considered to take any rare species and in fact are being proposed for habitat improvement in additional to fire management.

2.4 Projected Site Use

The MPMG Range would be available for all MAARNG units as well as other DoD organizations as scheduling permits. Over the last two decades, the MAARNG and Camp Edwards have worked diligently to transform and modernize its operations, facilities, and training venues to provide the best possible training for the MAARNG, other ARNG and DoD units, emergency responders, and law enforcement and is an important training facility for the DoD and the USCG (Department of Homeland Security).

A total of 103,864 man-days of training occurred at Camp Edwards for military personnel in TY (Training Year) 2018. The MAARNG has approximately 5,880 Soldiers who train on average one weekend per month and one two-week cycle during a training year. The KD Range is not presently used for training exercises other than for UAS. The overall training days/events at Camp Edwards will increase by 173 days/events or an approximately 20% increase of existing training days/events with the construction of the MPMG Range. The Annual Training Cycle at Camp Edwards is March through November with peak usage during May through June. The MPMG Range will not impact this training cycle.


Legend
Fuel Mgmt Buffers
Disturbed
MG
PPOF
PPSO
PPregen
SOS
Road Surface
New Road
Dirt
Gravel
Paved
Camp Edwards
JBCC Boundary
1:24,000
0
0.25
0.5
1
Miles
Figure 2.4
Firebreaks
MPMG Range
Camp Edwards
Barnstable County, Massachusetts
AECOM

2.5 Impacts and Mitigation

The impacts from the proposed MPMG Range include 170.5 acres of tree clearing which is considered impact on rare species to be constructed in two phases.

Table 2-1: MPMG Range Impacts

Phase	Alternative	800 Meter Lanes	1,500 Meter Lanes	Total Acreage *	Rare Species Impacts
Phase 1	Reduced-Scale Alternative	8	0	133.0	94.5
Phase 2	Construction of 1,500 Meter Lanes	0	2	76.0	76.0
TOTAL	**Preferred Alternative (Project)**	**8**	**2**	**209.0**	**170.5**

* With approximately 5.0 acres of firebreaks included in each phase

Mitigation proposed includes a comprehensive and robust rare species mitigation plan which is explained in greater detail in the attached draft CMP Application in **Appendix B** and summarized in **Section 6.7.** This combination of mitigation strategies will allow MAARNG to establish a robust mitigation bank and overall strategy for success to facilitate implementation of long-term planning efforts including modernization of the range complex and infrastructure, thereby maximizing positive impacts. The schedule for implementing mitigation efforts for the MPMG Range began in 2019 and will continue through to 2025 and beyond.

In addition, mitigation measures will be implemented during the construction phase and during the MPMG Range operation phase once constructed including the following with a reference to the mitigation sections in this documents where additional information can be found.

- Air Quality (**Section 6.3**)
- Greenhouse Gas (**Section 6.4**)
- Noise (**Section 6.5**)
- Biological Resources (**Section 6.6**)
- Endangered, Threatened, and Rare Species (**Section 6.7**)
- Oil and Hazardous Materials (**Section 6.12**)
- Construction Phase Mitigation (**Section 6.13**)
- Best Management Practices (**Section 6.14**)

2.6 Construction Schedule

Table 2-2 provides an estimated timeline for construction of the MPMG Range and associated mitigation actions. Details of these actions are described in **Section 6.7**.

2.7 Construction Cost

The estimated cost of construction of the MPMG Range is approximately $7 Million.

Table 2-2: MPMG Range Construction and Mitigation Schedule

Action Proposed	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Construction Phase										
Clear and construct primary range area (0-800 meters; ROCA)	x									
Clear UXO and mechanical removal of trees as needed	x	x	x	x	x	x				
Create shaded fuel breaks with mechanical forestry and UXO clearing			x	x	x					
Construct two lanes north from 800 to 1,500 meters			x	x	x	x				
Introduce fire into MPMG Zone				x						
Mitigation Phase										
Parcel H – Unit K Grassland improvement	x	x	x	x	x	x	x	x		
Frequent prescribed burns in MPMG Zone (2-3 year return interval)			x	x	x	x	x			
Maintenance burns on 3-year interval in MPMG Zone								x	x	x

UXO = unexploded ordinance

3.0 Alternatives Analysis

MEPA requires a description and review of feasible alternatives to the Project in light of the objectives of the Proponent and the mission of any participating agency, including relevant statutes, regulations, EOs and other policy directives, and any applicable state, Federal, municipal, or regional plan formally adopted by any State, Federal, municipal, or regional governmental entity. In addition, the No-Build Alternative shall be reviewed for the purpose of establishing a future baseline in relation to which the Project and its alternatives can be described and analyzed and its potential environmental impacts and mitigation measures can be assessed. A brief discussion of alternatives no longer under consideration including the reasons for no longer considering these alternatives is also provided. The baseline data has been previously submitted to MEPA, most recently in the 15 August 2012 Supplemental EIR for the SAR-IP.

The MAARNG developed and applied 13 criteria to screen and evaluate possible alternatives for the Project. The selection criteria were applied to available alternatives to determine which alternative(s) would fulfill the purpose and need for action including the No Action Alternative to assess any environmental consequences that may occur if the Project is not implemented. The alternatives analysis provides a description of the following alternatives

- Preferred Alternative (Project)
- Reduced-Scale Alternative
- Full Build Alternative
- No Action Alternative

Alternatives were screened first for different locations and then when the KD Range was chosen, different layouts were analyzed.

The purpose of the Project is to provide the MAARNG with a mission required, MPMG Range to allow the MAARNG to efficiently attain required training and weapons qualifications requirements within Massachusetts. The MPMG Range will provide Soldiers and units the necessary modernized training capabilities to be effective in contemporary and future operating environments. A priority for the MAARNG at Camp Edwards is the continued use and development of live-fire ranges to meet the requirement that all Soldiers qualify with their primary weapon systems annually.

The three closest MPMG ranges include Camp Ethan Allen in Jericho, Vermont located over 270 miles away, Fort Dix in Ocean County, New Jersey located over 300 miles away, and Fort Drum located in Jefferson County, New York located over 370 miles away (see **Figure 1.3**). Implementation of the Project would support higher quality, mission-essential training activities at Camp Edwards, while limiting the need for travel to other training sites that cause the loss of critical training time and resources.

3.1 Alternatives Development (Screening Criteria)

The MAARNG developed and applied the following 13 criteria to screen and evaluate possible alternatives for the Project. The MAARNG identified that a suitable site would meet the following requirements:

1. **Sufficient Land Area**: The proposed range should be located within a MAARNG-controlled training area in Massachusetts of sufficient size to accommodate the proposed range and its associated SDZs.
2. **Reduce Travel**: The proposed range should avoid excessive travel times and costs for MAARNG units by minimizing travel in and out of state to meet mission and training requirements.
3. **Minimize Conflicts with Other Existing Ranges and Training Areas**: The proposed range should be sited so as to minimize conflicts with other, existing ranges and other training uses, thereby allowing multiple training ranges and facilities to be utilized concurrently and maximizing training efficiency.
4. **Maximize Co-Location with Existing Impact Areas**: The proposed range should be sited in a way that maximizes the use of existing impact areas. Such a layout would avoid the creation of new impact areas, avoid consuming additional training land, and reduce the area of potential hazard across Camp Edwards.
5. **Proximity to Existing Utilities**: The proposed range should be sited in close proximity to existing utility services (i.e., electric, telecommunications) in order to minimize construction costs and the need for new or extended utilities.
6. **Proximity to Existing Roads**: The proposed range should be sited in close proximity to existing access roads in order to minimize construction costs and the need for new roads.
7. **Minimize Environmental Concerns**: The proposed range should be sited in an area and layout that would minimize potential effects to existing onsite environmental concerns, including cultural resources and special status species.
8. **Minimize Need for New Ground Disturbance**: The proposed range should be sited in previously disturbed areas to minimize the need for new ground disturbance. This would minimize the potential for new and additional impacts to onsite soils, water, biological, and cultural resources.
9. **Central Location to Minimize Offsite Impacts**: The proposed range should be sited in a central location within a MAARNG-controlled training area in order to minimize potential impacts (i.e., dust, noise, lighting) to off-site areas, including residents and sensitive receptors.
10. **Meet Training Requirements:** The proposed range should allow the MAARNG units to meet all required training provided by a MPMG Range.
11. **Meet Army Range Requirement Model (ARRM) Requirements:** The proposed range should meet current ARRM data requirements regarding the number and types of ranges needed to meet MAARNG training requirements.
12. **Compliance with Regulatory and Planning Requirements:** The proposed range should be in compliance with applicable regulations and planning documents developed.
13. **No Net Loss of Training Capacity**: The proposed range should be constructed to ensure no net loss in the capacity of the MAARNG or Camp Edwards to support the military missions and conduct training operations.

Through application of the first two screening criteria and the evaluation process provided in this section, it became readily apparent to the MAARNG that locating the MPMG Range at Camp Edwards was the only alternative capable of meeting these screening criteria. Therefore, the subsequent 11 screening criteria were used to identify the Project location within Camp Edwards. For the location within Camp Edwards, where possible, similar training facilities were co-located or grouped to increase usage of common areas and infrastructure components and to further reduce overall development needs and costs. Numerous range and facility layouts and sites within Camp Edwards were investigated and eliminated from further consideration due to conflicts with other training uses, location of existing utilities, lack of overall land area, existing environmental constraints, surrounding residential areas, or other limiting factors. Finally, when the KD

Range was determined to be the best alternative location (as described below), alternative layout designs were analyzed.

3.2 Evaluated Alternatives

The selection standards described above were applied to available alternatives to determine which alternative(s) would fulfill the purpose and need for action including the No Action Alternative to assess any environmental consequences that may occur if the Project is not implemented. The No Action Alternative also provides a baseline against which the Project can be compared. The following discussion provides a description of the Preferred Alternative (Project), the Reduced-Scale Alternative, the Full Build Alternative, and the No Action Alternative. The footprints of these alternatives are shown in **Figure 3.1**. Alternatives eliminated from further consideration are described in **Section 3.3**.

Table 3-1: Impacts by Alternative

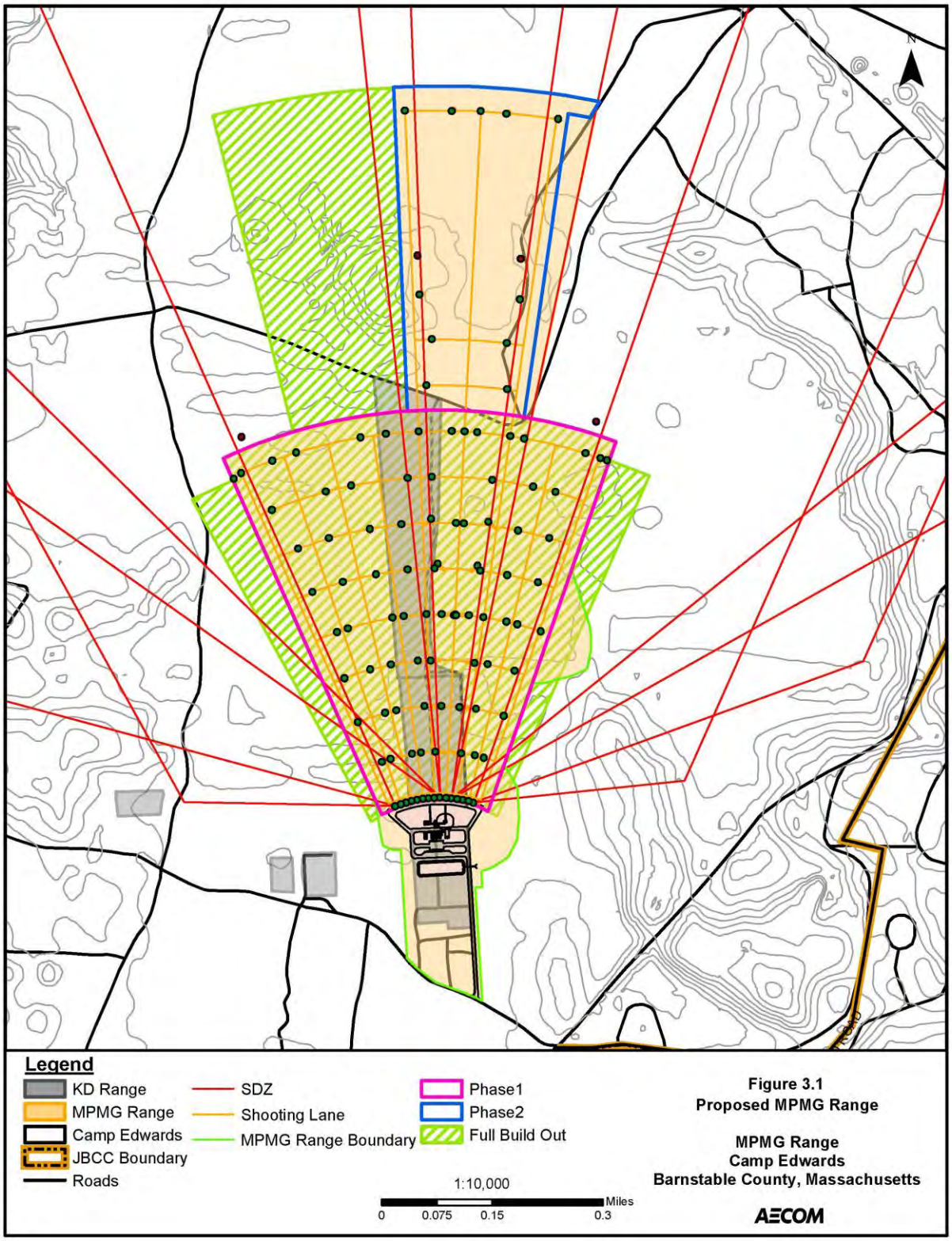
Alternative	800 meter lanes	1500 meter lanes	MPMG Range (acres)	Firebreak (acres)	Total Footprint (acres)	Tree clearing (acres)
Full Standard Build	10	4	294	12	306	267.5
Preferred Alternative	8	2	199	10	209	170.5
Reduced-Scale Alternative	8	0	128	10	138	99.5

** Without action, there will be an incremental loss of scrub oak shrubland habitat as described in **Section 4.6.1.3**.

3.2.1 Preferred Alternative

Under the Preferred Alternative (Project), the MPMG Range would be constructed and operated as described in **Section 2.0** by constructing the MPMG Range at the KD Range with the construction of an eight lane MPMG Range with six lanes 800 meters long with a width of 25 meters at the firing line and a width of 100 meters at a distance of 800 meters. The two middle lanes (Lanes 5 and 6) will extend an additional 700 meters to a distance of 1,500 meters long to accommodate .50 caliber rifles. The construction of the Project will fulfill the assigned mission and training requirements to have a machine gun range available within Massachusetts. The firing line would be located approximately 200 meters north of the existing firing line.

This design already represents minimization from the standard MPMG Range design guide which calls for ten 800 meter lanes and four 1,500 meter extended lanes (Full Build Alternative). The Preferred Alternative has eight 800 meter lanes and two 1,500 meter lanes which is approximately 97 acres less in footprint than the Full-Build Alternative design. Due to the presence of the Impact Area which is not accessible for habitat management and fire management, the scrub oak shrublands (SOS) have become overgrown. The primary driver behind declines in some of the State-listed moths at Camp Edwards is a lack of fire in SOS and the dramatic incursion of pitch pines into shrublands and frost bottoms after the secession of artillery fires in the Impact Area. The extension of the two 1,500 meter lanes into this habitat will allow for management and enhancement of the SOS which is a globally rare habitat.


N
Legend
KD Range
MPMG Range
Camp Edwards
JBCC Boundary
Roads
SDZ
Shooting Lane
MPMG Range Boundary
Phase1
Phase2
Full Build Out
1:10,000
0
0.075
0.15
0.3
Miles
Figure 3.1
Proposed MPMG Range
MPMG Range
Camp Edwards
Barnstable County, Massachusetts
AECOM

The Preferred Alternative would increase training days/events at Camp Edwards by 173 days/events or an approximately 20% increase of existing training days/events at Camp Edwards. This is a reduction of over 90% of the mileage (or 277,390 miles) travelled under existing conditions to other ARNG sites as shown in **Figure 1.3**. Units will no longer have to travel long distances to train at an out-of-state MPMG Range. Allowing units to train at Camp Edwards on the proposed MPMG Range also eliminates the travel time spent going to other sites; a reduction of approximately 144 hours less travel. This transportation information is part of the GHG Analysis summarized in **Section 4.4.**

This is the MAARNG's Preferred Alternative because it best meets the screening criteria set forth in **Section 3.1**. It effectively provides the best combination of land and resources to sustain quality military training and to maintain and improve MAARNG's readiness posture. This alternative provides many advantages:

- Located within an existing MAARNG facility, and therefore, no land acquisition costs.
- Eliminates the need for MAARNG units to travel out of state to meet mission and training requirements.
- Provides ample space/acreage for the required facilities.
- Located on previously disturbed land.
- Located near existing infrastructure and available utility connections.
- Places noise-producing facilities further away from noise-sensitive areas within and adjacent to Camp Edwards.

It was determined that the mission (Project purpose and need) would be completed with the Preferred Alternative with less impact on the environment from the Full Build Alternative or other alternatives dismissed as described in Section 3.3.

3.2.2 Reduced-Scale Alternative

The Reduced-Scale Alternative would implement the Project without the two extended .50 caliber use middle lanes. All lanes would be constructed to a distance of 800 meters. This alternative would allow for the same usage as the Preferred Alternative with the exception of the M2 machine gun and the M82 sniper rifle which utilize .50 caliber ammunition, thus reducing training capabilities of this range. This alternative would have a footprint of about 138.0 acres reducing the amount tree clearing by 71.0 acres compared to the Preferred Alternative. Nonetheless, this alternative would not allow the management of the SOS frost bottom located north of the KD Range maintaining the dramatic incursion of the pitch pines into this significant habitat. This alternative would have the same transportation and time impacts (or benefits) as described for the Preferred Alternative above. The Reduced-Scale Alternative represents Phase 1 of the MPMG Range Project. Phase II would include the extension of two lanes, both phases combined to be the Preferred Alternative.

3.2.3 Full Build Alternative

Construct and operate a standard ten-lane MPMG Range with four extended 1,500 meter lanes in accordance with TC 25-8. Given the existing site and environmental conditions, a reduced-size MPMG Range with only eight lanes is proposed as approved for funding by MILCON. Under the Full Build alternative, additional impacts to rare species habitat would be unavoidable. In addition, a larger range would increase noise impacts on adjacent sensitive receptors. This alternative would have an increased footprint by 97 acres to approximately 306 acres compared to the Preferred Alternative. The SDZs for this

alternative would reach a wider area and would be located partially off-base. This alternative does not meet Screening Criteria #1, #3, #7, #8, and #12.

3.2.4 No Action Alternative

Under this alternative, the Project would not be implemented and the existing training activities and operations would continue at Camp Edwards. Units would travel out-of-state to either New York, New Jersey, or Vermont to qualify on the nearest MPMG Range. This alternative would limit the capability of the MAARNG to carry out its assigned mission to provide adequate training facilities, and would not meet the purpose of or need for the Project. This alternative was retained to provide a comparative baseline analysis as required by MEPA. The No Action Alternative reflects the status quo and serves as a benchmark against which the effects of the Project (i.e., Preferred Alternative) can be evaluated.

Under the No Action Alternative, Camp Edwards full training potential would continue to be limited and the facilities necessary to accommodate the MAARNG's mission and training requirements would continue to be unavailable in the state. Required training would continue to be conducted by the MAARNG at out-of-state installations where the necessary ranges and training facilities are available. This would continue to cause MAARNG units to risk not meeting readiness requirements, and to use excessive training time for travel, potentially resulting in a decreased ability to meet training proficiency standards.

3.3 Alternatives Eliminated from Further Consideration

Alternatives that were eliminated from detailed study are identified along with a brief discussion of the reasons for eliminating them. For purposes of analysis, an alternative was considered "unreasonable" if it would not enable the MAARNG to meet the purpose of and need for the Project. The MAARNG considered the following alternatives:

- Southern Location Alternative
- New Training Site Alternative
- New Undisturbed Range Site Alternative
- Different Existing Range Alternative

These alternatives were eliminated from further consideration because they did not meet one or more of the screening criteria included in **Section 3.1**.

3.3.1 Southern Location Alternative

Implement the Project at a more southerly location which would shift the entire MPMG Range south approximately 100 meters. The firing line of this alternative would be located approximately 100 meters north of the existing firing line at the KD Range. The construction would fulfill the assigned missions but would result in greater impacts, specifically with noise as described in **Section 4.5.** This alternative does not meet Screening Criteria #7, #9, and #10.

3.3.2 New Training Site Alternative

Acquire a completely new training site for the construction and operation of the proposed MPMG Range, off-site of Camp Edwards. This alternative was examined but eliminated due to the fact that, as a primary

component of Base Realignment and Closure (BRAC), the DoD is eliminating and/or consolidating many installations throughout the U.S. and other sufficient land area is not available. As sufficient land area is available at Camp Edwards to accommodate the required range and training facilities, the MAARNG determined that, in accordance with DoD directives and vision, establishment of a new training site in-state but off-site of Camp Edwards was neither feasible nor necessary. This alternative does not meet Screening Criteria #7 and #8.

3.3.3 New Undisturbed Range Alternative

Construct and operate the proposed MPMG Range on a previously undisturbed portion of Camp Edwards. This alternative was examined but eliminated due to the fact that it would likely impact more rare species habitat resulting in more fragmentation of the rare habitats present at Camp Edwards than siting the range at the already cleared KD Range. This alternative does not meet Screening Criteria #3, #4, #7, and #8.

3.3.4 Different Existing Range Alternative

Construct and operate the proposed MPMG Range on either the A (Alpha) Range or the existing S (Sierra) Range (or a different range at Camp Edwards). During the range siting process, additional range configurations were evaluated, but were eliminated due to various land constraints and existing usage at other ranges. Given the large amount of land this range requires (including the configuration of the SDZs) and the available land at Camp Edwards that was already altered but did not have existing uses, siting options were limited for this range. Alpha Range was previously a .50 caliber machine gun range but guns were required to have a restraint bar to prevent the barrel from moving too far to the side. Substantial funding was spent upgrading Sierra Range in 2011-2012 to a Modified Record Fire (MRF) Range. In order for this alternative to work, the MRF range would have to be dismantled and constructed elsewhere on the base resulting in additional substantial costs. This alternative does not meet Screening Criteria #3, #7, and #12.

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4.0 Existing Environment

This section provides a description and analysis of the physical, biological, chemical, economic, and social conditions of the Project site, its immediate surroundings, and the region in sufficient detail to provide a baseline in relation to which the Project and its alternatives can be described and analyzed and its potential environmental impacts and mitigation measures can be assessed.

4.1 Topography, Geology, and Soils

The following is a summary of topography, geology, and soils at the MPMG Range and within Camp Edwards.

4.1.1 Topography

Elevations on Camp Edwards range from 250 feet above mean seal level (MSL) at the northern end of the installation to 50 feet above MSL at its southern end. The surface topography of Camp Edwards varies greatly between northern and western portion and the southern portion of the training area. Large glacial deposits dominate this area with high topographic relief of rolling hills and deep kettle holes. The eastern portion of Camp Edwards at the proposed MPMG Range is relatively flat and level outwash plain with slopes of 0-2%. Approximately 20 kettle-holes within the area have steeper slopes. One kettle hole is located to the north of the proposed range within the Impact Area and is referred to as the frost pocket or frost bottom. The KD Range and the proposed location of the MPMG Range is located in a relatively flat area of Camp Edwards at an elevation of about 160 feet above sea level (NGVD 29 datum).

4.1.2 Geology

The geology of Camp Edwards and its environs is composed primarily of Pleistocene Age sandstones, with sandstone deposits of Holocene age present along major drainage channels overlying Proterozoic-age schist, gneiss, and granite bedrock. Surficial glacial sediments deposited during the retreat of the Wisconsin glaciation underlie western Cape Cod. These deposits are estimated to be approximately 15,000 years old. In the Camp Edwards region, there are three large sedimentary units: the Buzzards Bay Moraine, the Sandwich Moraine, and the Mashpee Pitted Plain. The Buzzards Bay and Sandwich Moraines are mounds or ridges of unstratified glacial till along the western and northern edges of the installation, respectively. Both are composed of ablation till, unsorted material ranging from clay to boulders and deposited at the leading edge of Wisconsin glaciations.

4.1.3 Soils

In general, the soil of Camp Edward is well-drained sand or sandy loam with a high susceptibility to erosion. The primary soils present at the Project and in the vicinity include the Merrimac sandy loam, with slopes of 0 to 3%. Where the two lanes would be extended, soils present include Enfield silt loam, with slopes of 0 to 3% [3] The soil underlying the Site are well-drained and has a low frequency of flooding and ponding. Soils underlying the KD Range have been contaminated by past releases of hazardous substances. Further

[3] NRCS 2018 https://websoilsurvey.sc.egov.usda.gov

information on environmental contamination including hazardous materials at the KD Range is provided in **Section 4.12.**

The majority of the MPMG Range is identified as containing Prime Farmlands and Farmland of Statewide Importance as identified under the Farmland Protection Policy Act (FPPA) (7 USC 4208[b]) was adopted in 1981 is intended to minimize the impact that any Federal programs would have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. Farmland subject to FPPA requirements does not have to be currently used for cropland and can be forest land, pastureland, cropland, or other land. Camp Edwards may be exempt from the FPPA in accordance with Section 1547(b) of this Act which exempts acquisition or use of farmland for national defense purposes. The Project Site has been used for training purposed since at least the 1930s and may extend as far back as 1908 when training first started in this area. Due to the many years of the Site being used for military training, it is highly unlikely that this area would ever be used as farmland.

4.2 Water Resources (Groundwater)

Water resources evaluated in this section include groundwater as there are no wetlands, surface waters, or floodplains in or near to the Project Site. The predominant source of groundwater in the Camp Edwards area is the Sagamore lens of the Cape Cod aquifer, designated as a sole-source aquifer under the SDWA. The groundwater beneath the Camp Edwards is also known as the Upper Cape Water Supply Reserve and provides up to three million gallons of clean drinking water daily to Camp Edwards and the towns of Sandwich, Bourne, Falmouth, and Mashpee.

The water table is encountered an elevation of approximately 65 to 67 feet above sea level (NGVD 29 datum) which equates to an average depth of 100 feet below ground surface in and around the proposed MPMG Range. Groundwater at Camp Edwards has been classified as GW-1 and GW-3, in accordance with the Massachusetts Contingency Plan (MCP) (310 CMR 40.0932). Groundwater classified as GW-1 is water that might contribute to a Current Drinking Water Source Area or a Potential Drinking Water Source Area, while water classified GW-3 are groundwater resources that are considered a potential source of discharge to surface waters. In addition, portions of Camp Edwards, including the proposed MPMG Range, lie within multiple Zone II areas. According to 310 CMR 40.0006, Zone II is defined as the area of an aquifer that contributes water to a well under severe pumping and recharge conditions (see **Figure 1.5**).

Otis Air National Guard Base (ANGB) was placed on the Superfund program's National Priorities List (NPL) in 1989. A Federal Facility Agreement (FFA) was signed in 1991 (and subsequently amended in March 2000) governing the Superfund cleanup. Signatories to the FFA include the National Guard Bureau (NGB), the USAF, and the USEPA. Working under the authority of SOWA AO and separate from the Superfund work, the DA is managing long-term groundwater and any remaining source area cleanups as the Impact Area Groundwater Study Program (IAGWSP). Currently, there are seven groundwater plumes undergoing extraction and treatment with a combined system rate of 4.1 million gallons per day. The DA also manages a land use control program so that there are no public exposures to contaminated groundwater undergoing treatment. Long-term groundwater monitoring and operation and maintenance of treatment systems will continue until groundwater cleanup levels are met.

To date, no response actions have been needed to address groundwater due to contamination from the KD Range. A Human Health Risk Screening was conducted to identify any analytes that warranted further

evaluation, and no analytes were found that exceeded screening criteria.[4] According to IAGWSP data, no contaminated groundwater plumes are located beneath the KD Range or the proposed MPMG Range.

4.3 Air Quality

The following is a summary of Federal and State air quality regulations as they may relate to the proposed MPMG Range.

4.3.1 Federal Air Quality Regulations

The ambient air quality in an area can be characterized in terms of whether it complies with the primary and secondary National Ambient Air Quality Standards (NAAQS). The CAA, as amended, requires the USEPA to set NAAQS for pollutants considered harmful to public health and the environment. NAAQS are provided for six principal pollutants, called "criteria pollutants" as listed under Section 108 of the CAA: carbon monoxide (CO); lead (Pb); nitrogen oxides (NO_x); ozone (O_3); particulate matter (PM), divided into two size classes of (1) aerodynamic size less than or equal to 10 micrometers (PM_{10}), and (2) aerodynamic size less than or equal to 2.5 micrometers ($PM_{2.5}$); and sulfur dioxide (SO_2). 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 in nonattainment and maintenance areas, except when the action is covered under the Transportation Conformity Rule or when the action is exempted because the total increase in emissions is insignificant, or de minimus. NAAQS promulgated by the USEPA are defined as the maximum acceptable concentrations, both annual and short-term standards that may be reached. The short-term standards may not be exceeded. The allowable times per year a short-term standard may not be exceeded varies depending on the pollutant and averaging period of standard. Most NAAQS cannot be exceeded more than once per year.

According to the USEPA, air quality within Barnstable County and the Region of Influence (ROI) is in "attainment" for all NAAQS[5], though the area is treated as moderate non-attainment for ozone given the location within the Ozone Transport Region (OTR) designated by Section 176A of the CAA, with 1990 amendments, which subjects 12 northeast States, including Massachusetts. However, for General Conformity purposes, nonattainment designations due solely to being part of the OTR are not applicable. Therefore, the procedural requirements of the General Conformity Provision of the CAA does not apply to the Project and no Conformity Determination is required.

4.3.2 State Air Quality Regulations

The CAA gives the authority to States to establish air quality rules and regulations. The Commonwealth of Massachusetts has adopted the NAAQS and promulgated additional State Ambient Air Quality Standards (SAAQS) for criteria pollutants. The primary regulatory authority for air quality in Massachusetts is the MassDEP – Air and Climate Division. Massachusetts has also developed a State Implementation Plan (SIP) to enforce the CAA in the State. The Massachusetts Air Pollution Control Regulations (310 CMR 6.00-7.00) outline emission limits necessary to attain ambient air quality standards for fugitive emissions, dust and particulates.

[4] USEPA Training Area Operable Unit Decision Document 2019

[5] USEPA Greenbook. https://www3.epa.gov/airquality/greenbook/anayo_ma.html

Camp Edwards, located within Barnstable County, is part of the Metropolitan Providence Intrastate Air Quality Control Region (AQCR 120) which was designated a serious non-attainment area for the 1-hour ozone and 8-hour ozone (1997) standards but those standards have since been revoked by USEPA. With the exception of CO, for which several areas of Massachusetts are unclassified, Massachusetts is in attainment for SO_2, $PM_{2.5}$, PM_{10}, NO_2, and Pb. The Metropolitan Providence Intrastate AQCR 120 is classified as attainment for all criteria pollutants except for the one-hour ozone standard which has been revoked as previously noted.

Potential air emissions from stationary sources at Camp Edwards are below the established Federal and State thresholds for the designated primary air pollutants (carbon monoxide, nitrogen oxide, particulate matter, sulfur dioxide, and volatile organic compounds). The only MAARNG stationary source emissions in the Camp Edwards Training Area are located at Range Control and the Ammunition Supply Point.

Thus, Camp Edwards does not require an air quality control permit for stationary source emissions under the provisions of the CAA, nor is Camp Edwards required to measure and report actual emissions from its stationary sources. However, the prescribed burn program requires an air quality control permit. The MassDEP Southeast Regional Office renewed the Camp Edwards smoke management and prescribed burn permit (#4F02008) on August 20, 2018. Because of the number of facilities at Camp Edwards, the MAARNG is required to submit a Source Registration/Emissions Statement (SR/ES) report for Camp Edwards to MassDEP.

4.3.3 Air Quality - Existing Conditions

The muzzle blast from small arms fire releases air emissions and residual energetic materials, primarily nitroglycerin/nitrocellulose, from the propellant. Lead air emissions are produced from a single source the primer (lead styphanate).

Potential receptors from air borne emissions are limited to onsite personnel training on or maintaining the SAR. Emissions released from the muzzle blast and entrained in the air are expected to be a minor source of inhalation exposure limited to range users.

Current air emissions from Camp Edwards result from mobile and stationary sources include, but are not limited to, vehicles, equipment, and personally owned vehicles. Air pollution from fugitive dust may result from vehicles traveling on unpaved roads, construction projects, and troop training activities. These mobile sources are regulated in Massachusetts in accordance with the vehicle emissions regulations at 310 CMR 60.000. In addition, any construction or demolition of a building requires notification to the MassDEP before start of work in accordance with 310 CMR 7.09 designed to protect public health and the environment by ensuring that the release of dust or other potentially hazardous air pollutants to the ambient air will be prevented.

4.4 Greenhouse Gas Emissions

EOEEA issued the MEPA Greenhouse Gas Emissions (GHG) Policy and Protocol in 2007. Projects under the review of MEPA are required to quantify GHG impacts as a result of the proposed Project and identify measures to avoid, minimize, or mitigate any such emissions. As MEPA has full scope jurisdiction over the MPMG Range Project, a GHG analyses is required. We anticipate providing the final GHG assessment in the EIR to be filed following the issuance of the NPC Certificate. The GHG assessment is anticipated to calculate impacts for the demolition, construction, and operation of the Project including the removal of

170.5 acres of trees being converted to managed grasslands as part of the active range. In addition, the purpose of this Project is to eliminate long trips out of state for MAARNG units to train at other MPMG ranges. There are no stationary sources at the MPMG Range which would have emissions once the range is in operation as the range will be used sporadically.

Federal agencies are required to implement sustainable practices and technologies, increase energy efficiency, and reduce greenhouse gas emissions. Travel associated with personal and government-owned vehicles would slightly decrease under the Preferred Alternative because the need to travel to out-of-State facilities to meet weapons qualifications standards and training requirements would be reduced, resulting in a slight decrease in greenhouse gas emissions overall. Further, the MAARNG anticipates Camp Edwards site usage to increase by 77% annually over current conditions as a result of implementing the Preferred Alternative. Therefore, overall greenhouse gas emissions locally are anticipated to increase slightly in Camp Edwards, while overall regional emissions may experience a slight decrease due to reduced travel requirements.

A GHG Analysis has been completed and is included in **Appendix H**. **Table 4-1** provides a summary of all GHG emissions generated as a result of this Project compared to the baseline information and the three alternatives. Emission are calculated by transportation ,construction, land clearing, and range operations. Construction related emissions will be temporary and may produce short-term localized impacts limited to the construction period. Emissions from land clearing are also temporary but have the most impact on CO_2 emissions. Transportation related CO_2 emissions will be greatly reduced (by 82%) over existing baseline conditions. Long-term emissions would be generated from the training activities, specifically the firing of ammunition and the ROCA structures which are only estimated at 3 US Tons.

Table 4-1: CO_2 Emissions Summary by Alternative (US Tons)

Activity	Baseline	Preferred Alternative	Reduced Build	Full Build
Transportation	**724**	**60**	**60**	**60**
Out-of-State Training	724	0	0	0
Travel of Work Crews	0	1	1	1
Within Camp Edwards after Range Construction	0	59	59	59
Construction	**0**	**897**	**549**	**1,157**
Land Clearing	0	734	430	935
Range Construction	0	129	85	189
ROCA Demolition and Construction	0	34	34	34
Land Clearing (Biomass Removal)	**0**	**39,649**	**23,295**	**61,992**
Range Operations	**0.3**	**1.3**	**1.3**	**1.3**
Firing of Weapons	0.3	0.3	0.3	0.3
ROCA Structures	0	1	1	1
CO_2 Emission Totals	**724.3**	**40,607.3**	**23,904.3**	**63,210.3**
CO_2 Emissions without Land Clearing	**726**	**960**	**611**	**1,220**

4.5 Noise

The MAARNG manages noise in accordance with State and Federal regulations and other Federal guidelines for training areas. The Army and MAARNG use a system that partitions noise into three zones (I, II, and III), each representing an area of increasing noise as shown in **Table 4-2**. The United States Army Public Health Center (USAPHC) performed a Noise Assessment for the proposed MPMG Range in 2015 and again in May of 2019 in accordance with EPS 9.1 (Noise management activities shall conform to the Army's Environmental Noise Management Program policies for evaluation, assessment, monitoring, and response procedures). Copies of the final Noise Assessment (1 May 2019) is provided in **Appendix D**.

Table 4-2: Land Use Planning Guidelines

Noise Zone	Noise Limits Small Arms Peak (dB)	Noise-Sensitive Land Use
Land Use Planning Zone (LUPZ)	n/a	Generally Compatible
Zone I	< 87	Generally Compatible
Zone II	87 – 104	Generally Not Compatible
Zone III	> 104	Not Compatible

Source: AR 200-1

dB = decibel

As a result of the Noise Assessment, the location of the MPMG Range has been shifted to the north to reduce the Zone II (where small arms range decibels reach 87-104 dB) location within the adjacent residential areas. Therefore, the noise impacts are being mitigated partly through the design. In addition, the .50 caliber round training (which has greater noise impacts) will only utilize the center extended lanes approximately 30 days per year.

The USAPHC provided the recommendation to provide public notification of upcoming training events, particularly the .50 caliber activity as mitigation. Additional testing may be performed once the range is built in order to determine the actual Zone II locations which can then be used to determine if other mitigation measures such as constructing noise barriers to lower noise levels may be recommended. The noise model assumed no vegetation between the range and the sensitive receptors, therefore the model looks at the worst case scenario.

4.5.1 State Noise Regulations

The MassDEP has established a Noise Level Policy for implementing the Massachusetts Noise Control Regulations defined in 310 CMR 7.10. The policy specifies that a new noise source proposed in an area that is not likely to be developed for residential use because of development constraints, or proposed in a commercial or industrial area with no sensitive receptor might not be required to mitigate its noise impact. The regulation states that even if the projected noise levels at the facility's property line exceed the ambient background by more than 10 dBA, mitigation might not be required. However, a new noise source proposed in an area with current or proposed noise-sensitive receptors could be required to mitigate its noise impact in these areas. In accordance with 310 CMR 7.10(3), public safety agencies (i.e., fire and police) and civil and national defense activities are exempt from these State regulations. Nonetheless, MassDEP may become involved if the noise became a nuisance condition.

The MAARNG published a Statewide Operational Noise Management Plan (SONMP) in December 2007 that provides a strategy for noise management at MAARNG facilities, including Camp Edwards. The plan includes a description of noise environments, including levels from small arms and aircraft training activities. Elements of the plan include education, complaint management, possible noise and vibration mitigation, noise abatement procedures, and land use management. Specific procedures are provided for noise complaints and protocols are provided for providing public notification for demolition of UXO in place and for other unusual noise events.

4.5.2 Noise – Existing Conditions

The ambient noise environment around JBCC is affected mainly by small arms training, helicopter and aircraft activity, and automobile traffic. Typical activities that produce noise from Camp Edwards and the JBCC include existing helicopter traffic and jet traffic and other aircraft operations. Other sources of noise include truck traffic, convoys, and use of heavy equipment. The existing noise environment is characteristic of an active military installation, dominated by live-fire small arms training ranges and helicopter traffic.

The Zone II for other small arms ranges at Camp Edwards (primarily J, K, and L Ranges) are located partially within the residential area located off-base based on information provided in the Final Environmental Assessment for Small Arms Ranges at Camp Edwards[6] and confirmed in the 2019 Noise Assessment. These noise levels would affect a greater area with implementation of the Preferred Alternative as described in **Section 5.5**. Noise impacts are anticipated during the operational life of the proposed ranges.

4.6 Biological Resources

This section describes the existing vegetation and general wildlife at Camp Edwards and the proposed MPMG Range. Rare species are described in **Section 4.7.**

4.6.1 Vegetation

Much of Camp Edwards consists of Pitch Pine-Scrub Oak Barrens and is one of the largest remaining habitats of this type in northeastern U.S. (see **Figure 4.1**). There are a few small wetlands and ponds within this otherwise dry habitat that provide an important source of water for wildlife. Camp Edwards is the largest intact area of relatively unfragmented forest remaining on Cape Cod and serves as an important refuge for wildlife which require large ranges of interior forest habitat. Vegetation associated with the MPMG Range is provided in **Figure 4.2**.

The plant communities of Camp Edwards are dominated by cover types generally classified as mid to late successional forest with occasional early successional disturbed areas. Many of the plant communities at Camp Edwards have been influenced by several different disturbance types, including fire, ice storms, frost, drought, insect outbreaks, hurricanes, tropical storms, historic logging and grazing, and history of military use. A total of 13 natural communities and two altered land types are found at Camp Edward as shown on **Figure 4.1.** Plant community types include Black Oak-Scarlet Oak Forest; Pitch Pine-Scrub Oak Community, Cultural Grassland, Plantation, Red Maple Swamp, Scotch Pine-Pitch Pine-Oak Forest, Immature Pitch Pine, Scotch Pine-Pitch Pine-Scrub Oak, Non-Mapped Vegetation Community, Scrub Oak Shrubland, Pitch Pine Community, Wetlands, and Pitch Pine-Oak Forest.

[6] URS Corporation. Final Environmental Assessment for the SAR-IP, Camp Edwards, Massachusetts 19 June 2007

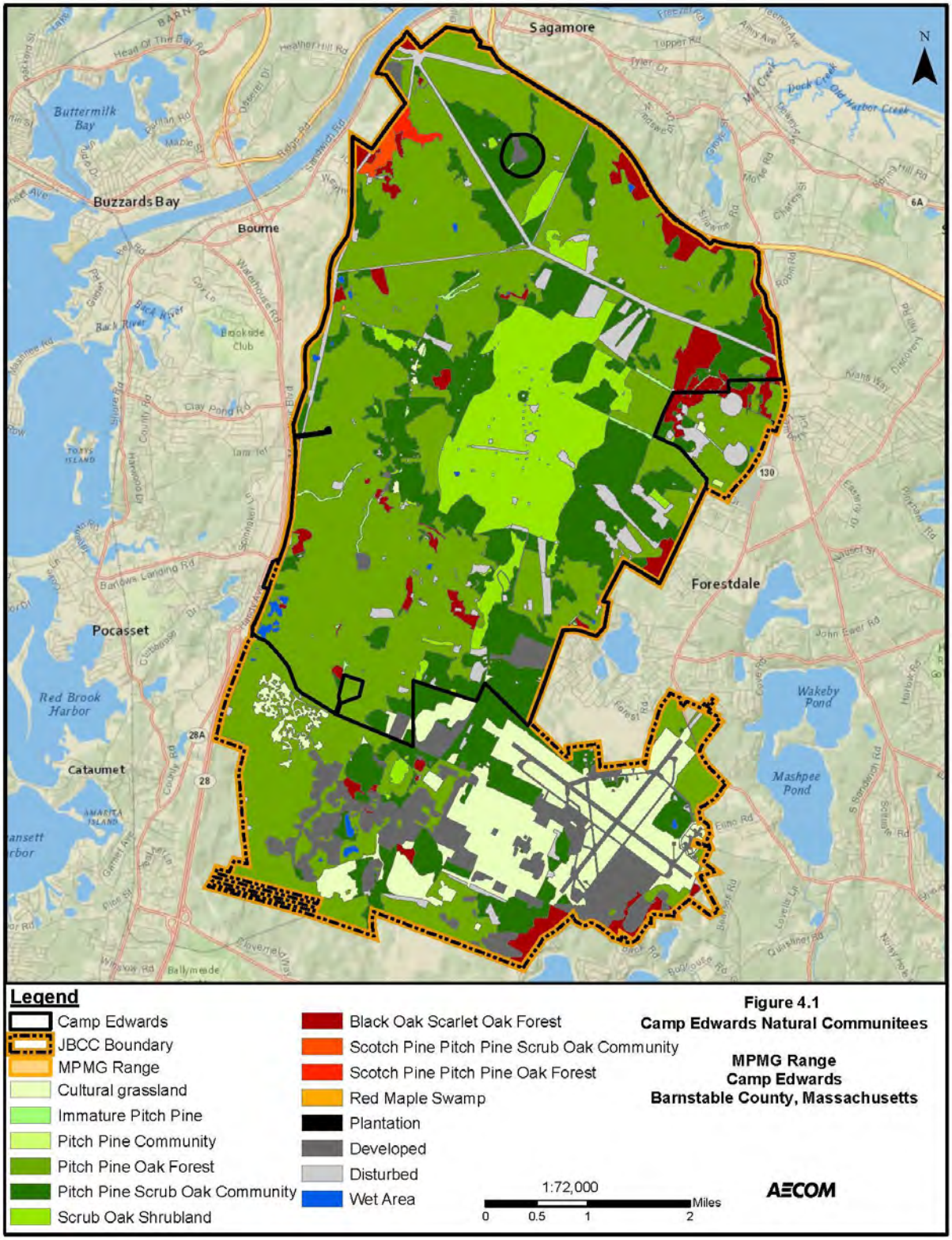
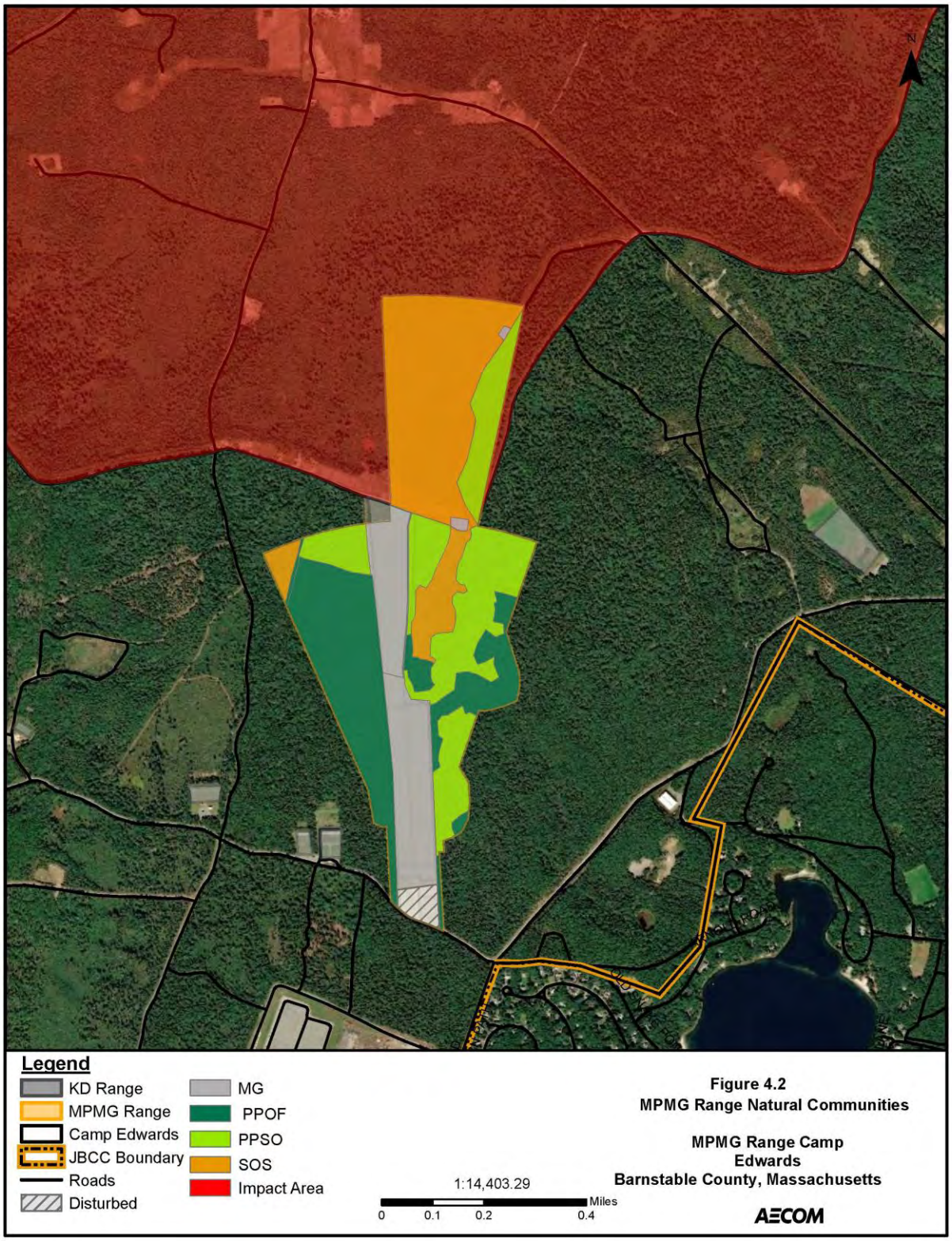


Figure 4.1
Camp Edwards Natural Communitees

MPMG Range
Camp Edwards
Barnstable County, Massachusetts


N
Legend
KD Range
MPMG Range
Camp Edwards
JBCC Boundary
Roads
Disturbed
MG
PPOF
PPSO
SOS
Impact Area
1:14,403.29
0
0.1
0.2
0.4
Miles
Figure 4.2
MPMG Range Natural Communities
MPMG Range Camp
Edwards
Barnstable County, Massachusetts
AECOM

Two of these natural communities are ranked as S2 or "Imperiled in Massachusetts" by NHESP including the Pitch Pine-Scrub Oak Community and the Scrub Oak Shrubland. The Black Oak-Scarlet Oak Forest is ranked by NHESP as S3/S4 or "Vulnerable in Massachusetts/Apparently Secure in Massachusetts" which indicated a wide range of uncertainty regarding this community.

The proposed MPMG Range footprint is primarily comprised of disturbed land, managed grasslands, immature pitch pine, scrub oak shrubland, pitch pine oak forest, pitch pine scrub oak. Rare species associated with the pine and scrub oak barrens and the large unfragmented sections of forest may be found within the area of the Project.

The following are descriptions of the natural communities of Camp Edwards as per the Classification of Natural Communities (Swain and Kearsely 2001) that are located in and adjacent to the MPMG Range and at the other projects locations

- Pitch Pine-Oak Forest/Woodland (PPOF)
- Pitch Pine-Scrub Oak Community (PPSO)
- Scrub Oak Shrubland/Frost Bottoms (SOS)
- Cultural or Managed Grasslands (MG)
- Wetlands

4.6.1.1 Pitch Pine-Oak Forest/Woodland (PPOF)

The pitch pine-oak forest woodland (PPOF) of Camp Edwards varies with degree of maturity. The structure of the forest ranges from a low canopy with a dense shrub layer to a taller canopy with a sparser shrub layer. In general, the plant community is in a mid-successional state where trees and shrubs are increasing in number, while forbs and grasses are becoming less abundant. The woodlands in the northern area of Camp Edwards tend to have a higher and denser canopy than the other forest communities. This may be due to less historic disturbance, resulting in a more mature forest.

The pitch pine-oak forest woodland of Camp Edwards has a low canopy of pitch pine (*Pinus rigida*) and tree oaks (black oak (*Quercus velutina*), scarlet oak (*Q. coccinea*), and white oak (*Q. alba*) and a moderately continuous shrub layer of blueberry (*Vaccinium* spp.), black huckleberry (*Gaylussacia baccata*), sheep laurel (*Kalmia angustifolia*), and scrub oak (*Q. ilicifolia*). The sparse forb layer consists of bracken fern (*Pteridium aquilinum*), wintergreen (*Gaultheria procumbens*), and Pennsylvania sedge (*Carex pensylvanica*), The low forest canopy, about 10-15 m tall, indicates a relatively young forest of no more than 100 years old and site-wide forest assessments in 1997 and 2003 indicate nearly all of this community dates to the mid-1950s or newer, which is consistent with historic photos and aerial imagery. PPOF near the MPMG Range and other project sites has a high percentage of scrub oak in the understory and is functionally lumped in with PPSO.

4.6.1.2 Pitch Pine-Scrub Oak Community (PPSO)

In areas of significant past disturbance and/or much of the moraine, the overstory community is almost entirely pitch pine with an understory of sometimes very dense scrub oak which creates the pitch pine-scrub oak (PPSO) community. Other tree species that are present but not common to the community are scotch pine (*Pinus sylvestris*), white oak, and black/scarlet oak. Scotch pine was likely introduced to Camp Edwards in the late 1920s and the early 1930s as plantations in Shawme-Crowell State Forest. The prevalent shrub species of this community are black huckleberry (*Gaylussacia baccata*) and blueberry which are

commonly interspersed among the more dominant scrub oak. The structure of the pitch pine-scrub oak communities varies greatly with age. Younger stands are short, dense thickets of immature pitch pine associated with significant recent disturbance. White oak is increasing significantly in understory where fire has been excluded and threatens to convert the community.

A smaller portion of the PPSO community is comprised of immature pitch pine, is relatively low in plant diversity, and often occurs along roads, old firebreaks, or other previously disturbed areas. As the pitch pine matures, the forest has a more closed canopy, which ultimately out competes scrub oak and nearly all other species for sunlight. However, in areas where pitch pine has been cleared, scrub oak often grows in extremely dense patches. In the pitch pine-scrub oak community trees, and shrubs in general, are growing at a rate greater than in any other plant community, indicating a somewhat young, but rapidly maturing forest. The diversity of the pitch pine-scrub oak community, 51 plant species, is about average for the plant communities of Camp Edwards. However, pitch pine and scrub oak are the dominant and most productive species in the community. This is an extremely fire prone plant community and present an extreme wildlife hazard as it matures and scrub oak meets canopy.

4.6.1.3 Scrub Oak Shrubland (SOS)

Much of Upper Cape Cod has been dominated by pitch pine and scrub oak shrublands or barrens (SOS) since the period of colonial settlement. The area has been maintained in an early successional state as a result of intensive timber harvesting and successive catastrophic fires. Fire and frost effects typically suppress the growth of pitch pine and other tree species while promoting the growth of scrub oak creating frost bottoms. Fire scarring causes scrub oak acorns to germinate more readily and terminal buds to die, resulting in the growth of lateral branches. Frequent late spring frosts result in chronic dieback of developing leaves, slow growth rates, and reduced stem height which promotes shrub growth. Eventually, large herds of sheep were grazed throughout the Upper Cape, which limited tree growth and promoted the establishment of the scrub oak barren habitats.

The SOS covers 2,107 acres, or 15% of Camp Edwards, mostly within the Impact Area. This plant community represents one of the earliest states of vegetative succession on Camp Edwards and consists primarily of scrub oak with essentially no pitch pine. Other common plants in the scrub oak barrens include black huckleberry, blueberry, cat brier (*Smilax glauca*), and wintergreen. The majority of SOS at Camp Edwards is at significant risk of loss due to forest (pitch pine) encroachment due to lack of fire from artillery and historic sources. Efforts to provide this habitat outside the Impact Area are underway.

4.6.1.4 Cultural or Managed Grasslands (MG)

Cultural or Managed Grasslands (MG) are human created and maintained open communities dominated by grasses. Mowing is the typical maintenance, however on Camp Edwards; fire has played and is playing a more important role. Only 175 acres of MG are located on Camp Edwards in portions of the Cantonment Area. The remainder of the grasslands of the JBCC are managed by other military services. MG were historically cleared for use as parade grounds, barracks areas, and airfield during World War II. The existing MG and management area is shown in **Figure 4.1**.

The cultural grasslands are one of the least diverse plant communities on Camp Edwards, with only 37 identified species during a floristic inventory. The community is dominated by grass species including little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), switchgrass (*Panicum virgatum*), hairgrass (*Deschampsia flexuosa*), redtop (*Agrostis gigantea*), poverty grass (*Danthonia*

spiccata), and Pennsylvania sedge (*Carex pensylvanica*). The only common tree species is immature pitch pine and red cedar. Sweetfern (*Comptonia peregrina*) was found in dense thickets less than a meter in height, whereas bayberry (*Myrica pensylavanica*), blueberry, and scrub oak were present, but less common. Many nonnative species such as honeysuckle (*Lonicera* spp.), Asiatic bittersweet (*Celastrus orbiculata*), autumn olive (*Elaeagnus umbellata*), and spotted knapweed (*Centaurea maculosa*) occur in the cultural grasslands of Camp Edwards and the JBCC. However, intensive management effort is focused on increasing plant diversity and reducing invasive plants. Best effect has been found in concentrating a combination of herbicide, fire, and mowing within an individual unit as opposed to broader treatments with a single method.

4.6.1.5 Wetlands

The ponds and wetlands at Camp Edwards, which comprise only 55 acres, or less than 1%, are the most diverse plant community on the installation. A total of 67 plant species were documented in the wetlands. There are six different types of wetlands based on the "Classification of Natural Communities in Massachusetts". They are Ponds, Coastal Plain Pond Shore, Kettlehole Level Bogs, Red Maple Swamps, Highbush Blueberry Thickets, and Woodland Vernal Pools. In addition, there are other types of bogs which are unique and not found in large acreages such as a Sphagnum Moss (*Sphagnum* spp.) Bogs comprised primarily of sphagnum moss and cranberry (*Vaccinium macrocarpon*) and Woodland Vernal Pools, and Highbush Blueberry Thickets that lack standing water for much of the year.

The MPMG Range and the majority of the other proposed projects do not include any wetlands within the project footprint. Additional details on these wetland resource area can be found in the 2009 INRMP. Range and other project designs will specifically avoid impacting wetlands and will comply with the Massachusetts Wetlands Protection Act and town bylaws.

4.6.1.6 Invasive Species

Although not a cover type, invasive species deserve a mention as they may impact mitigation efforts. As mentioned above, many nonnative and invasive species such as honeysuckle (*Lonicera* spp.), Asiatic bittersweet (*Celastrus orbiculata*), barberry (*Berberis thunbergii*), autumn olive, and spotted knapweed occur in the grassland area. There are ongoing management efforts to remove these exotic, invasive plant species. Some exotic and invasive plant species benefit from disturbance which tend to out-compete native species and proliferate in disturbed systems. One example of such a proliferation is that of knapweed (*Centaurea maculosa*) in the Cantonment Area which quickly establishes and out-competes native species in disturbed areas. It should be noted however, that the knapweed is slowly displaced by native bluestem grasses over a period of several years. Areas surrounding the existing KD Range, especially adjacent to parking and firing lines have particular abundance of some nonnative invasive plants including barberry, honeysuckle, and bittersweet.

4.6.2 Guilds

In addition to the vegetative communities described above, "guilds" have been identified at Camp Edwards to use for mitigation efforts. A guild is a grouping of species that may utilize similar natural resources such as vegetation cover types. For Camp Edwards, there are four vegetative guilds and three guilds based on a specific State-listed species (i.e., Eastern Box Turtle, Eastern Whip-poor-will, and Northern Harrier). In order to determine the mitigation ratios for Projects impacts (as described in **Section 1.4**), we assigned the

highest level of protection for species within that natural community or guild as shown in **Table 4-3** according to those species known to exist within these communities at Camp Edwards.

Table 4-3: Natural Communities and Guilds at Camp Edwards

Guild Associations	Natural Communities	Mitigation Level
Pine Barrens Guild	PPOF, PPSO, SOS	Threatened (2:1)
Grassland Bird Guild	MG	Threatened (3:1)
Frost Bottom Plant Guild	SOS Frost Bottoms	Endangered (3:1)
Wetlands	Wetlands	Endangered (3:1)
Eastern Whip-poor-will	PPOF, PPSO, SOS	Species of Special Concern (1.5:1)
Eastern Box Turtle	PPOF, PPSO, SOS	Species of Special Concern (1.5:1)
Northern Harrier	MG	Threatened (2:1)
Bats	PPOF, PPSO, SOS	Endangered (3:1)

4.6.3 Wildlife

Extensive surveys have been conducted to inventory the fauna of Camp Edwards. The MAARNG Range and Training Land Assessment (RTLA) program inventories and monitors natural resource conditions and manages and analyzes natural resource information. Results are pertinent to management of training and testing lands from training area to installation scales and provides input to decisions that promote sustained and multiple uses on military lands. Annual RTLA surveys have monitored the long-term trends in bird and small mammal populations since 1993 while other projects have surveyed faunal populations for one to eight years. According to the 2009 INRMP, in total, 28 species of mammals, 105 species of birds, 11 species of amphibians, 12 species of reptiles, 528 species of macrolepidoptera (butterflies, insects), and 46 species of odonates (dragonflies) have been documented at Camp Edwards. The INRMP is presently being updated and these lists are constantly being updated based on recent surveys.

4.7 Endangered Threatened, and Rare Species

MESA (MGL c. 131A) and its implementing regulations (321 CMR 10.00) protects State-listed rare species MESA prevents a loss or take of State-listed rare species. The NHESP manages the State-listed species and the MESA regulations. **Table 4-4** includes a summary of all State-listed species identified at Camp Edwards by rank. An updated list of State-listed wildlife species is provided in **Table 4-5** and plants are provided in **Table 4-6.** The Federal Endangered Species Act (ESA) requires that all Federal agencies shall seek to conserve threatened and endangered species and shall utilize their authorities in furtherance of the purposes of the ESA (Section 2(c)). MAARNG is presently working with both NHESP and USFWS regarding the survey, monitoring, and habitat management of listed species at Camp Edwards.

Based on surveys and observations made at Camp Edwards, earlier successional habitats (e.g., frost bottoms, SOS, sandplain grassland) are being lost to forest encroachment – especially within the Impact Area and other UXO hazard areas where the MAARNG is unable to implement management projects. The primary driver behind declines in some of the State-listed moths at Camp Edwards is a lack of fire in SOS

and the dramatic incursion of pitch pines into shrublands and frost bottoms after the secession of artillery fires in the Impact Area.

Table 4-4: Summary of State-Listed Rare Species Documented at Camp Edwards

Taxon	Special Concern	Threatened	Endangered	Total
Birds	1	3	1	**5**
Reptiles/amphibians	1	1	0	**2**
Odonates	0	1	0	**1**
Moths and Butterflies	12	6	0	**18**
Beetles	1	0	0	**1**
Crustacea	0	0	1	**1**
Mammals		0	4	**0**
Subtotal	**15**	**11**	**6**	**32**
Plants	0	1	6	**7**
Total	**15**	**12**	**12**	**39**

Table 4-4 includes the State-listed plants that have been identified at Camp Edwards.

Table 4-5: State-Listed Plant Species at or Near Camp Edwards

Scientific Name	Common Name	State Status	Federal Status	Habitat
Eleocharis ovata	Ovate Spike-sedge	E	-	Wetlands
Juncus debilis	Weak Rush	E	-	Wetlands
Malaxis bayardii	Bayard's Green Adder's Mouth	E	-	PPSO, MG
Ophioglossum pusillum	Adder's Tongue Fern	T	-	Wetlands
Rhynchospora torreyana	Torrey's Beak Sedge	E	-	SOS Frost Bottoms
Scleria pauciflora	Papillose Nut Sedge	E	-	PPSO, MG, Powerlines
Triosteum perfoliatum	Broad Tinker's Weed	E	-	SOS Frost Bottoms

Source: NHESP letter dated 16 August 2019

E = Endangered, T = Threatened, SC = Special Concern

Table 4-6: State-Listed Rare Species at Camp Edwards

Scientific Name	Common Name	State Status	Federal Status
Birds			
Ammodramus savannarum	Grasshopper sparrow	T	-
Bartramia longicauda	Upland sandpiper	E	-
Caprimulgus vociferus	Eastern Whip-poor-will	SC	
Circus cyaneus	Northern harrier	T	-
Pooecetes gramineus	Vesper sparrow	T	-
Reptiles and Amphibians			
Scaphiopus holbrookii	Eastern spadefoot	T	-
Terrapene carolina	Eastern box turtle	SC	-
Odonates			
Enallagma recurvatum	Pine Barrens bluet	T	-
Moths and Butterflies			
Abagrotis nefascia	Coastal heathland cutworm	SC	-
Acronicta albarufa	Barrens daggermoth	T	-
Callophrys irus	Frosted elfin	SC	-
Catocala herodias gerhardi	Gerhard's underwing moth	SC	-
Chaetaglaea cerata	Waxed sallow moth	SC	-
Cicinnus melsheimeri	Melsheimer's sack bearer	T	-
Cingilia catenaria	Chain dot geometer	SC	-
Cycnia inopinatus	Unexpected cycnia	T	-
Euchlaena madusaria	Sandplain euchlaena	SC	-
Dargida rubripennis	The Pink streak	T	-
Hemaris gracilis	Slender Clearwing Sphinx	SC	-
Hemileuca maia	Barrens buckmoth	SC	-
Lycia ypsilon	Pine barrens lycia	T	-
Metarranthis pilosaria	Coastal swamp metarranthis	SC	-
Papaipema sulphurata	Water-willow stem borer	T	-
Psectraglaea carnosa	Pink sallow moth	SC	-
Speranza exonerata	Pine barrens speranza	SC	-
Zale lunifera	Pine barrens zale	SC	-
Beetles			
Cincindela purpurea	Purple tiger beetle	SC	-
Crustacea			
Eulimnadia agassizii	Agassiz's clam shrimp	E	-
Mammals			
Myotis septentrionalis *	Northern long-eared bat	E	T
Myotis leibii *	Small-footed myotis	E	-
Myotis lucifugus *	Little brown bat	E	-
Perimyotis subflavus *	Tri-colored bat	E	-

Source: NHESP letter dated 16 August 2019
* From surveys performed at Camp Edwards
E = Endangered, T = Threatened, SC = Special Concern

4.8 Infrastructure and Transportation

Existing range buildings (i.e., ammunition building) and a range tower are present at the KD Range. These will be demolished for the construction of the new MPMG Range Buildings. In addition, the existing target berms, concrete walls, target supports, etc. will be demolished. Electricity is supplied to the range via overhead wires by Eversource. There is no sewer or water available at the site.

Camp Edwards has an extensive transportation system including 120 miles of roads, a railroad access point, and an ARNG aviation facility with associated access points throughout the training area. Railroad access from the Bourne-Falmouth railroad line has historically served to transport large tracked vehicles (e.g., tanks and APCs) and other equipment that is typically too large for transporting on existing public roads to Camp Edwards. The off-installation transportation systems serving Camp Edwards are in good condition and provide adequate access throughout the installation. U.S. Highway 6 and State Highways 28 and 130 border the Camp Edwards to the north, west, and east, respectively. State Highway 28 provides access to the Camp Edwards via the Bourne Gate; the Sandwich Gate is accessible via State Highway 130; and the Falmouth Gate is accessible via State Highway 151. The Bourne Gate is the most commonly used gate. Local highways are located on the east and west of Camp Edwards with the main access to Camp Edwards from MacArthur Boulevard to the west. This is a State controlled four lane divided highway which leads north to the Bourne Bridge where it connects to State Highway 25 and State Highway 495. Dirt roads are present to the north of the KD Range.

4.9 Recreation and Open Space

Camp Edwards has been a limited access facility since 11 September 2001. In addition, access to the 2,200 acre Impact Area is only accessed for UXO surveys. Persons interested in utilizing Camp Edwards for recreational or other purposes must request access from Camp Edwards Headquarters, Range Control, and the Camp Edwards E&RC. Consistent with this, SOPs for hunting on Camp Edwards were created by the Natural Resource Office in conjunction with Camp Edwards Headquarters, Facilities Engineers, Range Control, Massachusetts Division of Fisheries and Wildlife, the Senior Environmental Corps. Each year, sections of Camp Edwards on JBCC are open to deer hunting in the fall and turkey hunting in the spring. About 11,000 acres of this active military training area are open to hunting. However, access is strictly controlled. Camp Edwards is the largest tract of undeveloped land on Cape Cod. This area is also the Upper Cape Water Supply Reserve created for the permanent protection and coordinated management plans for water supply, wildlife, and open space protection, consistent with necessary and compatible military activities.

4.10 Cultural Resources

The National Historic Preservation Act (NHPA) of 1966, as amended (Public Law 89-665; 54 USC §300101 et seq.), establishes the policy of the Federal government to provide leadership in the preservation of historic properties and administer Federally-owned or controlled historic properties. Section 106 of the NHPA (54 USC §306108) requires Federal agencies to consider the effect an undertaking may have on historic properties; its implementing regulations, 36 CFR Part 800, 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. As part of the Section 106 process, agencies are required to consult with the State Historic Presentation Office (SHPO). The Section 106 process requires each undertaking to define an Area of Potential Effect (APE). An APE is “the geographic area or areas

within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any properties exist…[and the APE] is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking" (36 CFR Part 800.16[d]).

The MAARNG has been managing cultural resources at Camp Edwards for several years under the Integrated Cultural Resources Management Plan (ICRMP), last revised in 2009. In 2016, an archaeological survey of the MPMG Range was performed by The Public Archaeology Laboratory, Inc. (PAL) with no "finds" reported. A Project Notification Form (PNF) was submitted to MHC for comment. No comment was received and a MFR is included in **Appendix E** documenting this process.

4.10.1 Archaeological and Architectural Resources

The existing KD Range and Project area are in locations assessed with low archaeological sensitivity (Goodfellow 2003). At the request of MAARNG, PAL conducted an intensive (locational) archaeological survey of the KD Range in 2016 as part of planning efforts for the range expansion (Heitert and Fahey 2016). The survey consisted of the excavation of 94 shovel test pits across 103 acres flanking the east and west sides of the existing range. No artifacts were collected or cultural features identified as part of the survey and PAL recommended no additional archaeological survey of the then-proposed expansion area. Massachusetts Historical Commission (MHC) concurred with PAL's recommendation on 14 October 2016. No further correspondence or response to a Project Notification Form (PNF) submitted earlier this year.

The Preferred Alternative (Project) area abuts and expands north of the existing range into a landscape that also has been assessed with low archaeological sensitivity and is located within the Impact Area. In consideration of PAL's 2016 survey results and the identical results of other surveys conducted in low archaeological sensitivity areas (e.g., Heitert and Fahey 2017; Luttge and Heitert 2018), the Project area – inclusive of the previously surveyed and unsurveyed acreage – has low/no potential to affect potentially significant archaeological resources.

4.10.2 Native American Consultation

Based on the MAARNG's ICRMP, Federally-recognized tribes that are historically affiliated with the Camp Edwards geographic region have been and will be invited to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. These include the Wampanoag Tribe of Gay Head – Aquinnah, the Mashpee Wampanoag Tribal Council, and the Stockbridge – Munsee Community Tribe of Mohican Indians of Wisconsin. Tribal consultation has been initiated for the Project. Consultation with the Mashpee Wampanoag is also conducted through the EMC and the CAC as these groups include representatives of the Tribes. Correspondence was initiated via certified mail and letters sent to the tribes. No responses have been received to date.

4.11 Built Environment

Camp Edwards specializes in supporting military training for infantry exercises. Camp Edwards is comprised of approximately 582 acres (4%) of improved grounds, 675 acres (5%) of semi-improved grounds, and 13,311 acres (91%) of unimproved grounds. The land use of Camp Edwards consists of certain training activities, including assembly, tactical maneuvering, tactical bivouacking, small arms range firing, engineering, ammunition storage, support, maintenance, and aviation facilities, and environmental management. Tactical maneuvering, either on foot throughout the training area or in vehicles along roads, occurs as Soldiers travel from the assembly area to their area of operation. From the area of operation,

Soldiers engage in training missions specific to their mission requirements (e.g., engineering, infantry, medevac) throughout the training area. Small arms range firing and ammunition storage at the Ammunition Supply Point (ASP) also occur in the northern training area. The support, maintenance, and aviation facilities exist in a centralized region within the Cantonment Area.

JBCC is divided into two major sections. The southern section is comprised of approximately 5,000 acres of Cantonment Area, which is the industrialized portion of the base where administrative buildings, barracks, vehicle and equipment maintenance shops, housing, and runways are located. The northern section is comprised of approximately 15,000 acres and is a largely wooded area with rolling topography, trails, and paved roads with training areas, ranges where small arms firing and maneuver training occur, and the Central Impact Area where small arms firing and maneuver training occur and is primarily undeveloped. Camp Edwards is the largest tract of undeveloped land on Cape Cod. This area is also the Upper Cape Water Supply Reserve created for the permanent protection and coordinated management plans for water supply, wildlife, and open space protection, consistent with necessary and compatible military activities.

The Impact Area is a 330-acre area located within the Camp Edwards Impact Area (totaling 2,200 acres) and was the primary target area for artillery, mortar, and other firing activities from the early 1900s until firing ceased in 1997 due to contamination concerns. The Impact Area is considered a high hazard impact area due to UXO from weapon systems and due to safety concerns, no public access is allowed in this portion of the installation. The KD Range is located immediately south and separated from the Impact Area by Wheelock Road, an unimproved dirt road.

There are six active small arms ranges on Camp Edwards, which the MAARNG uses for weapons familiarization, weapons zeroing and qualification located within the 2,200-acre Impact Area but outside of the Impact Area. Camp Edwards has a series of paved and dirt roads throughout the area which is used for training in addition to over 7,600 acres of training areas comprised primarily of woodlands.

The installation is bounded by U.S. Highway 6 to the north, State Highway 130 and the Forestdale area of the town of Sandwich to the east, the Frances A. Crane Wildlife Management Area to the south, and State Highway 28 to the west. The predominant land use surrounding Camp Edwards is residential or commercial development. To the south of Camp Edwards is the Cantonment Area at Otis ANGB, the USCG Air Station Cape Cod, USCG Housing, and the Veteran's Affairs (VA) Cemetery.

The area located immediately to the east of the JBCC boundary is comprised of single-family residences and is the most densely populated area surrounding Camp Edwards. Land to the east of Camp Edwards near the KD Range is all residential (see **Figure 1.1**). The KD Range is approximately 300 meters (0.2 miles) west of the nearest residential homes located off of Meredith Road in the Forestdale neighborhood of Sandwich.

The existing KD Range is not presently used for live-fire training but is used for other training operations such as UAS. The Massachusetts Unmanned Aircraft Systems Test Center (MA UASTC) coordinates all non-military UAS flight operations at JBCC. The KD Range is the primary location for UAS operations in the Camp Edwards Training Area.

4.12 Oil and Hazardous Materials

According to the 2015 Environmental Condition of Property (ECOP) Pre-Construction Assessment (PCA) prepared by GEI Consultants specific to the KD Range, the following findings were presented:

- Between the mid-1970s and 1990s, the KD Range (formerly referred to as the CTR-1, or the CTR-1 Aerial Gunnery Range) was used for a variety of types of ordnance, including small arms marksmanship, grenade launching and rocket-type munitions training. The KD Range is currently used for unmanned drone flight training.
- In December 1993, the KD range was cleared of surface ordnance and explosives including ordnance remnants such as 22 mm rounds, 35 mm sub caliber rounds, and Dragon and tube-launched, optically-tracked, wireless-guided missile motors. However, a 2001 report concluded that several items of various types of Munitions and Explosives of Concern (MEC) had been discovered at the surface and that possible MEC exists in the subsurface.
- During site reconnaissance, an armored personnel carrier was observed, previously used for target practice. Visible debris from fired rockets and missiles including portions of housings, tail fins, and electronic components was also observed.
- The Property (KD Range) is listed by the MassDEP under Release Tracking Number (RTN) 4-15033. Concentrations of metals including antimony, copper, and lead, the explosive compound nitroglycerin (NG), and pesticide dieldrin, were detected in surface soil samples above the MCP Reportable Concentrations (RCs). MAARNG conducted a Rapid Response Action (RRA) to address soil contamination and protect groundwater conditions in 2000. Surface soil was excavated and removed from six areas to depths of approximately 1 to 2 feet. Excavated areas included the primary target area, pistol and rocket firing points, and the suspected former target area.
- The KD Range is also listed by the MassDEP under RTN 4-15075. The MAARNG investigated the potential application of the pesticide dieldrin at the KD Range and JBCC at the request of MassDEP. Based on historic file reviews no records documenting the application of dieldrin at the JBCC have been found. However, based on the distribution and concentrations detected in soil across the JBCC, it was concluded that application was the most likely source of the pesticide.
- There were no available records of current or past hazardous materials use or hazardous waste generation. No hazardous materials or wastes were observed during the site reconnaissance. The Range Captain stated that all oils and fuel are removed from vehicles before they are used for target practice.
- Per the EPSs, no vehicle or equipment maintenance is permitted in the Camp Edwards Training Area. Also, per EPSs, no storage or movement of fuel in anything larger than a five gallon can is permitted without prior approvals from MAARNG and EMC.
- Past and present operations and waste disposal practices at the JBCC have resulted in subsurface contamination including areas near the Impact Area of the JBCC where the KD Range is located. Contaminants associated with eight JBCC areas are fly ash, bottom ash, waste solvents, waste fuels, herbicides, and transformer oil. According to groundwater contaminant plume maps, the nearest plume, located on L Range, is located 0.5 mile to the east of the KD Range. The plume is being remediated. Based on the mapped extent of this plume, the plume is unlikely to affect conditions at the KD Range.
- According to the IAGWSP Final JBCC Training Areas Investigation Report (2 April 2018), the IAGWSP will remove the munitions debris and targets from the KD Range and collect a confirmatory soil sample from the primary target Army Personnel Carrier (APC). No additional action is

recommended for KD Range. Based upon investigation results, residual dieldrin concentrations in some soils are somewhat elevated. The observed concentrations of dieldrin ranged from 0.0026 to 0.18 mg/Kg with an overall average concentration of 0.048 mg/Kg, which is slightly higher than the JBCC background concentration of 0.03 mg/Kg. However, it is below the MCP S-1/GW-1 standard of 0.08 mg/Kg. It is likely that these detections are the result of use of a pesticide for its intended purpose according to the manufacturer's specifications. Therefore, no additional response action is recommended for the dieldrin detections.

- Sampling in 2018 identified RDX (an explosive) and HMX (a high melting explosive) were reported in exceeding MassDEP S-1/GW-1 standards. As required by the Final Training Areas Operable Unit Decision Document (February 2019), the APC was removed and soil will be excavated to a depth of one-foot from a 35 x 35-foot grid from this area. All excavated soil will be placed on and covered with impermeable plastic sheeting and will be characterized for offsite disposal at an approved facility.

The ECOP PCA concluded with the following: "Based on our evaluation of current Property conditions and our review of available Property records, we have categorized the Property as Category III. Category III is a site known to be contaminated, or there is a strong suspicion contamination will be encountered during construction. Specifically, MEC has been discovered at the surface and possible MEC [munitions and explosives of concern] exists in the subsurface. In addition, known propellant and explosive compounds and heavy metals, including lead, resulting from past range activities have been identified in soil. Targeted soil remediation has been performed, but there is a possibility that additional contamination is still present."

In January of 2000, the USEPA issued Administrative Order 3 (AO3), which required the NGB and the MAARNG to conduct rapid response actions, feasibility studies and remedial actions to address contamination in certain areas of the training ranges and Impact Area. It required the NGB to undertake a feasibility study to address UXO and munitions, which have been disposed of or fired at the training ranges and Impact Area. It also required the NGB, upon approval from USEPA, to implement remedial measures relating to UXO and munitions. As a result of the evidence of contamination, the USEPA in January 2000 ordered the NGB to begin the process for the removal of UXO from the base and to clean up contaminated groundwater and soils.

Soil investigations at KD Range were intended to focus on evaluation of the nature and extent of any contaminants potentially associated with target practice for multiple types of ordnance, including past use for rocket training. Investigations at these ranges focused on firing locations where propellants may have been present and target locations where explosives may have been deposited in compliance with the SDWA §1431(a), 42 USC §300i(a), as amended, and with AO3. Remedial actions to address localized contaminated soil have been conducted at the KD Range and involved soil excavations focused on localized soil contamination. At KD Range (West) over 500 yards of soil were excavated in 2000 to reduce elevated concentrations of several explosives including hexahydro-1,3,5-trinitro-1,3,5-triazine, octahydro-1,3,5,7-tetranitro-1,3,5,7- tetrazocine, and trinitrotoluene.[7]

The MAARNG maintains a Hazardous Waste Management Plan, as well as an installation-specific Spill Prevention Control and Countermeasure Plan (SPCC). This plan identifies potential sources of pollution, BMPs to limit this potential, procedures to respond to pollution events, and procedures to handle hazardous materials.

[7] USEPA Decision Document February 2019

5.0 Assessment of Impacts

The Preferred Alternative, Reduced-Scale Alternative, Full Build Alternative, and No Action Alternative were evaluated against the following significance criteria to determine if impacts would result from the MPMG Range on the following environmental resources.

5.1 Topography, Geology, and Soils

No adverse environmental impacts on topography, geology, and soils are anticipated. Work associated with soil during construction is provided in **Section 6.1** and soil remediation is discussed in **Section 6.12.**

5.2 Water Resources – Groundwater

The groundwater beneath the proposed MPMG Range is being managed by the Impact Area Groundwater Study by the IAGWSP. Construction and operation of the MPMG Range will be coordinated with the IAGWSP regarding their monitoring and treatment programs. Due to the depth of groundwater beneath the site, no impacts to groundwater are anticipated during the construction and operation phases of this Project.

5.3 Air Quality

Sensitive receptors for air quality assessments 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. The MPMG Range is proposed approximately 300 meters (0.2 miles) from the eastern JBCC boundary and the nearest offsite receptor (residential neighborhood, see **Figure 5.1**), making the potential air pathway to offsite residents highly unlikely. The nearest receptor on Camp Edwards is located over two miles to the southwest in the Cantonment area where residential areas are available for military personnel.

The Project would have non-significant, temporary effects on air quality. Construction of any range may generate some dust resulting from earth-moving operations during construction. This effect would be localized to the construction site and immediate surroundings and last for the duration of construction. This effect would be non-significant, localized to the construction area and would occur during daylight hours on weekdays during the construction period which is anticipated to be eight months. Effects on air quality from operating a training range would largely result from vehicles travelling to and from the range and would have de minimus (negligible) effect on air quality. Under the Preferred Alternative, the Project would result in a *de minimus* localized, short-term increase in air emissions during construction from construction vehicles onsite and the short-term generation of fugitive dust due to proposed earth disturbance within the collective 209.0-acre construction area. This would not result in a significant or long-term adverse increase of criteria pollutants at the JBCC or the surrounding area. No adverse environmental impacts on air quality are anticipated therefore, no mitigation measures are proposed. Impacts would be similar for each of the MPMG Range layout alternatives. The No Action Alternative would not result in any change to air quality.

MAARNG will look into participating in MassDEP's Clean Air Construction Initiative (CACI) and the MassDEP Diesel Retrofit Program to mitigate the construction-period impacts of diesel emissions to the maximum extent feasible. The CACI program helps proponents identity appropriate mitigation for minimizing air pollution from construction vehicles such as retrofit of construction equipment with particulate filters and oxidation catalysts and/or use of on-road low sulfur diesel (LSD) fuel. The MAARNG

may consult with MassDEP to develop appropriate construction period diesel emission mitigation, which could include the installation of after-engine emission controls such as diesel oxidation catalysts or diesel particulate filters (DPFs).

5.4 Greenhouse Gas

As described in **Section 4.5**, the majority of CO_2 emitted from the Project, all alternatives, is generated from the land clearing and the biomass removal. For each alternative, the biomass removal accounts for anywhere between 97.4% and 98.1% of the total CO_2 generated. If you eliminate the land clearing (biomass removal) from the calculated totals in **Table 4-1** and compare the emissions to the 726 US Tons under the baseline conditions, the Preferred Alternative result in an increase of emissions of 32%, the Full Build resulting in an increase of 68% over baseline emissions. Mitigation is discussed in **Section 6.4** and focuses primarily on the land clearing emissions.

5.5 Noise

The alternatives were evaluated against the following criteria to determine if they would result in a significant impact on the noise environment:

- Alternative would create a Zone III (>104 dB) boundary that extends off-base during favorable weather conditions.
- Alternative would include routine activities that result in a Zone II that extends off-base.
- Alternative would substantially increase noise resulting from traffic.
- Alternative would result in substantial disruptions to nearby sensitive receptors.

As part of the preliminary planning process, Camp Edwards conducted a test fire at KD Range in August 2015, to simulate noise from the proposed MPMG range in the Southern Location Alternative. The results of the test fire showed noise levels did not exceed MassDEP levels for nuisance noise. As the 2015 study showed additional acreage off-base located within the Zone II, a revised more northern location was identified and assessed in the 2019 update for the Preferred Alternative Location. The USAPHC performed a Noise Assessment for the proposed MPMG Range in May of 2019 which analyzed the Preferred Alternative (with the .50 caliber lanes), the Reduced-Scale Alternative (without the .50 caliber lanes), and the Southern Location Alternative. The Full Build Alternative was not studied. A copy of this report is provided in **Appendix D**.

USAPHC developed noise contours using the Small Arms Range Noise Assessment Model (SARNAM) which is the standard U.S. Army small caliber weapons (.50 caliber and below) noise simulation program (US Army Corp of Engineers, 2003). The program requires operations data concerning types of weapons, quantity of ammunition, and range layout. The SARNAM calculation algorithms assume weather conditions or wind direction that favors sound propagation in all directions and includes baseline activities from other small arms ranges at Camp Edwards. **Figure 5.1** provides the Noise Zones from the Preferred Alternative and **Table 5-1** provides a summary of impacts.

Under this alternative, Zone III remains within the JBCC boundary. Zone II extends approximately 300 meters (0.2 miles) to the east beyond the eastern boundary where there are multiple residential neighborhoods as well as an elementary school. Short-term and long-term impacts to the local noise environment would be anticipated. Direct impacts would include short-term increased noise levels as a

result of land clearance activities and long-term increased noise levels as a result of proposed firing operations.

Noise generating sources during land conversion activities would be associated primarily with standard construction and maintenance equipment. These increased noise levels could directly affect the areas adjacent to the proposed range. Given the distance between the MPMG Range footprint and sensitive receptors (i.e., residential areas), coupled with the short duration of these activities, no effect to the off-base noise environment is anticipated to occur as a result of land clearing activities.

Indirect impacts include noise from workers commuting and material transport. Area traffic volumes and noise levels would increase slightly from travel to and from the site within Camp Edwards. Under the Preferred Alternative, the area near the proposed range activities would experience temporary increases in traffic noise during daytime hours and some night time hours during operations. These effects would be anticipated to be negligible because they are temporary and the location of the proposed range is relatively remote and heavily wooded.

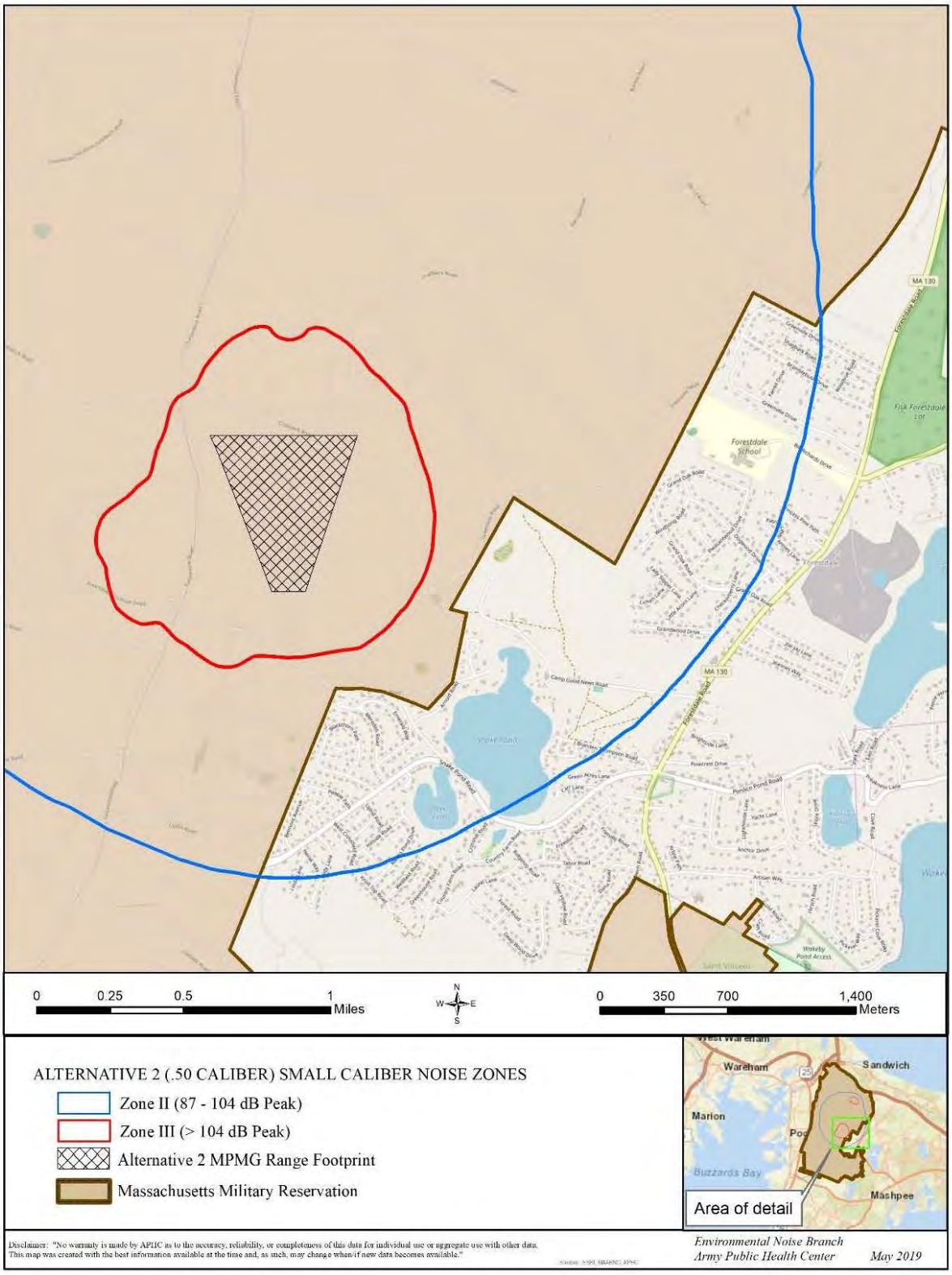
Table 5-1: Summary of Impacts from 2019 USAPHC Report

Noise Zone	Total Acreage	Off-Base Acreage	Total Acreage	Off-Base Acreage
Baseline				
Zone II (87-104 dB Peak)	2,754	26	-	-
Zone III (> 104 dB Peak)	394	0	-	-
Preferred Alternative (USAPHC Alternative 2)				
Noise Zone	**Without .50 caliber**		**With .50 caliber**	
Zone II (87-104 dB Peak)	3,293	127	7,323	832
Zone III (> 104 dB Peak)	693	0	802	0
Southern Location Alternative (USAPHC Alternative 1)				
Noise Zone	**Without .50 caliber**		**With .50 caliber**	
Zone II (87-104 dB Peak)	3,257	166	7,395	921
Zone III (> 104 dB Peak)	667	0	788	0

Legend:

No Action Alternative
Preferred Alternative (Project)
Reduced-Scale Alternative
Southern Location Alternative

Long-term operational noise impacts are anticipated due to increased site use and firing operations on the MPMG Range. While site usage would increase as no weapons training is presently occurring at the KD Range, overall Camp Edwards site usage would only increase by approximately 20% under the Preferred Alternative. Noise impacts associated with increased training use would be anticipated to be minimal and temporary.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ALTERNATIVE 2 (.50 CALIBER) SMALL CALIBER NOISE ZONES
Zone II (87 - 104 dB Peak)
Zone III (> 104 dB Peak)
Alternative 2 MPMG Range Footprint
Massachusetts Military Reservation
Wareham
Sandwich
Marion
Buzzards Bay
Mashpee
Area of detail
Disclaimer: "No warranty is made by APHC as to the accuracy, reliability, or completeness of this data for individual use or aggregate use with other data. This map was created with the best information available at the time and, as such, may change when/if new data becomes available."
Environmental Noise Branch
Army Public Health Center
May 2019

Although the annual average noise levels are compatible with the surrounding area, there is potential for individual event peak noise levels to generate noise complaints within the Zone II located off-base. Potential noise impacts on the surrounding communities and property owners can vary based on weather conditions due to differences in sound propagation. Citizens within these areas may find the activity noticeable and distinct, and there is a moderate risk of MAARNG receiving noise-related complaints. Peak noise levels above 130 dB, subjectively defined as very loud or possibly startling, would not extend beyond the JBCC boundary. Therefore, proposed training activities are anticipated to have minimal long-term impacts on the local noise environment with implemented BMPs. Noise mitigation is described in **Section 6.5**.

Under the Reduced-Scale Alternative and Full Build Alternative, no short-term impacts on noise would occur during the construction phase similar to the Preferred Alternative. During the operations phase, long-term minimal impacts would occur as identified in **Table 5-1**. However, the impact would be less than the Preferred Alternative as the range size is smaller. Zone III remains within the boundary of JBCC. Although not studies, the Full Build Alternative would result in an increase of the Zone II off-site. Implementation of the No Action Alternative would have no effect on the current local noise environment. Training and operations at Camp Edwards would continue under current conditions at current locations and noise levels.

5.6 Biological Resources

The Preferred Alternative, Reduced-Scale Alternative, Full Build Alternative, and the No Action Alternative were evaluated to determine impacts to biological resources such as vegetation and wildlife. Rare Species impacts are discussed in **Section 5.7.** Impacts to vegetation and wildlife are discussed below.

5.6.1 Vegetation

Short-term minimal impacts to biological resources would be anticipated during land cover conversion within MPMG Range due to the removal of existing vegetation. As shown in **Figure 3.2**, the MPMG Range is comprised primarily of pine barrens, scrub oak shrublands, and grasslands which are home to State-listed rare species. These vegetative communities are abundant within Camp Edwards. No rare plants have been observed within the proposed MPMG footprint although access within the Impact Area has been limited. The Project allows for the opportunity to have the part of the MPMG footprint within the Impact Area cleared of UXO so plant surveys may occur. **Table 5-2** provides a breakdown of vegetative cover types as they relate to the proposed MPMG Range.

Additionally, large scale restorations of these habitats are being conducted across Camp Edwards. Rare species mitigation programs are already underway in consultation with NHESP. Under the Preferred Alternative, a total of approximately 170.5 acres of pine barrens would be cleared and permanently converted to maintained grassland. Native species would be used when revegetating the cleared areas where targets and support structures (i.e., access roadways) are not proposed. Impacts to vegetative communities at Camp Edwards are anticipated to be minor due to the relatively limited amount of tree clearing compared to the total habitat available at Camp Edwards and the management and restoration efforts being conducted.

Table 5-2: Proposed MPMG Range Footprint by Cover Type

Cover Type	MPMG Range Footprint	MPMG Range-specific Firebreaks	Total Project Footprint
PPOF	47.0	4.0	51.0
PPSO	51.0	3.0	54.0
SOS	62.5	3.0	65.5
MG	36.0	-	36.0
ROCA	2.5	-	2.5
Total Acres	**199.0**	**10.0**	**209.0**

* Roadway edges adjacent to Impact Area

5.6.2 Wildlife

Wildlife in the proposed footprint of the range would sustain direct and indirect, short-term and long-term minimal impacts associated with construction and land clearing activities and from proposed site maintenance and training activities (i.e., from noise). Wildlife would be expected to vacate the immediate areas during these activities if they are able. Some individuals of the less mobile species (i.e., small mammals, reptiles, amphibians) could potentially suffer loss of life during land disturbing activities. While species may be disturbed by increased human presence and noise levels, the relatively small areas of disturbance and large areas of undeveloped land make expected impacts to wildlife less-than-significant.

Large-scale habitat restorations are underway at Camp Edwards and established procedures are in place to avoid and minimize impacts to wildlife species from routine military activities. The Project would be anticipated to affect these species, but would be unlikely to adversely affect them if the following procedures and management measures are followed as described in **Section 6.6**.

Overall, proposed land clearing would be minor relative to the available habitat at Camp Edwards. Further, MAARNG actively manages its property for the benefit of wildlife, including migratory birds. To minimize potential impacts associated with vegetation removal specifically in the Project area, land clearing activities would be scheduled to occur, to the extent feasible, outside the breeding season or late in the breeding season, under guidance from the E&RC.

Potential long-term effects to migratory birds could occur during land management operations (e.g., periodic mowing) and training activities. Proposed training activities at the proposed range could have the potential to injure or kill migratory birds, but the likelihood of birds being struck during operational activities is considered highly unlikely. Individual birds may temporarily relocate from the Project area during training exercises to other suitable habitat within Camp Edwards due to disturbance from noise and/or human presence. However, these birds would likely return upon completion of the training exercises. Therefore, no significant adverse impacts to migratory birds would be anticipated. To minimize potential impacts to migratory birds and special status species, operational activities would be conducted in accordance with the Camp Edwards INRMP and the Memorandum of Understanding (MOU) between the DoD and USFWS to promote the conservation of migratory birds. In the unlikely event that proposed training activities start a fire on the range, the fire would be extinguished in accordance with existing range management rules before it reaches adjacent natural areas.

Under the Preferred Alternative, impacts to biological resources would involve the removal of 170.5 acres of trees. Impacts to vegetation and wildlife would be less under the Reduced-Scale Alternative which is Phase 1 of the Preferred Alternative, as there would be approximately 71.0 acres less disturbance. Under the Full Build Alternative, there would be an additional 97 acres of impact to the biological resources. Under the No Action Alternative, no impacts to biological resources would occur. Nonetheless, The No Action Alternative and the Reduced-Scale alternative would not allow the management of the SOS frost bottom located north of the KD Range maintaining the dramatic incursion of the pitch pines into this significant habitat.

5.7 Endangered Threatened, and Rare Species

The following section describes the Project impacts to State-listed species including rare moths and Eastern Box Turtle. In addition, this section describes avoidance and minimization efforts to reduce impacts to these and other species. The MPMG Range Footprint is 199.0 which includes the 38.5 acres of the KD Range. In addition to the MPMG Range, an additional 10.0 acres of range specific firebreaks are proposed for a Project Footprint of 209.0 acres. Of the 209.0 acres, approximately 2.5 acres of the southern part of the KD Range the houses the previously existing ROCA is not considered as rare species habitat. Based on the presence of PPOF, PPSO, SOS, and MG, it is presumed that all remaining acreage (206.5 acres) within the Project Footprint is considered as rare species habitat. The draft CMP Application is provided in **Appendix B** which provides additional detail. Mitigation efforts are described in **Section 6.7**.

Table 5-3: MPMG Range Impacts

Acres	Description
199.0	MPMG Range Footprint
10.0	Firebreak Footprint
209.0	**Project Footprint**
209.0	Project Footprint
2.5	ROCA Footprint
206.5	**MPMG Range Rare Species Take Footprint**
206.5	MPMG Range Take Footprint
36.0	MPMG Range Grassland Take Footprint
170.5	**MPMG Range Pine Barrens Take Footprint**

Under the Preferred Alternative, impacts to rare species would involve the removal of 170.5 acres of trees within mapped habitat. Impacts to rare species would be less under the Reduced-Scale Alternative which is Phase 1 of the Preferred Alternative, as there would be approximately 71.0 acres less clearing of trees. Under the Full Build Alternative, there would be an additional 97 acres of tree removal. Under the No Action Alternative, no impacts to rare species would occur. Nonetheless, the No Action Alternative and the Reduced-Scale alternative would not allow the management of the SOS frost bottom located north of the KD Range maintaining the dramatic incursion of the pitch pines into this significant habitat.

5.8 Infrastructure and Transportation

No adverse environmental impacts on infrastructure and transportation are anticipated. For the construction of the firebreak roadways associated with the MPMG Range, 10.0 acres (4.5 miles) of pine barrens will be impacted. These impacts are addressed under **Section 5.7** for rare species impacts. The new roadways are expected to be a benefit for fire management relative to the MPMG Range but will also be available for controlling any wildland fires which may occur at Camp Edwards. There will be a temporary increase in construction equipment although this is anticipated to be minimal as all soils will be reused on site to the extent possible. This will almost eliminate traffic on local roads outside of the base.

5.9 Recreation and Open Space

No short-term adverse environmental impacts on recreation and open space are anticipated. Active programs exist at Camp Edwards to allow hunting under controlled conditions. Hunting will not be allowed when the MPMG Range is in operation due to the location of the SDZs and for the safety of the users of Camp Edwards.

5.10 Cultural Resources

As the MPMG Range Site has low/no potential to affect potentially significant archaeological resources, no adverse environmental impacts on cultural resources are anticipated.

5.11 Built Environment

The proposed MPMG Range is in compliance with the MMR Master Plan and with existing uses at Camp Edwards, therefore, no adverse environmental impacts on the built environment are anticipated.

5.12 Oil and Hazardous Materials

The Preferred Alternative, Reduced-Scale Alternative, Full Build Alternative, and the No Action Alternative were evaluated against the following significance criteria to determine if they would result in a significant impact from the use of oil and hazardous materials (OHM):

- Alternative would substantially increase generation of, or exposure of the public to, hazardous substances.
- Alternative would substantially increase the presence of hazardous substances in the environment (i.e., contamination).
- Alternative would substantially restrict the use of property due to hazardous waste, materials, or potential site remediation requirements.

Under the Preferred Alternative, short-term and long-term impacts associated with oil and hazardous waste (OHW) would be anticipated due to minor land conversion activities (short-term) and maintenance and training operations (long-term). Impacts would be managed through BMPs and ongoing regulatory compliance. Implementation of the Preferred Alternative would not substantially affect the installation's hazardous materials storage and handling procedures and hazardous waste disposal processes.

In general, the potential short-term and long-term impacts related to OHW would result from collective implementation of the Preferred Alternative, rather than from any one component. The Preferred Alternative would produce minor increases in handling, storage, use, transportation, and disposal of OHW. The anticipated increases would include additional vehicle and equipment use associated with vegetation removal activities, site maintenance, and training operations. These proposed activities would have potential contamination sources, including such products as diesel fuel, oil, antifreeze, and lubricants. Even without major release events, multiple minor releases could have potential effects to the environment. Releases over a long period of time could potentially lead to soil contamination, and thus could require some form of remediation. All OHW that would be used or generated would be handled and disposed of in compliance with Federal and State requirements, as well as the EPS to minimize potential impacts to the extent feasible. No stationary sources of hazardous or toxic materials/wastes occur within the proposed MPMG Range. The area is accessed occasionally by military and civilian vehicles. Examples of hazardous materials often associated with vehicles include antifreeze, motor oil, brake fluid, hydraulic oil, grease, battery acid, fuel oil, diesel fuel, and other fuels for vehicle maintenance.

Under the Reduced-Scale Alternative, potential OHW impacts would largely be the same as those described (i.e., minor) under the Preferred Alternative. Under the Full Build Alternative, the same potential OHW impacts would occur although the construction period would be longer increasing the potential for an incident to occur. Implementation of the No Action Alternative would have no effect with respect to OHW at Camp Edwards. All phases will require the use of UXO and MEC contractors to assess areas vegetated with trees before land clearing occurs.

5.13 Construction Phase Impacts

The MAARNG will evaluate construction period impacts, including erosion and sedimentation, air quality and solid waste disposal and commit to measures to minimize construction impacts and ensure the Project is consistent with the applicable Solid Waste and Air Quality control regulations and applicable EPS. A construction management plan will be prepared by MAARNG for approval by the EMC with more details on these impacts and associated mitigation. The Preferred Alternative would be constructed in two phases as previously described in **Section 1.5**. See **Section 6.13** for additional mitigation information.

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6.0 Mitigation Measures

6.1 Topography, Geology and Soils

No adverse environmental impacts on topography, geology, and soils are anticipated other than from grading or the construction of the MPMG Range. The MAARNG will prepare a detailed, site-specific Erosion and Sedimentation Control Plan to address all earth-disturbance aspects of the Project. The Erosion and Sedimentation Control Plan will include standard BMPs, such as specific guidelines and engineering controls to address anticipated erosion and resultant sedimentation impacts from establishing and operating the proposed MPMG Range. Soil contamination, if encountered, will follow procedures described in **Section 6.12.** The MAARNG will implement the following measures:

- Install and monitor erosion-prevention measures such as silt fences and water breaks, sedimentation basins, filter fences, sediment berms, interceptor ditches, straw bales, rip-rap, and/or other sediment control structures; re-spreading of stockpiled topsoil; and seeding/revegetation of areas temporarily cleared of vegetation.
- Plant and maintain native soil-stabilizing vegetation on the range where soils have been disturbed.

6.2 Water Resources – Groundwater

Due to the depth of groundwater beneath the site (100 feet deep), no impacts to groundwater are anticipated during the construction and operation phases of this Project. As such, mitigation measures are not proposed. Nonetheless, the MAARNG will conduct periodic visual inspections to verify that the Erosion and Sedimentation Control Plan is being followed and is working. Long-term groundwater protection during training operations would be accomplished by implementing stormwater BMPs, maintaining vegetative cover, and implementing the applicable EPS. The Site is located within the IAGWSP and may be subject to the MCP and the USEPA SOWA AOs for Camp Edwards. Environmental sampling and investigation activities are ongoing at portions of these sites. MassDEP recommends that the proposed Project be designed and constructed to not impede any ongoing or future environmental site investigation, remediation, system performance and/or monitoring activities at the MMR. The MAARNG will work closely with the Air Force Civil Engineer Center (AFCEC), Army National Guard, USEPA and MassDEP to coordinate activities during the design and construction of the proposed MPMG Range to avoid or mitigate impacts.

No dewatering is anticipated during construction due to the depth of groundwater beneath the site and the relatively shallow construction of the MPMG Range and associated buildings.

Pursuant to the Massachusetts Oil and Hazardous Material Release Prevention and Response Act, MGL c. 21E, the MAARNG must notify MassDEP if oil, hazardous material and/or UXO and MEC are identified or released during Project construction. The MAARNG should commit to ensuring that the Project contractors and sub-contractors maintain an emergency response plan for performing appropriate response actions in the event contamination is encountered during Project construction.

6.3 Air Quality

The MAARNG would ensure dust control associated with land clearing activities and proposed training activities are conducted in accordance with MassDEP – Air and Climate Division guidelines and EPS Air Quality Performance Standard 8 (which requires compliance with the SIP and the CAA). To minimize the potential for adverse air quality impacts, the MAARNG would implement the following typical dust control BMPs, as applicable:

- Use appropriate dust suppression methods during on-site construction activities, and if necessary, during dry weather training activities (i.e., available methods include application of water [fresh water only], soil stabilizers, or vegetation; use of enclosures, covers, silt fences, or wheel washers; and suspension of earth-movement or disturbance activities during high wind conditions);
- Require a speed of less than 15 miles per hour for land clearing equipment on unpaved surfaces;
- Use low volatile organic compounds supplies and equipment;
- Repair and service vehicular and construction equipment to prevent excess emissions;
- Shut down heavy equipment when not needed; and
- Clean excess soil from heavy equipment and trucks leaving the construction zone to prevent off-site transport.
- Dust-reducing measures would be briefed to the contractor or Soldiers responsible for implementing these activities.
- The MAARNG's on-site manager would be responsible for bringing air quality issues, if they arise, to the Range Control and the MAARNG Environmental Office.

6.4 Greenhouse Gas

Mitigation for the Proposed Project includes phasing of the construction and preservation of forested acreage within Camp Edwards. The Project will be constructed in two phases as described with the first phase being the Reduced-Build Alternative. Following the construction of the first phase, the two extended lanes will be constructed with the total impacts represented by the Preferred Alternative. Substantial mitigation efforts are being proposed relative to impacts to rare species in consultation with the NHESP which includes the preservation of approximately 310 acres of land within Camp Edwards that is presently forested. Other management strategies includes the management of approximately 832 acres of forests through mechanical forestry. The land preservation acreage alone provides mitigation for the impacts from the Proposed Project. Mitigation will continue each year with the annual sequestration occurring in the preserved forests. Grassland alteration during land clearing will also result in the release of CO_2 but will be mitigated by the replanting and restoration of the range floor with native grasses.

In addition to the annual sequestration, mature forests sequester carbon throughout its life. One acre of forest provides 230 US Tons of sequestration. The estimated amount of sequestered carbon in the 13,500 acres of forest at Camp Edwards is estimated to be approximately 3,105,000 US Tons. One acre of grassland provides 10 US Tons of sequestration. The estimated amount of sequestered carbon in the 175 acres of grassland at Camp Edwards is estimated to be approximately 1,750 US Tons of sequestration. The annual GHG sequestration and lifetime sequestration from the mitigation acreage is summarized in **Table 6-1.**

Camp Edwards continues to provide carbon sequestration on an annual basis through maintenance of forested land. Construction of the Proposed Project would only represent 1.3% of the carbon sequestered

in the forests at Camp Edwards. The release of CO_2 from the Proposed Project will be mitigated in 3.5 years based on just the annual sequestration of GHG provided by the forested land at Camp Edwards. According to the latest GHG emissions inventory by Massachusetts, in CY 2016, the state sources emitted 74,200,000 million metric tons of CO_2e emissions. This is equivalent of 81,620,000 US tons of CO_2e emissions in CY 2016 where complete dataset was available. The estimated CO_2e emissions for the Preferred Alternative (immediately after project completion) represents an insignificant amount (less than one hundredth fraction of 1%). Regardless, after the completion of Project, the continued annual sequestration by forested land at Camp Edwards will make up for the release during Project construction. Please refer to **Appendix H** for the GHG Analysis.

Table 6-1: Sequestration and Mitigation

Management Action	Acreage	Annual Sequestration		Lifetime Sequestration	
		Rate*	US Tons	Rate	US Tons
Land Preservation	310	0.85 US Tons/ acre/year	263.5	230 US Tons/acre	71,300
Forestry Management	832	0.85 US Tons/ acre/year	707.2	230 US Tons/acre	162,012
Total Mitigation	**1,142**	0.85 US Tons/ acre/year	**967.3**	230 US Tons/acre	**233,312**
Forests at Camp Edwards	**13,500**	0.85 US Tons/ acre/year	**11,475**	230 US Tons/acre	**3,105,000**

* see Section 1.8

6.5 Noise

As a result of the noise studies, the location of the MPMG Range has been shifted to the north to reduce the Zone II location within the adjacent residential areas. Therefore, the noise impacts are being mitigated partly through the design. In addition, the USAPHC provided the recommendation to provide public notification of upcoming training events, particularly the .50 caliber activity as mitigation. A Noise Notification Protocol has been established in the SONMP and utilizes, among other communication methods, postings on social media such as Facebook. Additional testing is anticipated to be performed once the range is actually built in order to determine the actual Zone II locations which can then be used to determine if other mitigation measures such as constructing noise barriers to lower noise levels would be recommended.

To minimize adverse noise impacts resulting from proposed small arms firing operations on the MPMG Range, the MAARNG will continue to implement the noise notification protocol and noise complaint protocol. In addition, the MAARNG would conduct training activities in accordance with Camp Edwards Range Regulations and the MAARNG SONMP further reducing operational noise effects.

The following BMPs will be used by the MAARNG as appropriate to limit noise impacts during land conversion activities:

- Stationary equipment and material transportation routes will be located as far away from sensitive receivers as possible.

- Equipment will be operated per manufacturer's recommendations, and noise-generating heavy equipment will be shut down when not needed.
- Construction personnel will be directed to operate equipment in the quietest manner practicable (e.g., speed restrictions, retarder brake restrictions, engine speed restrictions, etc.).
- Noise-reducing measures will be briefed to the contractor or Soldiers responsible for implementing these activities.
- The MAARNG's on-site construction manager would be responsible to bring noise issues, if they arise, to the Range Control or the MAARNG Environmental Office.
- These BMPs will be incorporated into construction contracts.

6.6 Biological Resources

The MAARNG will limit ground disturbing activities during the establishment of the proposed MPMG Range to the extent feasible. Native plant species will be used to the maximum extent practicable when revegetating the firing points. Long-term land management and training operations will be conducted in accordance with the INRMP and other applicable management plans for Camp Edwards. Large-scale habitat restorations are underway at Camp Edwards and established procedures are in place to avoid and minimize impacts to wildlife species from routine military activities. The Project would be anticipated to affect these species, but would be unlikely to adversely affect them if the following procedures and management measures are followed.

- Carry out the vegetation and wildland fire management recommendations outlined in the INRMP and Integrated Wildland Fire Management Plan (IWFMP) as applicable.
- Implement a Turtle Protection Plan relative to the Eastern Box Turtle to prevent any takes during the construction of the MPMG Range (including tree removal).
- Implement conditions of the CMP to be issued by NHESP.

While it is anticipated that short-term and long-term impacts may occur as a result of the Project on biological resources, mitigation measures are being developed in order to offset any impacts. These mitigation measures are outlined for rare species but will benefit all biological resources in the CMP which is presently being prepared. These measures would reduce any adverse environmental impacts to below significant levels. Additional mitigation measures relative to rare species and rare species habitat is provided in **Section 6.7.**

6.7 Endangered, Threatened, and Rare Species

Impacts from the MPMG Range will be mitigated through a combination of mitigation methods. Initially, the Project will be constructed in two phases which will allow rare species in the area to adapt to the existence of the range. Mitigation for the MPMG Range has already begun and has occurred during 2019 and additional actions will occur in subsequent years. The Project consists of significant mitigation measures related to impacts to the Site's rare species habitat. To address potential impacts to the Eastern Box Turtle, the Whip-Poor-Will, rare moth and grassland species, MAARNG proposes a number of mitigation strategies including land transfers, land preservation, and land management. **Tables 6-2** and **6-3** provide the proposed actions and mitigation standards which have been completed or are proposed to be completed as part of the MPMG Range mitigation. In order to determine the mitigation to impacts of rare

species for the MPMG Range Project, the following steps were taken. These steps will also be used for determining rare species impacts for future projects.

- Determine if project can be designed to avoid or minimize impacts to rare species habitat
- Determine vegetative communities impacts by acreage within project footprint
- Determine which State-listed species will be impacted based on vegetative community
- Apply mitigation ratios under MESA based on State ranking to determine required mitigation acreage
- Assess mitigation methodologies to required mitigation acreage for habitat improvement
- Identify land preservation or mitigation parcels
- Identify other mitigation or minimization actions

Table 6-2: MPMG Range Mitigation

Acres	Mitigation
171	MPMG Range Pine Barrens Take Footprint
2:1	2:1 mitigation ratio for Pine Barrens
341	**Pine Barrens Mitigation Required**
341	Pine Barrens Mitigation Required
- 133	Land Preservation Tract 5
208	**Remaining Mitigation Acres Needed**
208	Remaining Mitigation Acres Needed
2:1	Double Mitigation Acres Needed proposed by MAARNG (total of 4:1 mitigation ratio)
416	**Acres to be Managed**
125	30% of 416 (Standard #1 Mechanical Forestry)
+ 291	70% of 416 (Standard #2 Prescribed Burn)
416	**Acres to be managed (at 4:1 ratio)**
416	Acres to be Managed (Standard #3 Continued Management and Maintenance)
2:1	Additional Mitigation proposed
832	**Acres to be Managed (at 8:1 ratio)**

Acreage rounded up

Under MESA, impacts to rare species may be permitted if a project has long-term net benefits to the affected rare species. In accordance with 321 CMR 10.23(7)(b), NHESP reserves the right to require, on a permit-by-permit basis, an areal habitat mitigation ratio or an alternative mitigation approach that differs from the ratios noted above. As impacts resulting from the proposed MPMG Range will only impact Threatened and Special Concern species, the MAARNG is proposing land preservation at the required 2:1 ratio for this Project. The MAARNG has also offered to double the acreage needed to ensure net benefit and that the long-term or perpetual component of mitigation will be addressed through the INRMP. That is, management of any habitat will be performed at a 4:1 ratio for impacts to Threatened species

In consultation with NHESP, MAARNG has developed this draft CMP Plan to provide a long-term net benefit to the conservation of the State-listed species that may be impacted from the construction and operation of the MPMG Range. Implementation of this Plan will provide net benefit across much more area of Camp Edwards and will combine with ongoing site-wide management through the INRMP and additional habitat improvement beyond mitigation to support the MPMG Range use. The INRMP provides effect mechanisms to ensure net benefit despite loss of habitat. The INRMP is presently being updated. In addition, this Plan will be memorialized, not only in the INRMP, but also in the required Annual Reports (State of the Reservation). This section describes condition and intent for the various types of land actions, units, and parcels discussed for mitigation planning. Other types of land protection may come available and be included to this the Plan through coordination with MassWildlife and NHESP. However, this current Plan focuses on the following mitigation efforts; each one described in a section below.

Table 6-3: MPMG Range Mitigation

Mitigation Standard	Location	2019	2020	2021	Other years	Acres of Mitigation	
						Target	Provided
Land Preservation	Tract 5	133				310	310
Land Preservation	Primary Forest Canopy Reserve Area - Northern Unit (for Eastern Box Turtle)	177					
Total Land Preservation		**310**				**310**	**310**
#1 Mechanical Forestry	Pine Barrens Mitigation Focal Areas - Western Unit	50				125 (30% of 416)	125
#1 Mechanical Forestry	Pine Barrens Mitigation Focal Areas - Western Unit		40				
#1 Mechanical Forestry	Pine Barrens Mitigation Focal Areas (TBD)			35			
#2 Prescribed Burn	Pine Barrens Mitigation Focal Areas - Northern Unit	47				291 (70% of 416)	291
#2 Prescribed Burn	Pine Barrens Mitigation Focal Areas - Western Unit (Total burn = 399, remainder 145 for other projects)	244					
#3 Continued Management	Pine Barrens Mitigation Focal Areas		50	150	216	416	416
Total Pine Barrens Management		**341**	**90**	**185**	**216**	**832**	**832**
#4 Manage Grasslands	Grassland Mitigation Focal Area Parcel H – Unit K fire (Total burn = 42, remaining 6 for other projects)	36				36	36
#4 Manage Grasslands	Grassland Mitigation Focal Area Parcel H – Unit K herbicide						
#4 Manage Grasslands [1]	Grassland Mitigation Focal Area Parcel H – Unit K mowing (Total mow = 80, remaining 44 for other projects)		36				
Total Grasslands Management		**36**				**36**	**36**

[1] Parcel H – Unit K managed for other projects

- Land Preservation
  - Land Preservation by Transfer of Parcels to MassWildlife
  - Land Preservation with Management (Parcel H – Unit K)
  - Pine Barrens Forest Canopy Reserve Areas (FCRA)
- Management of existing habitat within Mitigation Focal Areas

    - Pine Barrens Mitigation Focal Areas
    - Grasslands Mitigation Focal Areas
- Monitoring and research of rare species
- Avoidance and minimization
- Cost of management

In addition, MAARNG developed "Mitigation Standards" to be used for the MPMG Range project and other projects proposed at Camp Edwards as outlined in the Draft CMP Application and summarized here. These Mitigation Standards are designed to be applied to the management of existing habitat for the benefit of rare species. MESA requires high level of Priority Habitat mitigation to provide net benefit to State-listed species. The number and breadth of impacted State-listed species results in a mitigation plan to provide for overall positive benefit for pine barrens and grassland associates of both open and closed forest conditions. The MAARNG has developed the following mitigation standards or actions for management at Camp Edwards which can be applied to proposed projects. In order to develop a Camp Edwards-wide approach to mitigation, percentages and associated acreages have been provided as a guide where appropriate.

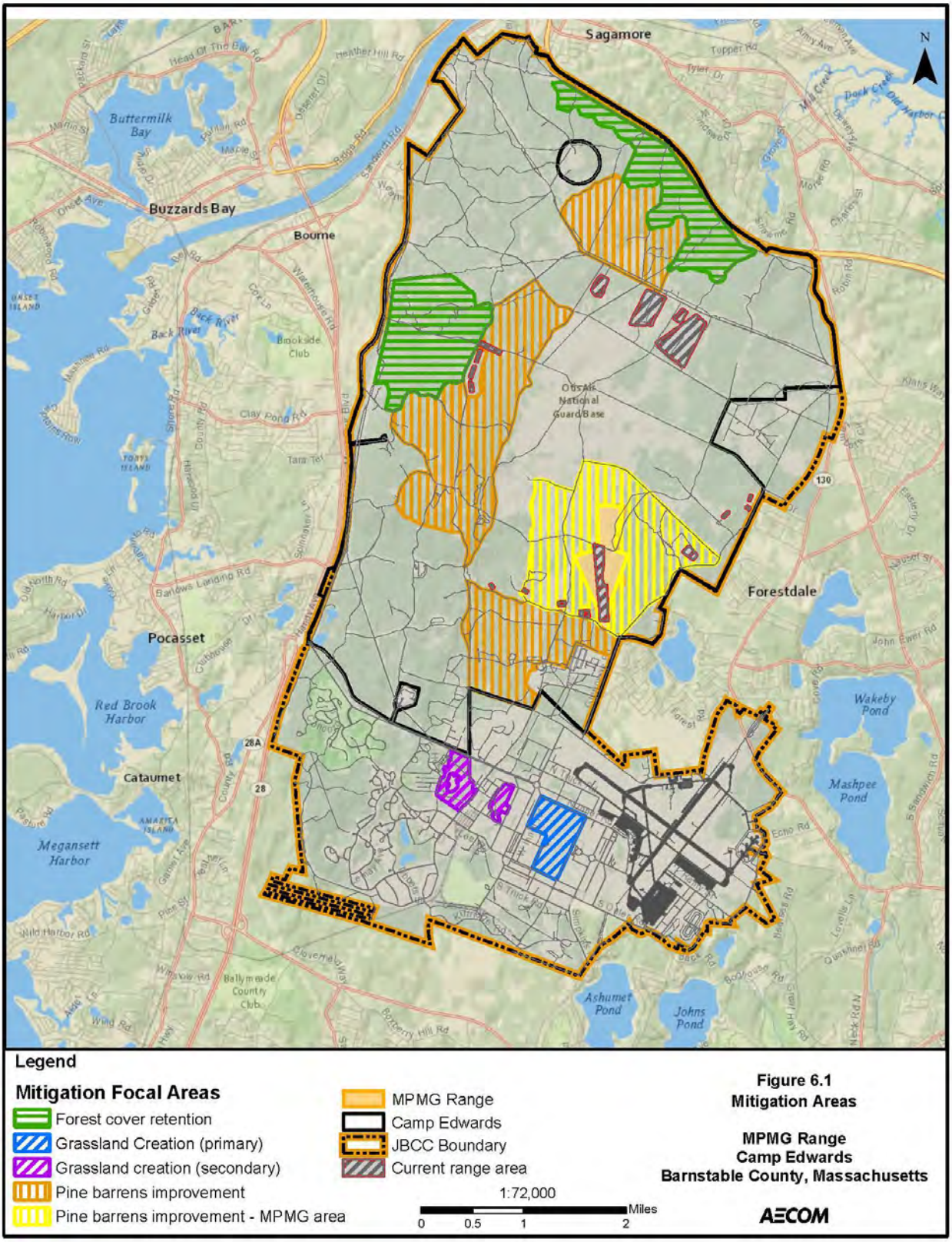
- Standard #1 Mechanical Forestry (Pine Barrens)
- Standard #2 Prescribed Burns (Pine Barrens)
- Standard #3 Continued Management and Management (Pine Barrens)
- Standard #4 Manage Grasslands
- Standard #5 Monitoring and Research

Figure 6.1 provides an overview map of JBCC including the location of land preservation parcels and mitigation focal areas. To date, the MAARNG has already performed actions which contribute to the net benefit of the rare species at Camp Edwards and JBCC including the following:

- Land Transfer of Tract 5 (133.0 acres) 2014, 2017 (PPSO)
- Land Transfer of Tracts 1-4 (128.0) 2019 (PPOF)
- Land Transfer of Parcel H of unit K (150.0 acres) (MG)
- Development and implementation of Range Complex Master Plan
- Development and implementation of site-wide INRMP

On-going actions are continuing which contribute to the management of resources at Camp Edwards:

- Collaborative development of mutually beneficial mitigation and monitoring strategies
- Range and infrastructure environmental review and design process
- Mitigation implementation


Sagamore
Buzzards Bay
Bourne
Buttermill Bay
Back River
Brookside Club
Otis Air National Guard Base
Forestdale
Pocasset
Red Brook Harbor
Cataumet
Megansett Harbor
Wakeby Pond
Mashpee Pond
Ashumet Pond
Johns Pond
Ballymeade Country Club
N
Legend
Mitigation Focal Areas
Forest cover retention
Grassland Creation (primary)
Grassland creation (secondary)
Pine barrens improvement
Pine barrens improvement - MPMG area
MPMG Range
Camp Edwards
JBCC Boundary
Current range area
1:72,000
0 0.5 1 2 Miles
Figure 6.1
Mitigation Areas
MPMG Range
Camp Edwards
Barnstable County, Massachusetts
AECOM

The conversion, management, and protection of rare species habitat will be assigned to "Mitigation Focal Areas". Benefits of using focal areas including consolidating mitigation for maximum benefit while providing flexibility of management and ensuring sufficient acreage for new or revised projects The Mitigation Focal Areas include two types of areas where active or passive mitigation through management may occur:

- Pine Barrens Mitigation Focal Areas
- Grassland Mitigation Focal Areas

These mitigation areas are explained in greater detail in the attached CMP Application in **Appendix B.** This combination of mitigation strategies will allow MAARNG to establish a robust mitigation bank and overall strategy for success to facilitate implementation of long-term planning efforts including modernization of the range complex and infrastructure, thereby maximizing positive impacts. The schedule for implementing mitigation efforts for the MPMG Range began in 2019 and will continue through to 2025 and beyond.

The robust mitigation components committed to by the MAARNG in the draft CMP Application specific to the MPMG Range include:

- Approximately 133 acres within Camp Edwards will be preserved in perpetuity as open space through the transfer of land to MassWildlife. The land is identified as the 133-acre Tract 5 located within the towns of Falmouth, Bourne, and Sandwich along the JBCC southern boundary and abuts the Crane Wildlife Management Area.
- Approximately 177 acres of land has been identified by MAARNG to be set aside for land preservation with management of vegetation for rare species. This land is identified as a Forest Canopy Reserve Area within Camp Edwards.
- Approximately 36 acres of has been identified for grassland management for rare species. This land is identified as a Grassland Mitigation Focal Area located in the Cantonment Area to optimize conditions for grassland species.
- The MAARNG will monitor the MPMG Range construction area prior to, and during construction, to remove Eastern Box Turtles from the construction areas if found.
- The MAARNG will provide construction staff with information and materials about the likely presence of State-listed species and appropriate responses to any sightings
- The MAARNG will implement a Turtle Protection Plan during the construction phase of the Project Eastern Box Turtles.
- The MAARNG will monitor Eastern Box Turtles and other species to be determined for a period to be determined after the construction of the Project to assess the effectiveness of mitigation measures.
- The MAARNG will implement a long term monitoring and management plan to maintain habitat quality within the pine barrens using the INRMP for guidance.
- The cost of the mitigation is more fully detailed in the draft CMP Application. Financial resources are budgeted for the proposed actions through Federal (Army, National Guard Bureau) funding.
- Mitigation funding for range MILCON projects is through the environmental budget of Army National Guard while facilities projects are through a combination of environmental (e.g., staff) and installation funding. Environmental funding is entered through the Status Tool for Environmental Programs (STEP) and is maintained with a seven-year budget.

- The MAARNG will be funding mitigation habitat management actions proposed as described in the draft CMP Application.
- The MAARNG will provide monitoring and research funding detailed more fully in the draft CMP Application which identifies actions and associated costs through to 2025.

6.8 Infrastructure and Transportation

No adverse environmental impacts on infrastructure and transportation are anticipated, therefore, no mitigation is proposed. Construction phase BMPs are discussed in **Section 6.13** below.

6.9 Recreation and Open Space

No adverse environmental impacts on recreation and open space are anticipated, therefore, no mitigation is proposed. Hunting will not be allowed when the MPMG Range is in operation due to the location of the SDZs and for the safety of the users of Camp Edwards.

6.10 Cultural Resources

As no adverse environmental impacts on cultural resources are anticipated, no mitigation is proposed. Should archaeological materials or human remains be inadvertently discovered during construction activities, all work will cease immediately and the MAARNG ICRMP SOP would be followed.

6.11 Built Environment

No adverse environmental impacts on the built environment are anticipated, therefore, no mitigation measures are proposed. Removal of construction and demolition debris from the tear down of the existing buildings will be transported to the Integrated Solid Waste Management landfill located adjacent to Camp Edwards. The proposed demolition of existing buildings, roadways or parking areas must be handled in accordance with the Massachusetts Solid Waste Regulations (310 CMR 16.00 and 310 CMR 19.000).

6.12 Oil and Hazardous Materials

Impact to the environment from OHW is expected to be minimal and mostly associated with the construction phase. To mitigate and prevent any releases of OHW, the following will be implemented:

- Comply with the EPS general performance standards for pollution prevention and management of the Camp Edwards training ranges.
- Ensure all MAARNG field staff members are trained in spill response.
- During construction and operation of the proposed MPMG Range, all OHW that would be used or generated will be handled and disposed of in compliance with the performance standards.

Pursuant to the Massachusetts Oil and Hazardous Material Release Prevention and Response Act, MGL c. 21E, the MAARNG shall notify MassDEP if oil, hazardous material and/or UXO and MEC are identified or released during Project construction. The MAARNG shall commit to ensuring that the Project contractors and sub-contractors maintain an emergency response plan for performing appropriate response actions in the event contamination is encountered during Project construction.

6.13 Construction Phase Mitigation

The following are items anticipated to be included in the construction management plan to reduce or eliminate impacts to the environmental during the construction phase.

- MAARNG will coordinate with the IAGWSP to protect and or relocate any existing groundwater quality monitoring wells currently located within the Project site.
- Construction and demolition material will be disposed of off-Site in compliance with State regulations. The proposed demolition of existing buildings, roadways or parking areas must be handled in accordance with the Massachusetts Solid Waste Regulations.
- MAARNG will look into participating in MassDEP's Clean Air Construction Initiative (CACI) and the MassDEP Diesel Retrofit Program to mitigate the construction-period impacts of diesel emissions to the maximum extent feasible.
- Porto-potties will be used throughout the construction phase as no latrines are allowed in this area.
- Refueling: All construction-related refueling must be conducted in accordance with an EMC-approved refueling plan.
- Construction traffic will result in the temporary increase from construction equipment being brought to and from the site. Construction traffic during the construction phase will be limited as machinery will be stored at the site or within Camp Edwards and all soils will be reused on site to the extent possible. This will almost eliminate traffic on local roads outside of the base.
- In the event that UXO/MEC are encountered during construction, an "on-call" UXO/MEC expert will be contacted immediately. This expert will handle all aspects of the removal process to include regulator notification, implementation of safety measures and removal of such items. This expert will be contracted from the start of the start of the project through the finish.
- MAARNG must notify MassDEP if OHM are identified and/or released above reportable quantities during Project construction.

6.14 Best Management Practices

Per established protocols, procedures, and requirements, the MAARNG will implement BMPs and will satisfy all applicable regulatory requirements in association with the Project. BMPs are included as components of the Preferred Alternative, as appropriate, and are described below. BMPs are regulatory compliance measures that the MAARNG regularly implements as part of their activities, as appropriate, across the State of Massachusetts. These are different from "mitigation measures," which are defined as project-specific requirements (not routinely implemented by the MAARNG) necessary to reduce identified potentially significant adverse environmental impacts to less-than-significant levels.

With implementation of the following routine BMPs, the Preferred Alternative would not result in significant adverse impacts to the current environmental setting. Extensive BMPs were developed in the SAR P2 Plan including the following, which deal with the design, administration, and operation of the MPMG Range, as applicable. These BMPs have been incorporated into the design of the MPMG Range. Administrative and operation BMPs include the following:

- Operation BMPs
  - Ammunition
  - Unit Evaluation SOP

        - Range Residue and Expended Cartridge Casing Management SOP
        - Range Turn-in/Clearing SOP
        - Metals Monitoring/Sampling
        - Periodic Metals Removal
        - Periodic Inspection of Range Conditions
    - Administrative BMPs
        - Support Personnel and Training
        - Budgeting and Funding
        - Small Arms Range Supplement Update

6.15 Mitigation Funding

MAARNG has developed a budget for the rare species mitigation of MPMG Range. This budget has been proposed to include all management costs, including mechanical, fire, monitoring and research. Financial resources are budgeted through Federal (Army, NGB) funding. The Project has been designed to meet the long-term net benefit performance standard for rare species by providing for financial or in-kind contributions toward the development.

Monitoring and research funding will be provided over a period of years as described in **Table 6-4**. Mitigation funding for range MILCON projects is through the environmental budget of ARNG while facilities projects are through a combination of environmental (e.g., staff) and installation funding. Environmental funding is entered through the STEP. MAARNG maintains a seven-year budget including these plans and projects which are included in the INRMP project tables. In addition to the monitoring and research funding, the MAARNG will be funding the various habitat management actions proposed as described in the draft CMP Application.

Due to early planning for mitigation needs, MAARNG accessed $76,600 funds dedicated to MPMG Range mitigation and leveraged this for an additional $158,791 of funded mitigation projects. Funding is also approved for the coming seven years in the Federal budget, but will benefit from the funding assurance provided by a formal CMP. The direct FY 2019 funds and associated acres were obligated for mitigation implantation to the amount of $235,391, details of which are provided in the draft CMP Application.

Table 6-4: Actions Proposed by Year

Year		Action	Acres	Cost	Year total
1	2019	Land transfer	132		$181,700
		Mechanical harvest (Wheelock)	52	$114,000	
		Prescribed burn	406	$42,500	
		Mechanical prep for burns*	18	$11,200	
		Admin (plans, permits)		$14,000	
2	2020	Prescribed burn	160	$51,000	$458,600
		Mechanical harvest (RAW3)	40	$88,000	
		Mechanical prep for burns	42	$54,000	
		Admin (plans, permits)		$22,500	
		Moth survey plan		$26,500	
		Eastern Box Turtle support		$216,600	
3	2021	Prescribed burn	160	$51,000	$334,500
		Mechanical harvest (BA-7/BA-1)	50	$110,000	
		Mechanical prep for burns	30	$36,000	
		Admin (plans, permits)		$22,500	
		Moth survey year 1		$55,000	
		Eastern Box Turtle support		$60,000	
4	2022	Prescribed burn	160	$51,000	$162,000
		Mechanical prep for burns	30	$36,000	
		Admin (plans, permits)		$15,000	
		Eastern Box Turtle support		$60,000	
5	2023	Prescribed burn	160	$51,000	$205,000
		Mechanical prep for burns	20	$24,000	
		Admin (plans, permits)		$22,500	
		Moth survey year 2		$55,000	
		Eastern Box Turtle support		$60,000	
6	2024	Prescribed burn	160	$51,000	$162,000
		Mechanical prep for burns	30	$36,000	
		Admin (plans, permits)		$15,000	
		Eastern Box Turtle support		$60,000	
7	2025	Prescribed burn	160	$51,000	$205,000
		Mechanical prep for burns	20	$24,000	
		Admin (plans, permits)		$22,500	
		Moth survey year 3		$55,000	
		Eastern Box Turtle support		$60,000	

7.0 Small Arms Range Management and the Environmental Performance Standards

The EPS are standards for performance that guide both military and civilian users in the protection of Camp Edwards Training Areas natural, cultural, and groundwater resources. These standards apply to MAARNG properties at JBCC. The EPS were established in 2001 under EO 443 and Chapter 47, Acts of 2002**.** The 19 EPSs that, under the oversight of the EMC, regulate and guide training in the Camp Edwards Training Area, are discussed below, updated as of 6 April 2017. This section is provided as the EPS have been reviewed during the MEPA process. A copy of the EPS are provided in **Appendix G.**

7.1 Adaptive Management

The Camp Edwards Training Area, including the small arms ranges and their associated SDZs, and any areas where small arms or other munitions or simulated munitions are used, shall be managed as part of a unique water supply area under an adaptive management program that integrates pollution prevention and BMPs including the recovery of projectiles. This will be done through individual range-specific plans that are written by the MAARNG and approved for implementation through the EMC and any other regulatory agency having statutory and/or regulatory oversight. Adaptive, in this context, means making decisions as part of a continual process of monitoring, reviewing collected data, evaluating advances in range monitoring, design and technology, and responding with management actions as dictated by the resulting information and needs of protecting the environment while providing compatible military training within the Camp Edwards Training Area / Upper Cape Water Supply Reserve. The small arms range management program components required in each range-specific plan shall include:

- Consultation with applicable agencies with oversight of the training area before undertaking any actions that are subject to State and/or Federal regulatory requirements.
- Specific recovery plans for the removal and proper disposition of spent projectiles, residues and solid waste associated with the weapons, ammunition, target systems, and/or their operation and maintenance.
- Reduction of adverse impacts to the maximum extent feasible, including consideration for the design/redesign and/or relocation of the activity or encouraging only those activities that result in meeting the goal of overall projectile and/or projectile constituent containment.
- Internal and external coordination of documentation for the Camp Edwards range management programs and other related Camp Edwards management programs including: the Integrated Training Area Management Program (ITAM), Range Regulations, Camp Edwards Environmental Management System, Civilian Use Manual, and SOPs.
- Long-term range maintenance, monitoring and reporting of applicable parameters and analysis within the annual State of the Reservation Report.

Goals for the adaptive ecosystem management of Camp Edwards / Upper Cape Water Supply Reserve are as follows:

- Management of the groundwater for drinking water resources
- Conservation of endangered species.
- Management of endangered species habitat for continuation of the species.

- Ensuring compatible military training activities.
- Allowing for compatible civilian use.
- Identification and restoration of areas impacted by training activities.

7.2 Small Arms Range Operations, Maintenance and Monitoring Plans

The OMMP identifies the operations and management practices that MAARNG will implement at the SARs. These plans identify BMPs that allow the employment of small arms at Camp Edwards Training Area in a manner that:

- Meets current and future training requirements, and
- Employs maximum feasible use of pollution prevention (P2) strategies to protect the Upper Cape Water Supply Reserve, which is managed as a MassDEP Zone II for public water supplies.

These plans are in concert with range management envisioned in the Camp Edwards Pollution Prevention Overview (Small Arms Range Supplement) (SAR P2 Overview) and are designed to be approved by the EMC in accordance with the EPSs. The potential pathways for migration of and potential receptors to contaminants from the ranges include surface and subsurface soils, surface water, groundwater, and air. Environmental management and P2 BMPs are selected and analyzed based on their ability to disrupt the pathways to potential receptors. These plans addresses the use of lead and lead-free copper ammunition at the SARs on Camp Edwards Training Area.

The OMMPs are limited to the operation and use of approved small arms ranges at Camp Edwards. They support the use of the ranges to meet current and anticipated requirements for small arms training exercises military and civilian users.

Although these plans identify specific BMPs for the management of metals to sustain operations at ranges, the scope of the BMPs addressed is not limited to typical environmental management options. It also includes BMPs for safe and efficient administration, use, management, and maintenance. The BMPs recommended in the range-specific sections of the plans are based on range-specific conditions and are not intended to apply to all ranges at Camp Edwards / Reserve or on other Army or DoD installations or ranges.

7.3 Summary of EPS and Proposed MPMG Range

The following sections will discuss each of the EPSs in the context of the proposed MPMG Range. Responses are provided in italics.

EPS 1. Groundwater Resources Performance Standards

1.1. All actions, at any location within the Camp Edwards Training Areas, must preserve and maintain groundwater quality and quantity, and protect the recharge areas, existing and potential water supply wells. All areas within Camp Edwards Training Areas will be managed as State Zone II, and, where designated, Zone I, water supply areas.

Camp Edwards is managed, as a Zone II therefore the MPMG range is located within a Zone II. Groundwater at the Project site is approximately 100 feet deep and no contamination of groundwater has been encountered. All work and range operations will be performed in accordance with the

approved construction plans, SAR P2 Plan and OMMP (BMPS) to prevent impacts to groundwater quality and quantity.

1.2. The following standards shall apply to designated Wellhead Protection Areas:

- The 400-foot radius around approved public water supply wells will be protected from all access with signage. That protection will be maintained by the owner and/or operator of the well, or the leaseholder of the property.
- No new stormwater discharges may be directed into Zone I areas.
- No in ground septic system will be permitted within a Zone I area.
- No solid wastes may be generated or held within Zone I areas except as incidental to the construction, operation, and management of a well.
- Travel in Zone I areas will be limited to foot travel or to vehicles required for construction, operation, and maintenance of wells.
- No new or existing bivouac activity or area shall be located within a Zone I area.
- All other areas will be considered as Zone II designated areas and will be subject to the standards of the Groundwater Protection Policy.

The MPMG Range is not located within any mapped Zone I areas. As the Project is located within numerous Zone IIs, the Groundwater Protection Policy is applicable.

- *7.a.ix. Firebreaks and fire management are allowed activities.*
- *7.a.x. Small arms ranges are not identified as a prohibited use or a permitted use. Nonetheless, in accordance with 7.a.x "operations, and maintenance, providing that all federal and state regulations are complied with, and BMP's are implemented".*
- *7.b.viii. A small arms range is not a prohibited use as ranges are not defined as hazardous waste generators.*
- *7.c.viii. The Project includes a stormwater management design to handle any runoff from paved areas that will prevent degradation of groundwater quality.*

1.3. Land-use activities that do not comply with either the state Wellhead Protection regulations (310 CMR 22.00 et seq.) or the Groundwater Protection Policy are prohibited.

The Project does not involve any of the prohibited uses within Zone IIs as defined at 310 CMR 22.21(a) which are similar to the prohibited uses within the Groundwater Protection Policy.

1.4. All activities will support and not interfere with either the Impact Area Groundwater Study and/or the Installation Restoration Program. All activities shall conform to the requirements of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the MCP, and the SOWA.

As described in Section 5.12, targeted remediation has been performed at the KD Range. Additional action may be required at the KD Range to address residual contamination from previous training exercises including metals such as tungsten and lead. MAARNG will coordinate with the IAGWSP in order to schedule this work relative to the construction phase of the MPMG Range.

1.5. Extraction, use, and transfer of the groundwater resources must not degrade [e.g. draw down surface waters] in freshwater ponds, vernal pools, wetlands, and marine waters, unless properly reviewed, mitigated, and approved by the managing and regulating agencies.

Not applicable.

1.6. Land uses and activities in the Camp Edwards Training Areas will meet the following standards:

- Will conform to all existing and applicable federal, state and local regulations.
- Must be able to be implemented without interference with ongoing remediation projects.
- Allow regional access to the water supplies on the MMR.

The Project is designed to not interfere with remediation projects and is presently being reviewed under Federal and State laws and regulations. The Project will not impact regional access to water supplies.

1.7. The following programs and standards will be used as the basis for protecting groundwater resources in the Camp Edwards Training Areas:

- JBCC Groundwater Protection Policy.
- Federal and DoD environmental programs: INRMP, ITAM, Range Regulations, SPCC (or equivalent), Installation Restoration Plan, Impact Area Groundwater Study, or other remediation programs.
- State and federal laws and regulations pertaining to water supply.

The Project is designed in compliance with these policies, plans, and standards.

EPS 2. Wetlands and Surface Water Performance Standards

This section is not applicable to the Project as there are no wetlands or surface waters within or nearby to the MPMG Range Project footprint.

2.1. Since there are relatively few wetland resources found at the MMR, and since they are important to the support of habitat and water quality on the properties, the minimum standard will be no net loss of any of the wetland resources or their 100-foot buffers.

2.2. Land uses and activities will be managed to prevent and mitigate new adverse impacts and eliminate or reduce existing conditions adverse to wetlands and surface water resource areas. Impacts from remediation activities may be acceptable with implementation of reasonable alternatives.

2.3. Wetland area management priorities:

- Protection of existing; wetland resource areas for their contributions to existing and potential drinking water supplies.
- Protection of wetlands for rare species and their habitats.
- Protection of human health and safety.

2.4. Activities will be managed to preserve and protect wetlands and vernal pools as defined by applicable, federal, state, and local regulations. These activities will include replacement or replication of all wetland resource buffer areas, which are lost after completion of an activity or use.

2.5. All land altering activities within 100 feet of a certified vernal pool must be reviewed before commencement by the MassDEP/Wetlands Unit and the NHESP within the Division of Fish and Wildlife for impacts to wildlife and habitat. The certification of vernal pools will be supported by the on-site personnel and will proceed with the assistance of the appropriate state agencies.

2.6. All new uses or activities will be prohibited within the wetlands and their 100-foot buffers, except those associated with an approved habitat enhancement or restoration program; those on existing improved and unimproved roads where appropriate sediment and erosion controls are put in place prior to the activity; or those where no practicable alternative to the proposed action is available. No new roads should be located within the 100-foot buffers. Existing roads within such buffers should be relocated provided that:

- The relocation does not cause greater environmental impact to other resources.
- There are funds and resources allocated for resource management and that those resources are approved and available for the relocation.

2.7. During the period of 15 February to 15 May, listed roads/trails within 500 feet of wetlands will be closed to vehicle access to protect the migration and breeding of amphibians. Emergency response and environmental management activities will not be restricted.

- Donnelly and Little Halfway Ponds maneuver trails (excluding the permanently closed section along the eastern edge of Donnelly Pond) from Frank Perkins Road north to Wood Road
- Red Maple Swamp trail from Wood Road north and east to Avery Road
- Orchard and Jefferson Roads (continuous) from Cat Road south and east to Burgoyne Road
- Maneuver trail(s) in powerline easement north of Gibbs Road from Goat Pasture Road west to the boundary of training areas C-13 and C-14
- Grassy Pond trail (side access to Sierra Range) from Gibbs Road south to Sierra Range
- Sandwich Road from the powerline easement north to the gas pipeline right of way
- Bypass Bog/Mike Range Road from entrance to Mike Range south and west to Greenway Road

2.8. No new bivouac area shall be located within 500 feet of any wetland. Any existing bivouac within a wetland buffer shall be relocated provided there are funds and resources allocated for the relocation.

EPS 3. Rare Species Performance Standards

3.1. As the NHESP of the Massachusetts Division of Fisheries & Wildlife has identified the entire MMR as State Priority habitat for state-listed species, all activities and uses must comply with the MESA and its regulations.

MAARNG has been coordinating with NHESP over the past year specifically regarding the MPMG Range impacts on rare species and mitigation measures. The Draft CMP Application is being submitted to NHESP which is summarized throughout this document and provided in ***Appendix B****.*

3.2. Where activities and uses are not specifically regulated under the Camp Edwards Training Area Range and Environmental Regulations, including these EPS, the E&RC must review the activities for conformance with the INRMP and shall consult with the NHESP regarding potential impacts to state-listed species.

See above response.

3.3. All activities impacting rare species habitat must be designed to preserve or enhance that habitat as determined by the MMR E&RC in consultation with the NHESP.

Impact to rare species habitat is unavoidable for this Project and efforts with NHESP have focused on developing a comprehensive mitigation plan for this Project and other possible future projects, all part of the CMP Application.

3.4. Users are prohibited from interfering with state and federal listed species.

MAARNG is presently studying the Project site for Eastern Box Turtles and if found, radio transmitters will be used to track the individuals. During the construction phase, sweeps will be made to make sure no additional turtles are within the work zone. During operation of the MPMG Range, it is likely that noise and activity from training will flush out any animals that may be using this area temporarily.

3.5. Users will report all sightings of recognized listed species, e.g. box turtles, within any area of the MMR.

The MAARNG has been communicating with NHESP over the past years regarding all sightings whether identified during surveys or other sightings. The MAARNG also has an education and signage program that teaches users about identifying turtles and report all sightings.

EPS 4. Soil Conservation Performance Standards

4.1. Activities and uses must be compatible with the limitations of the underlying soils. Limitations on uses and activities may be made where the soils or soil conditions would not support the activity.

The soils at the Project site are comprised of fine sandy loams soils which are highly erodible. Most of the Project site is flat and these soils should not pose an erosion problem. Where steeper slopes exist (where the .50 caliber lanes are proposed), erosion and sedimentation controls will be needed during construction until soils are stabilized with vegetation. All soils will be reused on-site.

4.2. Agricultural soil types will be preserved for future use.

The majority of the site contains soils units that are identified as Prime Farmland or soils of State Importance. Nonetheless, due to past Site uses and the partial location of the Site within the Impact Area, it is likely that this area has not and would not be used for agricultural activities.

4.3. Any perennial or intermittent stream identified by the E&RC Office willbe protected from siltation by retaining undisturbed vegetative buffers to the extent feasible.

Not applicable.

4.4. Cultural resource evaluations must be completed before any earth-moving operation may take place in undisturbed areas with high potential for cultural resources, and earth moving may be limited to specific areas (See Cultural Resource Performance Standards).

*Cultural resource evaluations have been completed for this site. See **Section 5.10**. No further cultural work is anticipated based on the findings of the evaluations.*

4.5. An erosion control analysis will be made part of the land management programs (INRMP, ITAM, Range Regulations, Civilian Use, and SOPs) for the Camp Edwards Training Area, including appropriate mitigation measures where existing or potential erosion problems are identified.

Although there are no wetlands or surface water resources within or near to the Project footprint, all stormwater measures will be designed to meet Massachusetts Stormwater Standards to the extent feasible.

4.6. For all improved and unimproved roads, ditches and drainage ways:

- All unimproved roads, ditches, roads and drainage ways identified for maintenance will be cleaned of logs, slash and debris.

- Unimproved roads and roads may not otherwise be improved unless approved for modification.
- Any trail, ditch, road, or drainage way damaged by activities will be repaired in accordance with the hazard and impact it creates.

The Project includes construction of paved access roads to the ROCA and gravel access roads to each of the target berms and the exterior of the range. The stormwater management will be for the paved area. In addition, there will be approximately 10.0 acres (4.5 miles) of new firebreak roadways as described in ***Section 5.8****.*

4.7. Erosion-prone sites will be inspected periodically to identify damage and mitigation measures.

Inspections will be part of the OMMP for this range. It is not expected that erosion will be a concern in Phase 1. There are steeper slopes in Phase 2 that may be prone to erosion and will require an erosion and control plan and inspections during construction.

EPS 5. Vegetation Management Performance Standards

5.1. All planning and management activities impacting vegetation

- Will ensure the maintenance of native plant communities, and
- Shall be performed to maintain the biological diversity.

Native grasses will be used to revegetate the areas disturbed during construction. These areas will be managed as grasslands in accordance with the grassland management guidelines developed for Camp Edwards.

5.2. Revegetation of disturbed sites will be achieved by natural and artificial recolonization by native species.

See response above.

5.3. Timber harvesting or clear-cutting of forested areas should not occur on steep slopes with unstable soils or with in the buffers to wetland resources.

Approximately 170.5 acres of trees will be cleared for this Project. Steep slopes are located at the northwestern portion of the Site where Phase 2 is proposed and will be protected during the tree clearing to avoid erosion.

5.4. Vegetation management will be subject to a forest management and fire protection program prepared by the users in accordance with federal standards, and carried out in a manner acceptable to the MMR Committee and other state agencies or commissions, as may be designated by the Commonwealth of Massachusetts.

As part of the Project operations, fire management is critical to control any fires that may result from the range during training. Strategic firebreak and management of these areas will be in accordance with the INRMP and Fire Management Plan.

EPS 6. Habitat Management Performance Standards

6.1. The Camp Edwards Training Area will be managed as a unique rare species and wildlife habitat area under an adaptive ecosystem management program that integrates ecological, socio-economic, and institutional perspectives, and which operates under the following definitions:

- Adaptive means making decisions as part of a continual process of monitoring, reviewing collected data, and responding with management actions as dictated by the resulting information and needs of the system.
- Ecosystem means a system-wide understanding of the arrangements of living and non-living things, and the forces that act upon and within the system.
- Management entails a multi-disciplinary approach where potentially competing interests are resolved with expert analysis, user and local interest considerations, and a commitment to compromise interests when the broader goal is achieved to manage the Camp Edwards Training Area as a unique wildlife habitat area.

*The Draft CMP Application included here as **Appendix B** provides details regarding the comprehensive management of rare species and wildlife habitat areas at the MPMG Range and throughout Camp Edwards. The management and mitigation strategies take into consideration adaptive management and a multi-disciplinary approach in order to make sure that mitigation efforts are successful or can be adapted to changing conditions. Annual evaluations will occur and presented in the State of the Reservation reports and managed actions adjusted as needed.*

6.2. The adaptive ecosystem management program will include:

- Coordinated documentation for the management programs, INRMP, ITAM Program, Range Regulations, Civilian Use, and SOPs.
- The MAARNG E&RC staff and necessary funding to support its ecosystem management plans, as related to the amount of training occurring.
- Cooperative agreements to create a management team of scientific and regulatory experts.
- Long-term land maintenance, monitoring of resources and trends, study and analysis.
- Recovery plans for species and habitats identified for improvement.
- Consultation with Federal and State agencies charged with oversight of the Endangered Species Program before any actions that may affect state and federal-listed species habitat.
- Reduction of adverse impacts to the maximum extent possible, including consideration for the relocation of the activity or encouraging only those activities that result in meeting a habitat management goal.
- Habitat management activities designed to promote protection and restoration of native habitat types.

*The MAARNG is responsible for the management of the habitat at Camp Edwards. A comprehensive management plan for the ecosystem of Camp Edwards has been in place for years through various environmental programs and MAARNG continues to coordinate on a regular basis with NHESP and USFWS and this will continue into the future. See **Section 6.7** for a summary of mitigation proposed for the MPMG Range.*

EPS 7. Wildlife Management Performance Standards

7.1. Native wildlife habitats and ecosystems management will focus on the following:

- Protecting rare and endangered species, and,
- Maintaining biodiversity.

See response to EPS 6 above.

7.2. Hunting, recreation and educational trips must be approved, scheduled, planned, and supervised through Range Control.

Hunting will not be allowed when the MPMG Range is in operation due to the location of the SDZs. Hunting is allowed within Camp Edwards but not within the Impact Area.

7.3. Any activity or use will prioritize protection of life, property, and natural resource values at the boundaries of the Camp Edwards Training Area where wildlife interfaces with the surrounding built environment.

The design of the range incorporates the SDZs in order to protect life and property. The CMP Application provides detailed information regarding the management of the natural resources.

7.4. Wildlife management will include the following actions, specific to the species targeted for management:

- Development and implementation of a plan to monitor hunting of game species.
- Planning for multi-use objectives for recreation and hunting that incorporate public input and recommendations.
- Development of suitable monitoring programs for federal and state-listed species, and regular exchange of information with the Natural Heritage and Endangered Species Program.

Please see the Draft CMP Application for specific wildlife management strategies in ***Appendix B****.*

EPS 8. Air Quality Performance Standard

8.1. All uses and activities will be responsible for compliance with both the SIP for Air Quality and the Federal CAA.

See ***Section 4.3*** *for additional air quality discussion.*

8.2. Air quality management activities will include air sampling if required by regulation of the activity.

Not applicable.

EPS 9. Noise Management Performance Standards

9.1. Noise management activities shall conform to the Army's Environmental Noise Management Program policies for evaluation, assessment, monitoring, and response procedures.

Noise studies have been performed for the Project and additional studies will be performed when the range is in operation in order to determine if any mitigation of noise is needed as described in ***Section 5.5.***

EPS 10. Pest Management Performance Standards

No pest management is anticipated relative to the MPMG Range at this time.

10.1. Each user will develop and implement an Integrated Pest Management Program to control pest infestations that may include outside contracting of services. Non-native biological controls should not be considered unless approved by federal and state agencies.

10.2. Each user will be held responsible for management of pests that threaten rare and endangered species, or are exotic and invasive species, Invasive plant species that may be considered pest species are

those defined by the USFWS and the NHESP of the Division of Fisheries and Wildlife office. Site-specific analysis will be performed before implementation of any proposed pest management plans.

10.3. Pest vegetation control must be balanced against environmental impact and any proposed pest management activities, including the use of herbicides and mechanical methods, within rare species habitat areas must be approved by the NHESP, or in the case of federally listed species, by the USFWS

10.4. Only herbicide formulations approved by the USEPA, the Department of Agriculture, the agency managing the user, and the Commonwealth of Massachusetts maybe applied.

10.5. Herbicides and pesticides will not be applied by aerial spraying unless required by emergency conditions and approved under applicable state and federal regulations.

EPS 11. Fire Management Performance Standards

A firebreak plan is being designed relative to the MPMG Range. In addition, there is an existing IWFMP which has been utilized for a very successful prescribed burn program as described in ***Section 2.4****.*

11.1. All activities and uses shall manage, prevent, detect, and suppress fires on the Camp Edwards Training Area in coordination with the local and state fire services and natural resource managers in the E&RC.

11.2. Prescribed bums will be used as a habitat management and fire prevention tool. Prescribed burns will be used to reduce natural fire potential and create or maintain diverse and rare species habitat.

11.3. Pre-suppression activities will include strategic firebreaks and other management of vegetation in high risk and high-incidence areas. The INRMP and Fire Management Plan will be consulted for proposed actions.

11.4. Other than the above, no open fires are allowed.

EPS 12. Stormwater Management Performance Standards

Stormwater management is being provided for the paved areas of ROCA. As no wetlands or surface water resources are located in or near the site, stormwater will be managed to prevent groundwater contamination and will be designed in accordance with the Massachusetts Stormwater Standards.

12.1. All stormwater facilities shall comply with the MassDEP Guidelines for Stormwater Management, including BMPs and all other applicable standards for control and mitigation of increased storm water flow rates and improvement of water quality.

12.2. All increases in stormwater runoff will be controlled within the user's property.

12.3. No new stormwater discharges will be made directly into wetlands or wetland resource areas.

EPS 13. Wastewater Performance Standards

13.1. All wastewater and sewage disposal will be in conformance with the applicable Federal and MassDEP agency regulations.

Portable toilet facilities will be provided at the MPMG Range as latrines are not allowed in accordance with EPS Standards 1.2. Wastewater and sewage from MAARNG training activities at

Camp Edwards are pumped from portable toilet facilities and hauled off-base for disposal at licensed disposal facilities.

EPS 14. Solid Waste Performance Standards

During training events at the MPMG all trash and other waste is removed from the range at the end of the event and disposed of in accordance with local, State, and Federal, laws and regulations. During construction and demolition debris will be managed in accordance with the contract and local, State, and Federal regulations and laws.

14.1. All solid waste streams (i.e., wastes not meeting the criteria for hazardous wastes) will be monitored and managed to substitute, reduce, recycle, modify processes, implement best management practices, and/or reuse waste, thereby reducing the total tonnage of wastes,

14.2. All users will be held responsible for collection, removal and disposal outside of the Camp Edwards Training Areas of solid wastes generated by their activities.

14.3. All users must handle solid wastes using best management practices to minimize nuisance odors, windblown litter, and attraction of vectors.

14.4. No permanent disposal of solid waste within the Groundwater Protection Policy area/Camp Edwards field training areas will be permitted.

EPS 15. Hazardous Materials Performance Standards

*The MPMG Range is not considered to be a generator of hazardous waste. Nonetheless the KD Range has a history of soil contamination which has been remediated. See **Section 4.12** for additional details.*

15.1. Where they are permitted, use and application of hazardous materials shall be otherwise minimized in accordance with pollution prevention and waste minimization practices, including material substitution.

15.2. No permanent disposal of hazardous wastes within the Groundwater Protection Policy area/Camp Edwards field training areas will be permitted.

15.3. Fuel Management

15.3.1 The SPCC is in place to reduce potential for a release. Camp Edwards Spill Response Plan is in place to respond to a release if an event should occur. All users will comply with these plans at the Camp Edwards Training Area.

15.3.2 If found, non-complying underground fuel storage tanks will be removed in accordance with state and federal laws and regulations to include remediation of contaminated soil.

15.3.3 No storage or movement of fuels for supporting field activities, other than in vehicle fuel tanks, will be permitted except in approved containers no greater than five gallons in capacity.

15.3.4 New storage tanks are prohibited unless they meet the following requirements:

- Are approved for maintenance heating, or, permanent emergency generators and limited to propane or natural gas fuels.
- Conform to the Groundwater Protection Policy and applicable codes.

15.4. Non-fuel Hazardous Material Storage

15.4.1 No storage above those quantities necessary to support field training activities will be allowed within the Camp Edwards Training Area except where necessary to meet regulatory requirements, and where provided with secondary containment.

15.4.2 When required by applicable regulation, the user shall implement a Spill Prevention, Control and Containment/Emergency Response or other applicable response plan.

EPS 16. Hazardous Waste Performance Standards

16.1. All uses shall comply with applicable local, state, and federal regulations governing hazardous waste generation, management, and disposal (including overlays relative to Wellhead Protection, Zone II's within the Cantonment Area).

See response above.

16.2. Accumulations of hazardous waste shall be handled in accordance with regulations governing accumulation and storage.

Ammunition projectiles (copper) will be recycled when they are harvested from the range during maintenance of the target and auxiliary berms.

16.3. Existing facilities must implement pollution prevention and waste minimization procedures (process modifications, material substitution, recycling, and best management practices) to minimize waste generation and hazardous materials use.

The MAARNG at Camp Edwards has moved to copper munitions and has BMPs (e.g. auxiliary berms for projectile capture) in place per the OMMP. See ***Section 7.1.2****.*

16.4. Occupants and users will be held responsible for removing all solid or hazardous wastes generated during the period of use/tenancy/visitation upon their departure or in accordance with other applicable or relevant regulations.

During training events at the MPMG Range, all trash and other waste is removed from the range at the end of the event and disposed of in accordance with local, State, and Federal, laws and regulations.

16.5. Remedial activities undertaken under the Installation Restoration Program, the IAGWSP, the MCP, or other governing remediation programs are exempt from additional regulation (e.g., waste generation volume limits). Removal, storage, and disposal of contaminated material are required to comply with all state, and federal regulations.

MAARNG will be coordinating with the IAGWSP during the construction and operation phases of the MPMG Range Project.

16.6. Post-remedial uses and activities at previously impacted sites will be allowed in accordance with terms and conditions of the applicable regulations.

MAARNG will be coordinating with the IAGWSP during the construction and operation phases of the MPMG Range Project.

16.7. All hazardous wastes will be transported in accordance with Federal Department of Transportation regulations governing shipment of these materials.

It is not anticipated that any hazardous wastes will be generated during the construction or operation phases of the MPMG Range.

16.8. Transport shall reduce the number of trips for transfer and pick-up of hazardous wastes for disposal to extent feasible. Tills may include planning appropriate routes that minimize proximity to sensitive natural resource areas, and reducing internal transfers of material, including transfers from bulk storage tanks to drums, tankers, carboys, or other portable containers or quantities.

It is not anticipated that any hazardous wastes will be generated during the construction or operation phases of the MPMG Range.

16.9. No permanent disposal of hazardous wastes within the Groundwater Protection Policy area/Camp Edwards field training areas will be permitted.

It is not anticipated that any hazardous wastes will be generated during the construction or operation phases of the MPMG Range.

EPS 17. Vehicle Performance Standards

17.1. Vehicles within the Camp Edwards Training Area will be limited to the existing improved and unimproved road system except where required for natural resource management or property maintenance or where off-road activity areas are located and approved by the E&RC in consultation with the Massachusetts Division of Fisheries and Wildlife.

Users of the MPMG Range will be limited to the use of access road and parking within the ROCA. Maintenance roadways are to be utilized by maintenance crews.

17.2. Unimproved, established access ways will be limited to use by vehicles in accordance with soil conditions as described in the Soil Conservation Performance Standards.

Unimproved range roads will be managed in accordance with the standards and the OMMP and will be maintained as firebreaks.

17.3. The number of military and civilian vehicles within the Camp Edwards Training Area will be controlled using appropriate scheduling and signage.

Camp Edwards Range Control will control access when the MPMG Range is in use as the SDZs prohibit the use of several Training Areas.

EPS 18. General Use and Access Performance Standards

The MPMG Range will be operated and managed in accordance with these standards.

18.1. General User Requirements. Requirements that will apply to all users, both public and private, in the Camp Edwards Training Area include the following:

- All acts that pollute the groundwater supply are prohibited.
- No litter or refuse of any sort may be thrown or left in or on any property.
- All users will be held responsible for providing, maintaining, and re- moving closed-system, sanitary facilities necessary for their use and activity.
- No person shall wade or swim in any water body except for activities approved by the MAARNG including remediation, scientific study, or research.
- Vehicles may only be driven on roads authorized and designated for such use and parked in designated areas, and may not cross any designated wetland.

- Public users may not impede the military training activities.

18.2. Civilian Use Manual. To guide public conduct on the MMR, a Civilian Use Manual will be prepared and periodically updated. All civilian users will obtain and follow this Manual.

18.3. Siting and Design Performance Standards

18.4. New or expanded buildings should not be proposed within the Camp Edwards Training Areas, with the following exceptions:

- Buildings to support allowed training, operations and activities, including upgrading of those facilities currently in place,
- Buildings used for the purposes of remediation activities,
- Buildings used for the purposes of development, operation and maintenance of water supplies,
- Buildings used for the purpose of natural resource and land management.

The buildings proposed within the ROCA are all buildings designed to support the training and operations of the MPMG Range.

EPS 19. Range Performance Standards

19.1. All operational ranges including but not limited to small arms ranges (SAR) shall be managed to minimize harmful impacts to the environment within the Upper Cape Water Supply Reserve. Range management at each range shall include to the maximum extent practicable metal recovery and recycling, prevention of fragmentation and ricochets, and prevention of sub-surface percolation of residue associated with the range operations. Camp Edwards shall be held responsible for the implementation of BMPs by authorized range users, including collection and removal of spent ammunition and associated debris.

The MAARNG at Camp Edwards has moved to copper munitions and has BMPs (e.g. auxiliary berms for projectile capture) in place per the OMMP. See ***Section 7.1.2****.*

19.2. Small arms ranges shall only be used in accordance with approved range plans. These plans shall be designed to minimize to the maximum extent practicable the release of metals or other contaminates to the environment outside of specifically approved containment areas/systems. Occasional ricochets that result in rounds landing outside of these containment areas is expected and every effort to minimize and correct these occurrences shall be taken. Failure to follow the approved range plans shall be considered a violation of this EPS.

The MAARNG at Camp Edwards has BMPs (e.g. auxiliary berms for projectile capture) in place per the OMMP. See ***Section 7.1.2****.*

19.3. All operational SARs shall be closely monitored by the MAARNG to assess compliance of the approved range plans as well as the implementation and effectiveness of the range specific BMPs.

The OMMPs identify and require range inspections by both the MAARNG and the EMC.

19.4. Camp Edwards/MAARNG E&RC shall staff and request appropriate funding to support its SAR management plans.

Staff and funding are in place to support the SAR management plans.

19.5. All users must use and follow Camp Edwards' Range Control checklists and procedures to:

- Minimize debris on the range (e.g. shell casings, used targets)
- Minimize or control residues on the ranges resulting from training (e.g., unburned constituents, metal shavings from the muzzle blast)
- Ensure the range is being used for the designated purpose in accordance with all applicable plans and approvals

The MPMG Range has been designed in accordance with this standard and the checklists and procedures will be followed.

19.6. Camp Edwards is responsible for following range operation procedures and maintaining range pollution prevention systems. Range BMPs shall be reviewed annually for effectiveness and potential improvements in their design, monitoring, maintenance, and operational procedures in an effort to continually improve them. Each year the annual report shall detail the range-specific activities including, but not limited to, the number of rounds fired, number of shooters and their organization, and the number of days the range was in use. The annual report will also detail active SAR groundwater well and lysimeter results, as well as any range maintenance/management activities that took place that training year and the result of such activities, i.e. lbs. of brass and projectiles recovered and recycled, etc. The MAARNG shall provide regular and unrestricted access for the EMC to all its data and information, and will provide immediate access to environmental samples from the range, including range management and monitoring systems and any other applicable activities operating on the ranges.

The OMMPs are reviewed annually for effectiveness and any identified changes are made. Currently the MAARNG has drafted a consolidated OMMP for all ranges and will have it reviewed and approved by the EMC as required. The MAARNG publishes an annual State of the Reservation Report with all required information presented.

19.7. Range plans and BMPs for training areas shall be reviewed and/or updated at least every three years. Management plans for new and upgraded ranges shall be in place prior to construction or utilization of the range. Range plans, at a minimum, will address long-term sustainable use, hydrology and hydrogeology, physical design, operation, management procedures, record keeping, pollution prevention, maintenance, monitoring, and applicable technologies to ensure sustainable range management. Range plans shall be integrated with other training area planning processes and resources.

Currently the MAARNG has drafted a consolidated OMMP for all ranges and will have it reviewed and approved by the EMC as required.

19.8. The MAARNG shall establish procedures for range maintenance and where applicable, maintenance and/or clearance operations to permit the sustainable, compatible, and safe use of operational ranges for their intended purpose within the Upper Cape Water Supply Reserve. In determining the frequency and degree of range maintenance and clearance operations, the MAARNG shall consider, at a minimum, the environmental impact and safety hazards, each range's intended use, lease requirements, and the quantities and types of munitions or simulated munitions expended on that range.

EPS 19 requires efforts to minimize harmful impacts to the Reserve to include "to the maximum extent practicable metal recovery and recycling prevention of fragmentation and ricochets and preventions of sub-surface percolation of residue associated with range operations". Ammunition

that is fired at Camp Edwards is to be captured and contained in accordance with EPS 19. The MAARNG is developing an OMMP for each range.

8.0 Response to Comment Letters

As part of the Federal NEPA process, Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) is required in order to request information from local, State, and Federal Agencies, and other interested parties for input in the preparation of the EA. A separate but similar process under the Native American Consultation (NAC). We have included the comment letters we have received to date with responses provided and have used these letters to assist us in the preparation of this NPC. Comment letters are provided in **Appendix E**.

8.1 EMC Comment Letter

The MAARNG has received a comment letter dated 13 September 2019 from the EMC regarding the preparation of the EA for the MPMG Range. EMC had the following recommendations for conditions to be added to their approval of the MPMG Range Project.

- EPS: The construction, operation and maintenance of the proposed MPMG Range must comply with the current revision of the EPS, dated April 6, 2017. The final design and the operation, maintenance and monitoring plan for the MPMG Range will require approval by the EMC prior to construction and operation

  *See **Section 7.0** for a discussion of the EPS relative to the MPMG Range.*

- Solid and Hazardous Waste: The MAARNG is advised that there may be soils contaminated with OHM and munitions items located at the proposed Project location. A plan for the management of OHM and munitions items which may be found during construction should be developed by the Massachusetts National Guard. (EPS 14.0-16.0)

  If soils contaminated with OHM are encountered the MAARNG will follow the procedures set forth in the Massachusetts Contingency Plan MCP including the contracted "on call" UXO removal experts. This contractor will be contracted throughout the entire construction Project.

- Construction Management Plan: A construction management plan should be provided which defines the limits of the proposed work area, how construction vehicles and personnel will be controlled to remain within work areas, construction and laydown areas, erosion control, dust suppression, vehicle parking and refueling areas and noise during construction. (EPS 4.5, 4.6, 5.0, 8.0, 9.0, 12.0)

  This plan will be developed along with the Project plans and specifications to be reviewed by EMC.

- Refueling During Construction: EPS 15.3.3 states that no storage or movement of fuels supporting field activities, other than in vehicle fuel tanks is permitted except in approved containers no greater than five gallons in capacity. The MAARNG is advised that a waiver of EPS 15.3.3 may be granted by the EMC for the duration of the construction period subject to EMC review and approval of a site specific SPCC.

There is currently no qualifying facility (55 gallons or larger) authorized in the Training Area. Camp Edwards has an SPCC for qualifying activities, however since there are no "qualifying facilities" in the Training Area, this area is not identified in the SPCC. Protocols are in place within the Training Area to report all spills of any type/size to Range Control immediately. All soldiers/users are required to carry "soldiers field card" that has all necessary 24/7 contact information.

All construction-related refueling and equipment maintenance activities will be conducted in accordance with an EMC-approved refueling plan. Currently the MAARNG is working with the EMC and its advisory councils to refine EPS 15.3.3. However, if the EPS is not changed the MAARNG will request a waiver of EPS 15.3.3. The will implement its SPCC as needed.

- Access Control/Coordination/Communication: The MAARNG is advised to develop an access control and communications plan during construction activities with Camp Edwards Range Control personnel. This plan will be particularly important during the MAARNG Annual Training cycle and for the recreational hunting program at Camp Edwards.

  Procedures will be identified within the construction management plans and specifications requiring the general contractor to contact the MAARNG Range Control office on a daily basis to identify Camp Edwards activities including Project briefings.

- Ammunition: The EMC recommends that the MPMG Range be designated as a copper ammunition-only range. (EPS 1 9.0)

  The range is only authorized and designed for copper ammunition. The range will be signed as copper ammunition only.

- Southern Location Alternative: The MAARNG has stated that this alternative would result in greater noise impacts to the community. The MAARNG has performed an on-site noise study and noise modeling for the MPMG Range. The studies concluded that there would be noise impacts to the community during range use (the nearest off-post community is approximately 500 meters to the southeast and 1000 meters to the east). The EMC has recommended additional noise studies to be performed during training activities at the MPMG Range to determine if nuisance conditions exist and if noise mitigation is necessary. (EPS 9.0)

  As the noise study assumes no vegetation between the MPMG Range and the sensitive receptors, studies will be performed once the MPMG Range is operational. At that time, it can be determined if mitigation measures should be developed.

- MPMG Range Operation and Maintenance: The EMC recommends that appropriate funding be appropriated to ensure that the MPMG Range will be adequately staffed to ensure operation and maintenance activities are compliant with the required OMMP. (EPS 19.0)

  The MPMG Range will be fully staffed to ensure that all operations and maintenance activities' are compliant with the requirements of the OMMP.

- Finally, the MAARNG should continue to work closely during the permitting and the execution of the Project with the MassDEP the EMC, and the MassWildlife, who maintains custody, care and control of the Upper Cape Water Supply Reserve. Early coordination with Commonwealth and municipal resource agencies is recommended with regard to rare species and wetland resources which may be impacted by the proposed project.

  Early coordination has been ongoing and will continue during and after this Project has been constructed.

8.2 USEPA Comment Letter

MAARNG received a comment letter from the USEPA on 5 September 2019 following a request for input to the EA for the MPMG Range.

- The KD Range has been subject to investigation and cleanup under Section 1431(a) of the SOWA, 42 USC § 300i(a), as amended, and two Administrative Orders (AOs) concerning response actions issued thereunder (USEPA AO SOWA 1-97-1019 (AOl) and AO SOWA-1-2000-0014 (AO3).

  No response needed.

- The final cleanup remedy under AO3 for the KD Range is contained in two (2) separate Decision Documents (DD). The February 2019 Training Areas Operable Unit DD (KD West is one of 36 sites or locations contained within this DD) presents the selected remedy for the KD West Range. The selected action for KD West was data review and/or confirmatory soil sampling and geophysical screening. Details of these proposed actions are contained in Appendix F to the DD. These actions are ongoing and the findings memo for all Training Areas post-DD work will be prepared in 2020. The need for Land Use Controls (LUCs) will be determined after completion of the investigations as described in the Decision Document.

  MAARNG will continue to work with the USEPA on any required actions at the MPMG Range.

- The September 2015 Small Arms Ranges (SAR) DD (KD East is one of 40 locations contained within this DD) presents the selected remedy for the KD East Range. The selected action for KD East was confirmatory soil sampling and potential removal actions. Details of these proposed actions are contained in Appendix D to the DD. These actions have been completed and the findings memo for all SAR post-DD work is currently being drafted. LUCs have been established in the DD to protect groundwater monitoring wells and other environmental sampling equipment on and around the small arms ranges

  MAARNG will continue to work with the USEPA on any required actions at the MPMG Range.

- USEPA established use restrictions at the KD Range in May 1997 with the issuance of AO2 (SOWA I-97-1030), but those restrictions were lifted in May 2017 when USEPA issued a Final Response to a 31 August 2016 MAARNG Request to modify the AO2 Scope of Work (SOW). USEPA modified Sections II.A.1.a and Section II.A.l.f of the SOW to not prohibit firing of lead ammunition or other "live" ammunition at small arms ranges at or near the Training Range and

Impact Area to the extent those actions receive approval and oversight from the EMC in accordance with the EPS.

- The authorization was conditioned upon continued compliance with all conditions established by the EMC.
- The authorization was conditioned upon MAARNG requesting and then receiving funds necessary to ensure compliance with the approved OMMP.
- The authorization does not extend to any other ammunition or training device.
- The proposed use of this ammunition or training device was authorized only to the extent it does not interfere with the completion of investigation and cleanup activities.
- This decision will be reviewed as appropriate, but no less often than every five years. The purpose of the review is to revisit the appropriateness of the decision in providing adequate protection of human health. The scope of the review will include, but is not limited to, the following questions: are the ranges operating as designed (i.e., monitoring or maintenance); have any of the cleanup standards changed since the decision; and is there any new information that would warrant modifying or withdrawing the decision? If appropriate, additional actions (including, if necessary, reopening the decision) may be required as a result of these reviews. USEPA retained all its enforcement authorities pursuant to existing AOs.

- The EMC should continue to be consulted during the range design and development process, including the selection of pollution prevention strategies and best management practices that will be codified in an OMMP for the MPMG Range. These strategies and practices should also be developed to adhere to the conditions described above.

  An OMMP is required for the MPMG Range and will be provided for the EMC to review and approve as required. The MPMG Range is being addresses in the new consolidated OMMP for the small ranges. The final plan will come after the construction of the range.

- It may also be a worthwhile exercise for the EA to consider how the adaptive management strategies employed during the Juliet, Kilo, Tango and Sierra Range pilot periods might apply to development and use of the KD Range.

  All strategies for range management will be considered especially those that were found to be beneficial to range operations and the environment.

8.3 MassDCR Comment Letter

MAARNG received a comment letter from the Massachusetts Department of Conservation and Recreation on 10 September 2019 following a request for input to the EA for the MPMG Range.

- The MassDCR is represented on the EMC and Leonard Pinaud is our point of contact. We will prepare comments through the EMC process.

  No response needed.

9.0 Proposed Section 61 Findings

Pursuant to Section 61 of the Massachusetts Environmental Policy Act (MEPA) M.G.L. Chapter 30 Sections 61- 62H, and Section 11.12(5) of the MEPA regulations (301 CMR 11.00) the Massachusetts Army National Guard (MAARNG) has designed the proposed Multi-Purpose Machine Gun (MPMG) Range project so that all feasible measures have been taken to avoid damage to the environment or, to the extent this damage to the environment cannot be avoided, to minimize and mitigate that damage to the maximum extent practicable. The only State permit required for this project is the Conservation and Management Permit (CMP) to be issued by the Natural Heritage and Endangered Species Program (NHESP), in compliance with applicable performance standards of the Massachusetts Endangered Species Act (MESA) and implementing regulations (321 CMR 10.00).

Documentation to support these findings, include the 2020 Notice of Project Change (NPC), past MEPA documents such as the Draft and Final Master Plan and Area-Wide Environmental Impact Reports and Annual Reports prepared by MAARNG and noticed in the Environmental Monitor. The NPC and other MEPA documents have been widely distributed and reviewed by local, State, and Federal agencies and the general public. Public and other agency comments will be considered in making these findings.

Certain projects and activities at Camp Edwards are subject to a Special Review Procedure (SRP) created and jointly executed by Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) and the MAARNG so that the process under MEPA could be used more efficiently for the long-term use of Camp Edwards. Given the importance of the Range to the future operation and viability of the base, the MAARNG has taken its responsibilities under Massachusetts regulations extremely seriously. Therefore, the MAARNG has been working in close cooperation over the past two years with the NHESP to determine mitigation of rare species habitat impacts as a result of the MPMG Range project. In addition, MAARNG has been in communication with the Massachusetts Department of Environmental Protection (MassDEP), Environmental Management Commission (EMC), and United States Environmental Protection Agency (USEPA) relative to this project. The MAARNG has established mutually respectful relationships with these agencies and the four towns in which Camp Edwards resides (Bourne, Falmouth, Mashpee, Sandwich). The MAARNG meets regularly with the EMC and its two supporting councils, the Science Advisory Council (SAC) and the Community Advisory Council (CAC) including pre-application meetings, development of presentations, public meeting facilitation, outreach, and informal and formal consultations.

A Conservation and Management Plan (presently in draft form) for the MPMG Range project has been prepared in consultation with the NHESP, in compliance with MESA and implementing regulations (321 CMR 10.00). Although the project will result in a "take" of several State-listed lepidopterans (moths and butterfly) species identified on the site, and that there could potentially be a "take" of Eastern Box Turtle (*Terrapene carolina*), Eastern Whip-poor-will (*Caprimulgus vociferus*), and sandplain grassland bird species, the project meets the standards for issuance of a Conservation and Management Permit (CMP) pursuant to MESA.

The components of the CMP as drafted in consultation with NHESP staff include:

- Approximately 133 acres within the 15,000-acres Camp Edwards will be preserved in perpetuity as open space through the transfer of land to MassWildlife. The land is identified as the 133-acre

Tract 5 located within the towns of Falmouth, Bourne, and Sandwich along the Joint Base Cape Cod (JBCC) and abuts the Crane Wildlife Management Area.

- Approximately 177 acres of land has been identified by MAARNG to set aside for land preservation with management of vegetation for rare species. This land is identified as a Forest Canopy Reserve Area.
- Approximately 36 acres of has been identified for grassland management for rare species. This land is identified as a Grassland Mitigation Focal Area.
- The proponent will monitor the MPMG Range construction area prior to, and during construction, to remove Eastern Box Turtles from the construction areas.
- The proponent will provide construction staff with information and materials about the likely presence of State-listed species and appropriate responses to any sightings
- The proponent will implement a Turtle Protection Plan during the construction phase of the project Eastern Box Turtles.
- The proponent will restore grassland habitat in an acreage to be determined in the CMP in order to optimize conditions for grassland species.
- The proponent will monitor Eastern Box Turtles and other species to be determined for a period to be determined after the construction of the project to assess the effectiveness of mitigation measures.
- The proponent will implement a long term monitoring and management plan to maintain habitat quality within the pine barrens.
- The schedule for implementing mitigation efforts began in 2019 and will continue through to 2025 and beyond.
- The cost of the mitigation is more fully detailed in the draft CMP Application. Financial resources are budgeted for the proposed actions through Federal (Army, National Guard Bureau) funding.
- Mitigation funding for range Military Construction (MILCON) projects is through the environmental budget of Army National Guard (ARNG) while facilities projects are through a combination of environmental (e.g., staff) and installation funding. Environmental funding is entered through the Status Tool for Environmental Programs (STEP) and is maintained with a seven-year budget.
- The MAARNG will be funding the various habitat management actions proposed as described in the plan.
- Monitoring and research funding is also detailed more fully in the CMP Application which identifies actions and associated costs through to 2025.
- Mitigation for Greenhouse Gas (GHG) emissions will occur along with the land preservation and management of habit for rare species as described above.

10.0 Circulation of Notice of Project Change

This list has been developed from previous NPCs submitted to MEPA, notably the 2012 NPC. In addition, other local, State, and Federal agencies, individuals, and non-profit organizations were updated as well as updates to the JBCC agencies.

Executive Office of Energy and Environmental Affairs 100 Cambridge Street, Suite 900 Boston, MA 02114-2524 Attn: Page Czepiga, MEPA Assistant Director
Executive Office of Energy and Environmental Affairs 100 Cambridge Street, Suite 900 Boston, MA 02114-2524 Attn: Kathleen Theoharides, Executive Secretary
Executive Office of Energy and Environmental Affairs 100 Cambridge Street, Suite 900 Boston, MA 02114 Attn: Bob O'Connor, Land Policy Director
Massachusetts Department of Environmental Protection One Winter Street Boston, MA 02108 Attn: Martin Suuberg, Commissioner
Massachusetts Department of Environmental Protection Bureau of Water Resources One Winter Street Boston, MA 02108 Attn: Kathleen Baskin, Assistant Commissioner
Massachusetts Department of Environmental Protection Division of Waterways & Wetlands One Winter Street Boston, MA 02108 Attn: Stephanie Moura, Division Director
Massachusetts Department of Environmental Protection One Winter Street Boston, MA 02108 Attn: MEPA Coordinator
Massachusetts Department of Environmental Protection 20 Riverside Drive Lakeville, MA 02347 Attn: MEPA Coordinator
Massachusetts Department of Environmental Protection Southeast Regional Office Attn: Millie Garcia-Serrano, Regional Director 20 Riverside Drive Lakeville, MA 02347
Massachusetts Department of Environmental Protection 20 Riverside Drive Lakeville, MA 02347 Attn: Len Pinaud, Federal Facilities

Massachusetts Department of Environmental Protection 20 Riverside Drive Lakeville, MA 02347 Attn: Ellie Donovan, Federal Facilities and Solid Waste
Massachusetts Department of Transportation Public/Private Development Unit 10 Park Plaza, Suite 4150 Boston, MA 02116
Massachusetts Department of Transportation District #5 1000 County Street Taunton, MA 02780 Attn: Mary-Joe Perry, District Highway Director
Massachusetts Historical Commission State Historic Preservation Officer 220 Morrissey Boulevard Boston, MA 02125 Attn: Brona Simon, Executive Director
Massachusetts Division of Marine Fisheries 251 Causeway Street, Suite 400 Boston, MA 02114 Attn: Project Review Coordinator
Massachusetts Division of Marine Fisheries (South Shore) 836 Rodney French Boulevard New Bedford, MA 02744 Attn: Environmental Reviewer
Massachusetts Office of Coastal Zone Management 251 Causeway Street, Suite 800 Boston, MA 02114 Attn: Project Review Coordinator
Massachusetts Department of Fish and Game 251 Causeway Street, Suite 400 Boston, MA 02114 Attn: Ronald S. Amidon, Commissioner
Massachusetts Natural Heritage and Endangered Species Program MassWildlife 1 Rabbit Hill Road Westborough, MA 01581 Attn: Eve Schluter, NHESP Assistant Director
Massachusetts Natural Heritage and Endangered Species Program MassWildlife 1 Rabbit Hill Road Westborough, MA 01581 Attn: David Paulson
Massachusetts Department of Conservation and Recreation Planning and Engineering 251 Causeway Street, 9th Floor Boston, MA 02114-2104 Attn: Jim Montgomery, Interim Commissioner

Massachusetts Department of Conservation and Recreation Division of Water Supply Protection 251 Causeway Street Boston, MA 02114-2104 Attn: John Scannell, Director
Massachusetts Department of Agricultural Resources 251 Causeway Street, Suite 500 Boston, MA 02114
Massachusetts Executive Office of Health and Human Services One Ashburton Place, 11th Floor Boston, MA 02108
Massachusetts Department of Public Health 250 Washington Street Boston, MA 02108
Massachusetts Department of Energy Resources 100 Cambridge Street, Suite 1020 Boston, MA 02114
US Environmental Protection Agency Superfund and Emergency Management Division 5 Post Office Square, Mail Code 07-5 Boston, MA 02109-3912 Attn: Bryan Olson, Director
US Environmental Protection Agency Massachusetts Superfund Program 5 Post Office Square, Mail Code 07-1 Boston, MA 02109-3912 Attn: Lynne Jennings, Section Chief
US Environmental Protection Agency 5 Post Office Square, Suite 100 Boston, MA 02109-3912 Attn: Environmental Reviewer
US Environmental Protection Agency - Region 1 5 Post Office Square, Suite 100 Boston, MA 02109-3912 Attn: Dennis Deziel, Regional Administrator
US Environmental Protection Agency 5 Post Office Square – Mail Code 07-03 Boston, MA 02109-3912 Attn: Jane Dolan, JBCC (MMR) Team Member
US Fish and Wildlife Service New England Field Office 70 Commercial Street, Suite 300 Concord, NH 03301-5087 Attn: Tom Chapman Attn: Susi von Oettingen
US Fish and Wildlife Service Northeast Region 300 Westgate Center Drive Hadley, MA 01035-9589 Attn: Wendi Weber, Regional Director

US Army Corps of Engineers New England District 696 Virginia Road Concord, MA 01742-2751 Attn: Col. William M. Conde, District Engineer, Commander
US Department of Agriculture Natural Resources Conservation Service 451 West Street Amherst, MA 01002-2953 Attn: Daniel Wright, State Conservationist
Senator Julian Cyr (Cape and Islands) State House, Room 218 24 Beacon Street Boston, MA 02133-1053 Barnstable Town Hall, Room 2L 367 Main Street Hyannis, MA 02601
Cape Cod Chamber of Commerce 5 Patti Page Way Centerville, MA 02632
Cape Cod Conservation District 303 Main Street W. Yarmouth, MA 02673
Cape Cod Commission 3225 Main Street, P.O. Box 226 Barnstable, MA 02630 Attn: Kristy Senatori, Executive Director Attn: Jonathan Idman, Chief Regulatory Officer
Association to Preserve Cape Cod 482 Main Street Dennis, MA 02638
Environmental Management Commission Building 3468, Beaman Street Camp Edwards, MA 02542-500 Attn: Len Pinaud, EMC Environmental Officer
Wampanoag Tribe of Gay Head (Aquinnah) 20 Black Brook Road Aquinnah, MA 02535 Attn: Bettina Washington, Tribe Historic Preservation Officer
Mashpee Wampanoag Tribe P.O. Box 1048 483 Great Neck Road South Mashpee, MA 02649 Attn: David Weeden, Tribal Historic Preservation Officer
Stockbridge - Munsee Tribe of Mohican, Wisconsin W13447 Camp 14 Road Bowler, WI 54416 Attn: Bonney Hartley, Tribal Historic Preservation Manager/NAGPRA

Massachusetts National Guard JFHQ Hanscom AFB, MA 01731 Attn: Mr. Paulo Baganha
Headquarters, Camp Edwards JFHQ Hanscom AFB, MA 01731 Attn: Mr. Dave Shannon
Massachusetts National Guard Environmental & Readiness Center Building 3468, Beaman Street Camp Edwards, MA 02542 Attn: Mike Ciaranca, Ph.D., Deputy Director
Impact Area Groundwater Study Program PB 0515, West Outer Road Camp Edwards, MA 02542 Attn: Ben Gregson, Remediation Manager
Impact Area Groundwater Study Program PB 0515, West Outer Road Camp Edwards, MA 02542 Attn: Pam Richardson, Community Involvement Specialist
Impact Area Groundwater Study Program PB 0515 West Outer Road Camp Edwards, MA 02542 Attn: LTC Shawn Cody
Air Force Civil Engineering Center Installation Restoration Program 322 East Inner Road Otis ANG Base, MA 02542 Attn: Doug Karson, Community Involvement Lead
Air Force Civil Engineer Center Installation Restoration Program 322 East Inner Road Otis ANG Base, MA 02542 Attn: John Davis
Massachusetts Air National Guard 253rd Cyberspace Engineering Installation Group Otis ANG Base, MA 02542 Attn: COL James Hoye
Massachusetts Air National Guard 102d Intelligence Wing 158 Reilly Street, Box 25 Otis ANG Base, MA 02542 Attn: COL McNulty
US Coast Guard Environmental Health and Safety 5215 E. Hospital Road, 2nd Floor Buzzards Bay, 02542 Attn: Elizabeth Kirkpatrick

6th Space Warning Squadron (PAVE PAWS) 1 Flatrock Road Sagamore, MA 02561-0428 Attn: LTC James E. Roberts
Upper Cape Regional Water Supply Cooperative P.O. Box 373 Mashpee, MA 02649-0373 Attn: Dan Mahoney, Chair
Sheriff James Cummings Barnstable County Sherriff's Office 6000 Sheriff's Place Bourne, MA 02532
Dr. Paul Cavanaugh 225 Thomas Landers Road East Falmouth, MA 02536
Mark Harding 25 Devon Street Mashpee, MA 02649
Mimi McConnell P.O. Box 832 Cotuit, MA 02635
Jimmy Dishner P.O. Box 955 South Orleans, MA 02653
The Nature Conservancy 99 Bedford Street, Suite 500 Boston, MA 02111
Department of Natural Resources Conservation University of Massachusetts, Amherst 205 Holdsworth Way Amherst, MA 01003-9285
Anthony Schiavi, Town Administrator Bourne Town Hall 24 Perry Avenue Buzzards Bay, MA 02532
Bourne Board of Selectmen Bourne Town Hall 24 Perry Avenue Buzzards Bay, MA 0253
Bourne Planning Board Bourne Town Hall 24 Perry Avenue Buzzards Bay, MA 02532
Bourne Conservation Commission Bourne Town Hall 24 Perry Avenue Buzzards Bay, MA 02532
Bourne Board of Health Bourne Town Hall 24 Perry Avenue Buzzards Bay, MA 02532

Jonathan Bourne Public Library 19 Sandwich Road Bourne, MA 02532
Rodney C. Collins, Town Manager Mashpee Town Hall 16 Great Neck Road North Mashpee, MA 02649
Mashpee Board of Selectmen Mashpee Town Hall 16 Great Neck Road Mashpee, MA 02649
Mashpee Planning Board Mashpee Town Hall 16 Great Neck Road Mashpee, MA 02649
Mashpee Conservation Commission Mashpee Town Hall 16 Great Neck Road Mashpee, MA 02649
Mashpee Board of Health Mashpee Town Hall 16 Great Neck Road Mashpee, MA 02649
Mashpee Public Library 64 Steeple Street PO Box 657 Mashpee, MA 02649
George Dunham, Town Manager Sandwich Town Hall 130 Main Street Sandwich, MA 02563
Sandwich Board of Selectmen Sandwich Town Hall 130 Main Street Sandwich, MA 02563
Sandwich Planning Board 16 Jan Sebastian Drive Sandwich, MA 02563
Sandwich Conservation Commission 16 Jan Sebastian Drive Sandwich, MA 02563
Sandwich Board of Health 16 Jan Sebastian Drive Sandwich, MA 02563
Sandwich Public Library 142 Main Street Sandwich, MA 02563
Julian Suso, Town Manager Falmouth Town Hall 59 Town Hall Square Falmouth, MA 02540

Falmouth Board of Selectmen Falmouth Town Hall 59 Town Hall Square Falmouth, MA 02540
Falmouth Planning Board Falmouth Town Hall 59 Town Hall Square Falmouth, MA 02540
Falmouth Conservation Commission Falmouth Town Hall 59 Town Hall Square Falmouth, MA 02540
Falmouth Board of Health Falmouth Town Hall 59 Town Hall Square Falmouth, MA 0254
Falmouth Public Library 300 Main Street Falmouth, MA 02540