FINDING OF NO SIGNIFICANT IMPACT

IMPLEMENTATION OF
THE INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN
FOR CAMP EDWARDS TRAINING SITE, MASSACHUSETTS
MASSACHUSETTS ARMY NATIONAL GUARD

The Massachusetts Army National Guard (MAARNG) prepared an Environmental Assessment (EA) to identify and evaluate the potential environmental impacts of implementing the five year revision of the Camp Edwards Training Sites’ Integrated Natural Resources Management Plan (INRMP), a 14,433-acre MAARNG training site located in southeastern Massachusetts approximately 50 miles southeast of Boston, at the base of Cape Cod. The Integrated Natural Resources Management Plan will guide natural resource management at Camp Edwards from Fiscal Year 2006 through 2011 in accordance with the Sikes Act (16 USC 670a et seq) and the Sikes Act Improvement Amendments of 1997.

A. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Proposed Action

The MAARNG proposes to adopt and implement the INRMP for Camp Edwards Training Site. The INRMP sets forth goals, objectives, and specific activities to support the training mission of the MAARNG through conservation and rehabilitation of the natural resources of Camp Edwards Training Site. The INRMP will guide improvement of the training lands while benefiting the natural resources through reduced soil erosion, improvement to the flora, fauna, and their habitats, protection of wetland ecosystems, and conservation of rare species. The land use of Camp Edwards Training Site consists of training activities including assembly, tactical maneuvering, tactical bivouacking, small arms range firing, engineering, ammunition storage, support, maintenance, aviation facilities, and environmental management to include fire management. Preparation and implementation of the INRMP for Camp Edwards Training Site is required by the Sikes Act.

Alternatives Considered

The “No Action” alternative was considered in addition to the preferred alternative (i.e., the proposed action). Under the “No Action” alternative, the INRMP would not be implemented and natural resources would continue to be managed in accordance with existing directives and procedures. At present, Camp Edwards Training Site does not have an INRMP. Therefore, the “No Action” alternative would result in maintaining the status quo of ecosystem management at Camp Edwards Training Site. The natural
resources decision-making would not be formally integrated with other mission activities and there would be no consistent framework or approach for implementing natural resources programs on Camp Edwards Training Site.

**B. ENVIRONMENTAL ANALYSIS**

The analysis of the potential environmental impacts of the proposed action is documented in the aforementioned Environmental Assessment. Evaluation indicates that implementation of the INRMP would result in beneficial effects or no-effects in all instances for the following resources: land use; soils; surface water; biological resources; threatened, endangered, and special status species; cultural resources; air quality; noise management; hazardous materials and waste management; integrated pest management; environmental justice; protection of children; public use; outdoor recreation; and public safety. Continuation of existing management procedures, the “No Action” alternative, has the potential to result in either adverse impacts or no-effects for each of these resource areas.

**C. MITIGATION MEASURES**

No mitigation measures will be required as a result of implementing the INRMP for Camp Edwards Training Site. General and project-specific actions identified in the INRMP and the EA will effectively avoid or significantly reduce potential impacts to various resources. Furthermore, the EA has not identified any significant impacts that would result from the implementation of the INRMP, thereby eliminating the need to establish mitigation measures.

**D. REGULATIONS**

There are no indications that implementation of this action will violate any federal, state, or local environmental laws or regulations. The proposed action would not violate the National Environmental Policy Act (42 USC § 4321 to 4370e), its regulations as promulgated by the Council on Environmental Quality (40 CFR Parts 1500-1508), 32 CFR Part 651, 29 March 2002, Environmental Analysis of Army Actions "Environmental Effects of Army Actions" or any other federal, state, or local environmental laws or regulations. The EA documents the status of project compliance with applicable federal environmental statutes and executive orders.

**E. PUBLIC REVIEW AND COMMENTS**

A notice of availability and legal advertisement for the draft EA and INRMP will be placed in the Cape Cod Times announcing that copies of the draft EA and INRMP are available for public review and comment. Copies of the draft EA and INRMP will be
made available at the town libraries in Bourne, Falmouth, Mashpee, and Sandwich, as well as the Coast Guard library located on the Massachusetts Military Reservation. Copies of both draft documents will also be available on-line at http://www.mass.gov/guard/E&RC/publications.htm during the review period.

The draft EA and INRMP were reviewed by Federal, state, and local agencies during their development. Comments and input from these agencies are reflected the final EA and INRMP.

The final EA and INRMP will be available for review and comments following the signing of this Finding of No Significant Impact. Copies of the final EA and INRMP will be made available at the town libraries in Bourne, Falmouth, Mashpee, and Sandwich, as well as the Coast Guard library located on the Massachusetts Military Reservation. Copies of both final documents will also be available on-line at http://www.mass.gov/guard/E&RC/publications.htm

Interested parties are invited to review the EA and INRMP and submit written comments before close of the public review period. Written comments should be sent to Massachusetts National Guard, Environmental and Readiness Center, ATTN: Dr. Michael Ciaranca, Building 1204, West Inner Road, Camp Edwards, MA 02542-5003. Comments may also be submitted on-line at the http://www.mass.gov/guard/E&RC/publications.htm. Questions or requests for more information should be directed to Dr. Michael Ciaranca at (508) 968-5121.

F. FINDING OF NO SIGNIFICANT IMPACT

A careful review of the Environmental Assessment has concluded that the implementation of the INRMP for Camp Edwards will not have any significant adverse impacts on the quality of the existing natural or human environment. The requirements of the National Environmental Policy Act and the Council on Environmental Quality regulations have been satisfied and an Environmental Impact Statement will not be prepared.

Date

Gerald I Walter
Colonel
Chief of Environmental Programs
National Guard Bureau
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LIST OF ACRONYMS

$O_3$-Ozone
APC-Armored Personnel Carrier
AR-Army Regulation
ARNG-Army National Guard
CAA-Clean Air Act
CFMO-Construction and Facilities Management Officer
CX-Categorical Exclusion
DA PAM-Department of the Army Pamphlet
DMP/AWEIR-Draft master Plan/Area-Wide Environmental Impact Report
DoD-Department of Defense
EA-Environmental Assessment
Eaw-Environmental Awareness
EIS-Environmental Impact Statement
EO-Executive Order
FE-Facilities Engineer
FNSI-Finding of No Significant Impact
GIS-Geographic Information System
ICP-Integrated Contingency Plan
IDT-Inactive Duty Training
INRMP-Integrated Natural Resource Management Plan
ITAM-Integrated Training and Management
RTL A-Range and Training Land Assessment
LRAM-Land Rehabilitation and Maintenance
LZ-Landing Zone
MAARNG-Massachusetts Army National Guard
MMR-Massachusetts Military Reservation
MNG-Massachusetts National Guard
NAAQS-National Ambient Air Quality Standards
NEPA-National Environmental Policy Act
POTO-Plans, Operations, and Training Officer
ppt-parts per thousand
REC-Record of Environmental Consideration
RONA-Record of Non-Applicability
TRI-Training Requirements Integration
USCG-United States Coast Guard
USDA-United States Department of Agriculture
USEPA-U.S. Environmental Protection Agency
VOC-Volatile Organic Compounds
EXECUTIVE SUMMARY

The Massachusetts Army National Guard (MAARNG) is required under the Sikes Act and AR 200-3 to develop and implement an Integrated Natural resource Management Plan (INRMP) for Camp Edwards. The INRMP will be the installation commander’s adaptive plan for managing ecosystems and natural resources to support and be consistent with the military mission while protecting and enhancing those ecosystems and resources for multiple use, sustainable yield, and biological integrity.

The INRMP addressed here is a revision of the INRMP issued October 2001. Issues from the revised INRMP that drive this EA are as follows:

- Environmental Oversight by the Environmental Management Commission as established by the Massachusetts General Law Chapter 47 the Acts of 2002.
- Reclassification of the Natural Communities of Camp Edwards to be consistent with sister state agencies.
- Adjusted goals, objectives, and management actions based upon reclassification of natural communities.
- Expanded fire management goals, objectives, and proposed actions as exerted from the Camp Edwards Integrated Fire Management Plan.
- The need to recognize a Federal Candidate Species, New England Cottontail (*Sylvilagus transitionalis*) and put forth proactive management actions to address this species.

This Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and Army Regulation (AR) 200-2 (December 23, 1988) to assess the potential environmental and socio-economic impacts associated with implementing the Camp Edwards INRMP.

The proposed action within this EA is to implement the INRMP at Camp Edwards. The INRMP coordinates ecosystem management, the Integrated Training Area Management (ITAM) program, and military training at Camp Edwards to ensure the sustainable use of training lands, maintenance and improvement of natural resources, and education of the users of the training lands of Camp Edwards. The goals and objectives of the INRMP aim to protect, rehabilitate, and enhance environmental conditions at Camp Edwards. This EA summarizes and compares the effects and impacts of the Proposed Action and the No Action Alternative. The objectives of the Camp Edwards INRMP are:

1. To outline the military mission and its effects on the natural resources of Camp Edwards.
2. To recommend guidelines for the management and protection of natural and cultural resources on Camp Edwards to maintain biological diversity and sustainability of the training site for mission use.

3. To suggest methods for increasing awareness of the Massachusetts Army National Guard and the general public on matters of natural resources protection and conservation and its integration with military training.

4. To provide specific natural resources management guidelines and recommendations so that the Environmental Performance Standards from the Massachusetts National Guard’s Master Plan/Area-Wide Environmental Impact Report, once they are approved, may be achieved on Camp Edwards with no net loss to the training mission.

5. To describe the physical characteristics of the Camp Edwards Training Site.

6. To describe the results and findings of the Range and Training Land Assessment Program and other natural resources inventories and studies on Camp Edwards. These results will serve as a baseline of information upon which management recommendations will be based.

7. To describe in detail the organization, personnel, funding, and support required for the implementation of the INRMP on the Camp Edwards Training Site.

8. To provide an avenue for public involvement in the implementation process of the INRMP as well as in the recommendations for use of the training site for recreational purposes.

Based on the findings of this EA, implementation of the Camp Edwards INRMP would have no significant direct or cumulative environmental or socio-economic impacts. The proposed action would result in long-term positive effects on the land use, soils, water resources, biological resources, and cultural resources on Camp Edwards. Impacts to resources such as air quality, soils, vegetation, and wildlife would be short-term and temporary. Therefore, no significant indirect or cumulative effects are expected and the proposed action would result in the MAARNG providing realistic and sustainable training opportunities while successfully managing and preserving the natural resources on Camp Edwards.

Implementation of the MAARNG’S INRMP would result in the efficient management of natural resources at Camp Edwards. The INRMP establishes explicit responsibilities, standard operating procedure, and long-range goals for managing natural resources at ARNG lands in compliance with all applicable federal laws,
regulations, and NGB guidelines. The goals included in the INRMP require close interaction between the ARNG natural resource program manager and other natural resources professionals. As a result, all natural and human resources under the MAARNG control will receive greater consideration and protection than previously afforded. Implementation of the proposed action would not result in significant environmental effects and an EIS should not be required.

The proposed action of implementing the INRMP at Camp Edwards is the MAARNG’s preferred alternative. This EA evaluates the potential effects of total implementation of the Camp Edwards INRMP and does not assess partial implementation alternatives. Partial implementation will not be addressed because the MAARNG cannot predict resource availability (i.e. funding) and what projects would actually be funded in the years covered by the current INRMP. Subsequently, it must be assumed that the impacts of partial implementation would be similar to a no action alternative. Therefore the only other potential alternative to full implementation of the Camp Edwards INRMP is the No Action, or non-implementation, alternative. The potential environmental and socio-economic impacts of implementing the proposed INRMP as well as the No Action alternative will be evaluated within this EA.

Under the No Action alternative, the management programs within the INRMP would not be implemented. Therefore, the No Action alternative would result in maintaining the status quo of ecosystem management at Camp Edwards. The natural resources of Camp Edwards would be managed in accordance with existing directives and procedures.

All persons and organizations having a potential interest in the proposed action, including minority, low income, disadvantaged and Native American groups, are urged to participate in this decision making process.
CHAPTER 1. PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 Introduction

The MAARNG proposes to implement the revised INRMP at the Camp Edwards Training Site (14,433 acres) (Figure 1-1). The INRMP coordinates the Integrated Training Area Management (ITAM) program, ecosystem management, and military training at Camp Edwards to ensure the sustainable use of training lands, maintenance and improvement of natural resources, and education of the users of the lands of Camp Edwards. The MAARNG is required by the Sikes Act (16 U.S.C. 670a et seq.) to develop and implement an INRMP for the Camp Edwards Training Site.

The INRMP will be the installation commander’s adaptive plan for managing ecosystems and natural resources to support and be consistent with the military mission while protecting and enhancing those ecosystems and resources for multiple use, sustainable yield, and biological integrity.

The INRMP for which this EA has been prepared is the revision of the first INRMP implemented at Camp Edwards. Issues from the revised INRMP that drive this EA are as follows:

- Environmental Oversight by the Environmental Management Commission as established by the Massachusetts General Law Chapter 47 the Acts of 2002.
- Reclassification of the Natural Communities of Camp Edwards to be consistent with sister state agencies.
- Adjusted goals, objectives, and management actions based upon reclassification of natural communities.
- Expanded fire management goals, objectives, and proposed actions as exerted from the Camp Edwards Integrated Fire Management Plan.
- The need to recognize a Federal Candidate Species, New England Cottontail (*Sylvilagus transitionalis*) and put forth proactive management actions to address this species.

ThisEnvironmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and Army Regulation (AR) 200-2 (December 23, 1988) to assess the potential environmental and socio-economic impacts associated with implementing the Camp Edwards INRMP.

1.2 Purpose and Need
The proposed action within this EA is to implement the revised Camp Edwards INRMP. The Purpose of this action is to ensure that natural resource conservation measures and Army activities on mission lands are consistent with federal stewardship requirements to sustain native natural resources on an ecosystem scale and to comply with current legal mandates while resulting in “…no net loss in the capability military installation lands to support the military mission of the installation…” (Sikes Act Improvement Act of 1997). Development and implementation of the INRMP at Army installations is required under the Sikes Act (Sikes Act 16 U.S.C. 670a et seq., Sikes Act Improvement Act of 1997) and AR 200-3 (February 28, 1995). The potential environmental and socio-economic effects of actions proposed in the INRMP must be assessed under NEPA.

The Sikes Act, the knowledge that Army Training lands need to be maintained in a healthy environmental state, and to provide for managed lands, biodiversity, and the most beneficial training experience possible drive the Need for this action.

An Environmental Assessment (EA) is required when a proposed action does not qualify for a Categorical Exclusion. EAs are comprehensive documents that describe a proposed action and the alternatives to the proposed action. An EA is used for proposed actions that will not have a significant environmental effect or where a proposed action’s environmental effects can be mitigated below a level of significance. An EA is often used when extensive new military exercises, major construction, or land acquisition is planned, when the planned action involves a large area, or when wetlands or endangered species may be involved. A 30-day review period is provided for public comment and a Finding of No Significant Impact is required for the action to proceed as planned.

The National Environmental Policy Act (NEPA) was created to identify environmental concerns with human activities and resolve them to the best degree possible at early stages of project development. The MAARNG uses NEPA analysis to ensure its activities are properly planned, coordinated, and documented. The MAARNG provides NEPA documentation for proposed projects (actions) at Camp Edwards that are beyond the existing required documentation developed by the
Figure 1-1. Camp Edwards Training Site, Massachusetts Military Reservation, Cape Cod, Massachusetts.
MAARNG for the training site. This additional NEPA documentation can then be used for identification of potential problems or impacts on the natural resources of Camp Edwards.

NEPA is a three-stage process.

1. If the Proposed Action meets a categorical exclusion (CX) in 32 CFR Part 651, 29 March 2002, Environmental Analysis of Army Actions, a Record of Environmental Consideration (REC) is prepared for the project, and the project may proceed as planned. These are the most commonly prepared documents.

2. An Environmental Assessment (EA) or Environmental Impact Statement (EIS) is required when an action does not qualify for a Categorical Exclusion. EAs and EISs are comprehensive documents that describe a proposed action and the alternatives to the action. An EA is used for actions that will not have a significant environmental effect or where an action's environmental effects can be mitigated below a level of significance. An EA is often used when extensive new military exercises, major construction, or land acquisition is planned; when the planned action involves a large area, or when wetlands or endangered species may be involved. A Finding of No Significant Impact is required for the action to proceed as planned. A 30-day review period is provided for public comment.

3. An EIS is reserved for those actions with significant environmental effects that cannot be mitigated below a level of significance. If more study is needed or a Finding of No Significant Impact (FNSI) cannot be prepared, an Environmental Impact Statement (EIS) must be written. These can be lengthy documents that require significant time to prepare.

Implementation of this INRMP is the proposed action that must be reviewed in accordance with NEPA and 32 CFR PART 651, 29 MARCH 2002, ENVIRONMENTAL ANALYSIS OF ARMY ACTIONS Environmental Effects of Army Actions before implementation of the projects, objectives and goals found within. This EA was written to address the implementation of this plan. Topics to be addressed are related to the effects of implementing the proposed plan on natural resources. The details are discussed in the following chapters and include but are not limited to: ITAM, endangered species, wildlife, prescribed burning, routine maintenance activities, riparian zones, floodplains, wetlands, off-road vehicle use, sedimentation, erosion, and non-point source pollution.

The proposed action within this EA is to implement the revised Camp Edwards INRMP. The Purpose of this action is to ensure that natural resource conservation measures and Army activities on mission lands are consistent with federal stewardship
requirements to sustain native natural resources on an ecosystem scale and to comply with current legal mandates while resulting in “...no net loss in the capability of military installation lands to support the military mission of the installation…” (Sikes Act Improvement Act of 1997). The Sikes Act (Sikes Act 16 U.S.C. 670a et seq., Sikes Act Improvement Act of 1997), the knowledge that Army Training lands need to be maintained in a healthy environmental state, and to provide for managed lands, biodiversity, and the most beneficial training experience possible drive the Need for this action.

1.3 Scope of the Document

This EA assesses the potential environmental and socio-economic impacts associated with the proposed action (implementing the INRMP at Camp Edwards), and the impacts associated with the No Action alternative (i.e., not implementing the INRMP and maintaining existing conditions). The outline and content of the EA have been prepared in accordance with the guidelines provided in Army National Guard Manual for Compliance with the National Environmental Policy Act of 1969, Guidance on Preparing Environmental Documentation for Army National Guard Actions in Compliance with NEPA (June 2006). The environmental and socio-economic resources addressed in this EA are described in Chapter 4. The potential impacts resulting from the proposed action and the No Action alternative are presented in Chapter 5.

1.4 Agency and Public Participation

All persons and organizations having a potential interest in the proposed action, including minority, low income, disadvantaged and Native American groups, are urged to participate in the decision making process.

The preparation of the INRMP and this EA was coordinated with appropriate federal, state, and local agencies. Copies of agency correspondence are provided in Appendix B. In addition, agency and public input will be obtained during the public comment period. During this time any comments submitted by agencies, organizations, or members of the public on the proposed action or EA will be considered. If the EA concludes that there are no significant impacts, a FNSI will be issued. The draft FNSI and final EA will then be made available during another public comment period. Notices of public comment period and availability of the documents will be advertised through the local news media.
CHAPTER 2. DESCRIPTION OF THE PROPOSED ACTION

The goals of the Camp Edwards Integrated Natural Resources Management Plan (INRMP) are to preserve and maintain the natural resources of Camp Edwards consistent with the use of Camp Edwards to ensure the preparedness of the MAARNG. Guidance from the INRMP will aid in improving the training lands while benefiting the natural resources through reduced soil erosion, improvement to the flora, fauna, and their habitats, protection of wetland ecosystems, and conservation of rare species. Further objectives of the Camp Edwards INRMP are:

1. To outline the military mission and its effects on the natural resources of Camp Edwards.

2. To recommend guidelines for the management and protection of natural and cultural resources on Camp Edwards to maintain biological diversity and sustainability of the training site for mission use.

3. To suggest methods for increasing awareness of the Massachusetts Army National Guard and the general public on matters of natural resources protection and conservation and its integration with military training.

4. To provide specific natural resources management guidelines and recommendations so that the Environmental Performance Standards from the Massachusetts National Guard’s Master Plan/Area-Wide Environmental Impact Report, may be achieved on Camp Edwards with no net loss to the training mission.

5. To describe the physical characteristics of the Camp Edwards Training Site.

6. To describe the results and findings of the Range and Training Land Assessment Program and other natural resources inventories and studies on Camp Edwards. These results will serve as a baseline of information upon which management recommendations will be based.

7. To describe in detail the organization, personnel, funding, and support required for the implementation of the INRMP on the Camp Edwards Training Site.

8. To provide an avenue for public involvement in the implementation process of the INRMP.

The MAARNG proposes to implement the Camp Edwards INRMP. The INRMP evaluated in this EA addresses management goals and objectives that are proposed for
FY06 to FY11. Either during or at the end of this time period, the INRMP will be revised to reflect the changing conditions, land use, and management practices on Camp Edwards. The implementation of the INRMP on Camp Edwards would include the coordination of ecosystem management, the Integrated Training Area Management (ITAM) program, and with military training at Camp Edwards.

The Integrated Training Area Management Program (ITAM) is the U.S. Army standard for sustaining the capability of installation land units to support their military training missions by achieving the following goals:

- to protect natural and cultural resources
- to ensure compliance with existing statutory regulations
- to prevent future pollution and reduce hazardous waste and toxic releases
- to integrate environmental planning procedures into all military training operations

The U.S. Army recognizes that the execution of training to doctrinal standards, under realistic combat conditions, will affect the natural resources of a training site. As a result, the ITAM Program was created as an essential part of the Army’s commitment to environmental stewardship and to ensuring no net loss of training capability (DA PAM 350-4). ITAM consists of four subprograms designed to facilitate these processes.

2.1 Range and Training Land Assessment (RTLA)

RTLA is the natural resources data collection and analysis component of the ITAM Program and is used as a standard base for inventory and monitoring on Department of Defense owned or managed properties (USA-CERL 1995). The intent of RTLA is to acquire essential natural resource baseline information that is needed to effectively manage training lands.

RTLA surveys inventory plants, animals, and describe the condition of the land. The information obtained from RTLA surveys may be integrated with standard data elements from ancillary components of ITAM (for example, cultural resources surveys, wetlands surveys, endangered species surveys, water quality monitoring), as well as satellite imagery and aerial photography to portray a total picture of the natural and cultural resources of the training site. A Geographic Information System (GIS) is used to integrate all natural and cultural resources data and graphically display the relationships between individual resource components.

2.2 Training Requirements Integration (TRI)

Training Requirements Integration (TRI) supports the integration of land use requirements with natural and cultural resources management processes. Siting
military missions (and other land uses) in areas best capable of supporting the activities is the main goal of TRI. TRI relies heavily on GIS and RTLA to determine land capabilities and includes rotation of training lands as well as scheduling lands according to their “carrying capacity” to support specific missions (Department of the Army 1999).

At Camp Edwards, TRI also coordinates between trainers and users those restrictions required to maintain high-quality training lands, provide a safe training environment, and protect significant natural resources. Concurrently, the Sustainable Range Awareness program will serve to educate the training site users about site limitations. Sustainable Range Awareness also instructs using units about the best means to accomplish the missions with minimal environmental damage or impact.

2.3 Land Rehabilitation and Maintenance (LRAM)

Land Rehabilitation and Maintenance is the component of the ITAM program that provides a preventive and corrective land rehabilitation and maintenance procedure to reduce the long-term impacts of training and testing on an installation. It includes training area redesign and/or reconfiguration to meet training requirements (Department of the Army 1999).

The program uses cost-effective technologies such as revegetation and erosion control techniques to reduce soil loss, control water runoff, and protect soil productivity and riparian areas (adjacent to water and wetlands). A key element in the LRAM program is the watershed or drainage basin approach to land rehabilitation. This approach ensures that land rehabilitation projects address actual land degradation problems, not just the symptoms.

There are four types of rehabilitation activities: (1) reducing activities that result in negative environmental impacts, (2) adding materials, (3) accelerating or decelerating ecosystem processes, and (4) changing site conditions. The simplest and least costly rehabilitation activity is to reduce or control an activity such as cutting of live vegetation. A second and more costly activity involves adding species (by planting or seeding), water, fertilizers, or soil to the site. Accelerating or decelerating ecosystem processes might involve introducing prescribed fire to reduce woody species and provide nutrients to the soil, mowing or bushhogging to slow successional processes, or attracting seed vectors such as birds to accelerate seed input to a site. In severely damaged sites, changing site conditions would be accomplished by changing drainage, slope, or vegetation to improve environmental conditions.

2.4 Sustainable Range Awareness (SRA)

Sustainable Range Awareness provides a means to educate land users on their environmental stewardship responsibilities. It provides for the development and
distribution of educational materials to land users. These materials relate the principles of land stewardship and the practices of reducing training and/or testing impacts. EA also includes information provided to environmental professionals concerning operational requirements (Department of the Army 1999).

The Sustainable Range Awareness Program focuses on primarily two groups of land users: military and non-military training site users (e.g., police, local population, school and community groups). Sustainable Range Awareness is designed to improve their understanding of the effects of their mission, training, or activity on the natural resources of the Camp Edwards.

Sustainable Range Awareness also serves to educate the public and garner their support by effectively communicating the nature of the military mission at Camp Edwards and the level of success of natural resources management at the site. When military users and the public are informed and educated about “easily understood” management practices (such as wildlife food plots, reseeding, tree plantings) as well as “misunderstood” management practices (such as restrictions on field operations or hunting, prescribed burning, or reduced grounds maintenance), they tend to lend more support than opposition to the practice.

### 2.5 Ecosystem Management

The goal of ecosystem management on military training lands is to ensure that military lands support present and future training requirements while, as much as possible, preserving, improving, and enhancing an ecosystem’s characteristics and communities of which it is comprised. Over the long term, that approach will maintain and improve the sustainability and biological function of ecosystems; while supporting sustainable economies, human use, and the environment required for realistic military training operations (DoD Instruction 4715.3).

Ecosystem management is based on a holistic, systems-oriented approach, and not predicated on single species management or maximizing the prevalence of a small group of organisms. While rare species may be important components of restoration work, rare species should not distract the focus from conservation of a healthy, biologically diverse system.

It is important to note that though this plan takes an ecosystem approach to managing the lands of Camp Edwards, the Massachusetts Endangered Species Act still requires recovery of individually listed species. Combining both management methods will ensure that ecosystems maintain their integrity - their constituent species and dynamics - and continue to support those species that are most vulnerable to ecosystem change- state-listed rare species.
As part of this type of management, fire management, as put forth in the Camp Edwards Training Site Integrated Fire Management Plan and as cited within the Camp Edwards Training Site’s INRMP, will be used as one of the primary tools.

The overriding goal of the fire management policies of Camp Edwards is to support the mission of the training site (combat readiness) while promoting a diverse ecosystem, public safety, and protection of the surrounding community from wildland fire. It is the intent of the MAARNG and other stakeholders that fire be reintroduced to this system using a landscape scale approach. It is critical to the success of this undertaking that wildland and prescribed fire planning is in place to ensure the most ecologically sound and safest approach to this endeavor.

The goals of the fire management plan and as proposed within the INRMP are to:

- guide the decision making process so that safety as well as social, political, and resource values are evaluated with appropriate management.
- provide a framework for fuels management through the use of prescribed fire.
- provide a platform for cooperation in planning and implementing a fire program within and across agency boundaries.

2.6 Plan Implementation

Implementing the Camp Edwards INRMP is ultimately the responsibility of the Adjutant General of the MAARNG. The cooperation and participation of the MAARNG Training Site Commander, the Construction and Facilities Management Officer (CFMO), the Plans, Operations, and Training Officer (POTO), and Camp Edwards Range Control with the Camp Edwards Natural Resource Office is essential throughout the development and implementation process (See Chapter 5.1). However, the day-to-day coordination and implementation of the management proposed in the INRMP will be the responsibility of the Camp Edwards Natural Resource Office.
2.6.1 Staffing

The staffing required to implement the INRMP on Camp Edwards is potentially available from several sources. The primary personnel that will be involved in implementing the INRMP are the personnel of the Camp Edwards Natural Resource Office, which will include, but not necessarily be limited to:

- Natural Resources Manager
- Natural Resources Planner
- GIS Manager
- GIS Technician

Additional personnel may include troop labor (i.e., soldier man-days) and contractors. Troop labor is also employed during annual or drill training, primarily for implementing an LRAM project. Contractors are often employed for larger projects such as bivouac restoration and fire break maintenance. If a proposed project is too large for a MAARNG unit or FE to conduct, then it is made available for contractors to bid. In addition, State environmental agencies have, in some states, partnered with the ARNG to conduct natural resources management on a training site. Personnel from these agencies may often provide expertise to guide natural resources management projects.
CHAPTER 3. ALTERNATIVES CONSIDERED

3.1 Alternatives Development

NEPA and 32 CFR PART 651, 29 MARCH 2002, ENVIRONMENTAL ANALYSIS OF ARMY ACTIONS require consideration of reasonable alternatives to a proposed action. Only alternatives that would reasonably meet the defined need for the proposed action require detailed analysis in this EA. The proposed action presented in Chapter 2 is the MAARNG’s preferred alternative. The only other alternative considered in this EA is the No Action alternative.

3.2 Alternatives to the Proposed Action

The proposed action of implementing the INRMP at Camp Edwards is the MAARNG’s preferred alternative. This EA evaluates the potential effects of total implementation of the Camp Edwards INRMP and does not assess partial implementation alternatives. Partial implementation will not be addressed because the MAARNG cannot predict resource availability (i.e. funding) and what projects would actually be funded in the years covered by the current INRMP. Accordingly, it must be assumed that the impacts of partial implementation would be similar to a no action alternative. Therefore, the only other potential alternative to full implementation of the Camp Edwards INRMP is the No Action, or non-implementation, alternative. The potential environmental and socio-economic impacts of implementing the proposed INRMP as well as the No Action alternative will be evaluated within this EA.

3.3 No Action Alternative

Under the No Action alternative, the management programs within the INRMP would not be implemented. The No Action alternative would result in maintaining the status quo of ecosystem management at Camp Edwards. The natural resources of Camp Edwards would be managed in accordance with existing directives and procedures. Furthermore, natural resources decision-making would not be formally integrated with other mission activities and there would be no consistent framework or approach for implementing natural resources programs on Camp Edwards.
CHAPTER 4. AFFECTED ENVIRONMENT

4.1 Location Description

The Camp Edwards Training Site (41° 42’ 30” N, 70° 32’ 30”W) is located in southeastern Massachusetts approximately 50 miles southeast of Boston, at the base of Cape Cod (i.e., Barnstable County) (Figure 4-1). Camp Edwards lies within the towns of Sandwich and Bourne. U.S. Route 6 and State Routes 28 and 130 border Camp Edwards to the north, west, and east, respectively. Camp Edwards comprises approximately 70% of the Massachusetts Military Reservation (MMR) of which the southern portion is occupied by the Veteran’s Administration Cemetery, and land leased to the United States Coast Guard and to the United States Air Force.

Figure 4-1. Location of Camp Edwards (MMR) in Massachusetts

4.2 Neighbors

Although the upper portion of Cape Cod was sparsely populated in the 1930’s when Camp Edwards was first established, the residential population has exhibited one of the fastest rates of growth in the United States. Approximately 70% of the perimeter of Camp Edwards is surrounded by residential development. In these areas, residential development is within one half mile of the boundary of Camp Edwards and often directly adjacent to the fences.
The cantonment area in the southern portion of Camp Edwards adjoins the remainder of the MMR, which includes Otis Air National Guard Base, the Veteran’s Administration Cemetery, Coast Guard Housing, and the Coast Guard Golf Course. The Coast Guard transmitter station is adjacent to Camp Edwards at its eastern border. The U.S. Air Force Precision Acquisition Vehicle Entry Phased Array Warning System Radar station is located within the northern portion of Camp Edwards.

The only parts of Camp Edwards that are not directly bordered by development are at the northern and southern ends of the perimeter. The far northern end of Camp Edwards is adjacent to the Cape Cod Canal. Although no development currently exists in this area, the land is highly sought after for residential homes. The northeastern corner of Camp Edwards abuts Shawme-Crowell State Forest. Although the state forest is only 742 acres in size, it is the most highly used state forest in southeastern Massachusetts (Massachusetts National Guard 1999). Furthermore, Shawme-Crowell State Forest is so fragmented that within the forest, residential development is always less than one half mile from and often in contact with the boundary of Camp Edwards. Crane Wildlife Management Area, which is managed by the Massachusetts DFW, is the only other relatively large public land in close proximity to Camp Edwards. It is located south of Otis Air National Guard Base and the Coast Guard Golf Course. Partnerships will be developed between Camp Edwards Natural Resource Office and the Division of Fisheries and Wildlife on Crane Wildlife Management Area and the Department of Conservation and Recreation on Shawme-Crowell State Forest.

4.3 Land Use

The MAARNG on Camp Edwards serves the public interest in two primary areas. The federal mission of the MAARNG is to support the national military strategy of U.S. Army. As a result, the MAARNG must maintain a capable force of soldiers that have received high-quality realistic training. Achieving training objectives and overall force readiness depends, in part, upon the availability of adequate training lands.

The state mission of the MAARNG is to provide assistance to the Commonwealth of Massachusetts, under the direction of the Governor, during natural disasters or other emergencies under the ARNG’s Innovative Readiness Training program. Furthermore, the MAARNG assists local communities with improvements to public properties such as athletic fields, landscaping, and playgrounds (Massachusetts National Guard 1999).

Soldier training on Camp Edwards takes place during two-week increments concentrated between May and August and weekend inactive duty training (IDT) occurring throughout the year. Throughout the summer months (2006), approximately 43150 soldiers trained on Camp Edwards. At most 3000 troops will train on Camp Edwards at one time (Massachusetts National Guard 1999). In the summer of 2006, 43150 National Guard soldiers trained on Camp Edwards. The total number of
personnel that used Camp Edwards throughout the year averaged 91,144 from 2002-2006. Other military and law enforcement personnel and general civilians that used Camp Edwards during the same time period averaged 59,249. General civilian use included Boy Scouts, BMX racing, athletics, motorcycle training, commercial drivers license training, and Youth Challenge.

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. Troop assembly occurs primarily in the 3600 Area or at the UTES Facility, but may occur in other areas. 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, which is one or more training areas. 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 ASP also occur on the northern training area. The support, maintenance, and aviation facilities, exist in a centralized region within the cantonment area.

Environmental management is not limited to a specific area, but rather occurs throughout Camp Edwards. For instance, maintenance of the scrub oak barrens occurs in the northern training area, whereas grassland management takes place primarily within the cantonment area. See Chapter 8 of the Camp Edwards INRMP for details on environmental management on Camp Edwards.

4.4 Air Quality

Ambient air quality standards have been established by the U.S. Environmental Protection Agency (USEPA) to define maximum concentration levels for selected atmospheric pollutants over specified averaging times. The National Ambient Air Quality Standards (NAAQS) promulgated by the USEPA are defined as the maximum acceptable concentrations, both annual and short-term standards, that may be reached. The annual standards may not be exceeded. The short-term standards may not be exceeded more than once per year. The selected atmospheric pollutants are referred to as “criteria” pollutants and consist of carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂), particulate matter with nominal aerodynamic diameter of less than 2.5 (PM₂.₅) and 10 (PM₁₀) micrometers, sulfur dioxide (SO₂), and lead (Pb). Measured air quality, when compared to the NAAQS, determines which pollutants are subject to attainment or non-attainment status.

The Clean Air Act (CAA) requires the USEPA to publish a list of all geographic areas in compliance with the NAAQS, which are then referred to as attainment areas.
The geographic regions established for designating air quality status are termed air quality control regions (ACQR).

Massachusetts is divided into four AQCRs. Camp Edwards is located within the Southeastern Massachusetts AQCR 120. An area is designated as attainment for a pollutant if the ambient concentration of a pollutant is below the NAAQS and non-attainment if violations of the NAAQS occur. Areas where insufficient data are available to make attainment status designation are listed as “unclassified”. Unclassified areas are treated as attainment for regulatory purposes.

The entire state of Massachusetts is classified as a serious ozone non-attainment area for the one-hour ozone standard. Additionally, Massachusetts is part of the Ozone Transport Region designated by Section 176A of the CAA 1990 amendments which subjects 12 northeast states, including Massachusetts, to certain air quality control policies. With the exception of CO, for which several areas of Massachusetts are unclassified, Massachusetts is in attainment for SO2, PM10, NO2, and Pb. The standard for PM2.5 is a new standard and the monitoring network is under development. Recommendations for designation are not due to the USEPA until adequate data are collected. Therefore, the PM2.5 status will not be fully assessed for several years. The Southeastern Massachusetts ACQR 120 is classified as attainment for all criteria pollutants except for the one-hour ozone standard. See Appendix A.

4.5 Noise

Noise levels in the environment are usually expressed in terms of hourly equivalent sound pressure levels (Leq) in decibels on the A-weighted scale (dBA). When expressed in this manner, noise levels approximate the response of the human ear by filtering out some of the noise in the low and high frequency ranges that the ear does not easily detect. The A-weighted scale is also used in most local ordinances and standards. Leq is defined as the average noise level, on an energy basis, for a specific period of time (e.g., hourly). Many environmental studies use the Day-Night noise level (Ldn) because it accounts for the greater annoyance of noise during nighttime hours. Ldn values are typically calculated by averaging hourly Leq sound levels for a 24-hour period and adding a weighting factor to the nighttime Leq values. The weighting factor, which reflects the increased sensitivity to noise during nighttime hours, is added to each hourly Leq sound level before the 24-hour Ldn is calculated.

Existing noise levels at Camp Edwards result from two primary sources: vehicular traffic and military training activities. Vehicular traffic exists on the roadways surrounding and throughout Camp Edwards. State routes 6, 130, and 28, which border Camp Edwards to the north, east, and west, respectively, experience regular traffic throughout the year. Traffic on the roads within the northern training area of Camp
Edwards is concentrated during the weekends and throughout the summer, when MAARNG training occurs.

Noise levels resulting from MAARNG activities, including the firing ranges, were modeled and are presented in the Noise Management Plan (2006). The noise contours were calculated in decibels and were concentrated around the Impact Area of Camp Edwards.

4.6 Topography

The surface topography of Camp Edwards varies greatly between northern and western portion and the southern portion of the training area. The northern and western portion of Camp Edwards is part of the Sandwich and Buzzards Bay glacial moraines, respectively. Large glacial deposits dominate this area with high topographic relief of rolling hills and deep kettle holes. Slopes range from 0-15%, with a mean slope of 3.4%. The greatest change in topographic relief in this area of Camp Edwards is approximately 90 feet. The highest point on Cape Cod, Pine Hill (318 feet above sea level), is situated in this western portion of Camp Edwards, atop the Buzzards Bay Moraine.

In contrast, the southern portion of Camp Edwards, which resides entirely within the Mashpee pitted outwash plain, has relatively low elevation (approximately 100 feet above sea level) and little topographic relief. Although slopes range from 0-15% in the outwash plain, the mean slope of 1.5% is considerably less in the moraine. The majority of the outwash plain has a slope of 0-2%, with the exception of the approximately 20 kettle-holes within the area.

4.7 Geology

The geologic origin of Cape Cod dates back to approximately 12,000 years ago at the end of the Wisconsin Period of glaciation. During the retreat of the Laurentide ice sheet, moraines of glacial till were deposited by the Cape Cod Bay Lobe to form the Sandwich moraine, the main peninsula of the Cape, and by the Buzzards Bay Lobe, which formed the Buzzards Bay Moraine, the western edge of the Cape and the Elizabeth Islands (Strahler 1966). Camp Edwards is situated on the northwest corner of Cape Cod where these two moraines converge. Approximately 40% of Camp Edwards resides on the glacial moraines. As a result, much of the geologic material with which much of Camp Edwards and Cape Cod was formed is an amalgam of well-scoured rock fragments that originated in northern New England.

As the Laurentide Ice Sheet melted and retreated over the course of hundreds or thousands of years, rivers and streams of meltwater deposited material from the moraines southward to the ocean. Much of the loam and clay washed into the Atlantic Ocean while the sand, gravel, and cobble was deposited closer to the moraines, forming
the Mashpee pitted outwash plain (Strahler 1966). This outwash plain is broad sloping land that forms the southern side of Cape Cod, extending from the terminal moraines to the Atlantic Ocean. The southeastern portion of Camp Edwards, approximately 60% of the land, is situated on the Mashpee pitted outwash plain. As a result, much of the soil in the area is a loose sand material.

4.8 Soils

In general, the soil of Camp Edwards is well-drained sand or sandy loam often containing stones or boulders. As a result, most of the soils have a high susceptibility to erosion, especially at steeper slopes (USDA Soil Conservation Service 1993) and along roads. For the sake of description, the soils of Camp Edwards can be classified in two categories- soils of the Sandwich and Buzzards Bay terminal moraines and soils of the outwash plain.

4.7.1 Soils of the Sandwich and Buzzards Bay Terminal Moraines

The soils of the Sandwich and Buzzards Bay terminal moraines are classified as rolling or hilly, and extremely bouldery. These excessively drained or well drained soils are typically found on slopes ranging from 3-15% and on hills of glacial moraine areas. Plymouth-Barnstable complex soils and Plymouth loamy coarse sand (7,066 Ac), and Barnstable-Plymouth complex soils (791 Ac) comprise the entirety of the terminal moraine soils on Camp Edwards. The Plymouth-Barnstable and Barnstable-Plymouth complex soils are mixtures of Plymouth, Barnstable, and other soils in varying proportions. These soils are typically covered with an inch of organic matter above the highly permeable soil. The relatively high susceptibility of these soils to erosion is a management concern (USDA Soil Conservation Service 1993).

4.8.2 Soils of the Outwash Plains

The soils of the outwash plains on Camp Edwards are primarily Enfields silt loams and Merrimac sandy loams. Both of the Enfield and Merrimac loams have been classified as very deep well-drained soil commonly found in broad areas on outwash plains. These soils have been described at a range of slopes between 0 and 15% throughout outwash plains. Erosion is a management concern where these soils exist on moderate to steep slopes (USDA Soil Conservation Service 1993).

Other soil types that have been described on the outwash plain of Camp Edwards include Plymouth loamy coarse sand, Carver coarse sand, Hinckley gravelly sandy loam and gravelly sandy loam. These soils are often found on moderate or steep slopes of swales on outwash plains. Like the Enfield and Merrimac loams, these soils are described as excessively drained, often resulting in high erodability, especially at steeper slopes (USDA Soil Conservation Service 1993).
Soil types associated with development on the outwash plain include sand and gravel pits from which sand or gravel have been removed, Udipsamments, smoothed, which are areas that have been leveled or smoothed during construction, and Urban land that includes buildings and pavement (USDA Soil Conservation Service 1993).

4.9 Water Resources

The water resources of Camp Edwards are scarce on the surface of the land, but plentiful beneath. The excessively drained sandy soils of Camp Edwards are not conducive to surface water retention. As a result, 45% of the annual rainfall on Camp Edwards infiltrates the soil and contributes to the groundwater supply.

4.9.1 Surface Water Resources

Although there are 31 delineated wetlands on Camp Edwards, they comprise only 55 of the 14,433 Acres, or 0.39%, of land. No large lakes, rivers, or streams exist on the property, only small palustrine (i.e., marshy) wetlands and ponds (Gravatt et al. 1999). As determined using the National Wetlands Inventory classification system, there are 16 palustrine emergent, 7 palustrine scrub-shrub, 4 palustrine unconsolidated bottom, 3 palustrine forested, and 1 palustrine aquatic bed wetlands on Camp Edwards. By definition, these palustrine wetlands are well-vegetated nontidal wetlands that are dominated by trees, shrubs, or emergent plants and have a salinity below 0.5 ppt. If vegetation is not present, then the wetlands must be less than 8 hectares, lacking in wave-formed or bedrock shores, and have a maximum water depth less than 2 meters at low water (Cowardin et al. 1979). Most of the wetlands and surface waters in the Sandwich and Buzzards Bay Moraines are considered to be perched (i.e., recharged by rainwater and not groundwater), since they lie up to 100 feet above the groundwater table (US Army Corps of Engineers 2000).

4.9.2 Groundwater Resources

Camp Edwards sits atop the Sagamore Lens of the Cape Cod Aquifer. This aquifer has been designated as a “sole-source” aquifer by the Environmental Protection Agency, since it meets the definition of supplying greater than 50 percent of the drinking water to the residents of Cape Cod.

The Upper Cape Water Supply Cooperative provides up to 3 million gallons of clean drinking water per day to the MMR and the four Upper Cape Cod towns of Sandwich, Bourne, Falmouth, and Mashpee, and to an elevated storage tank. The purpose is (1) to replace water supplies that have been contaminated or are threatened by contamination from the MMR, (2) to supplement existing water supplies to meet
present and future required drinking water for surrounding towns, and (3) to serve as an emergency source of drinking water (US Army Corps of Engineers 2000).

Water is drawn from three wells in the northern training area of Camp Edwards and distributed to the surrounding towns via approximately 11 miles of pipelines installed along existing roads. A pump house, an access road, and monitoring wells will accompany each of the three water supply wells. The following considerations were made during the selection of locations for the water supply wells:

- current and potential future land use
- groundwater flow regime
- location of known groundwater contamination
- existing water supply wells
- present and future locations of plume remediation systems
- wetlands and surface waters

4.10 Biological Resources

4.10.1 Plants

An initial floristic survey of the MMR identified 433 species of vascular plants (Jenkins 1994). The annual RTLA and rare plant surveys have identified an additional 124 specimens since 1994, increasing the total number of known plant species on Camp Edwards to 557. Data from the RTLA plant surveys originally indicated seven major plant communities on Camp Edwards. These communities were classified according to The Nature Conservancy’s Albany Pine Bush Reserve Classification System: mixed woods forest, pitch pine-scrub oak forest, hardwood forest, scrub oak barrens, grasslands, wetlands, and disturbed communities. The natural communities of Camp Edwards and the MMR in 2004 were reclassified using the Massachusetts Natural Heritage and Endangered Species Program’s Natural Communities Classification (Swain and Keasley 2001). Some smaller undescribed plant communities, such as aspen (Populus spp.) depressions exist within the predominant natural communities.

The plant communities of Camp Edwards are generally classified as mid to late successional forest with intermittent early successional disturbed areas and kettle-hole ponds and wetlands. The climax plant community on Camp Edwards is likely an oak-pine forest with gray birch (Betula populifolia), American beech (Fagus grandifolia), and bitternut hickory (Carya cordiformis) (Foster and Motzkin 1999).

The species diversity of the forests of Camp Edwards is generally quite low. On average, 53 species of plants were documented in each plant community of Camp Edwards, which when compared to most fertile woods of western New England that typically have up to 200 plant species, is relatively low (Jenkins 1994).
4.10.2 Wildlife

Extensive surveys have been conducted to inventory the fauna of Camp Edwards. 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 1 to 3 years. These surveys and inventories have provided an enormous database of the fauna of Camp Edwards and their associated habitats.

4.10.2.1 Invertebrates

Due to their high diversity compared to other groups of fauna, invertebrates are one of the least studied groups of animals on Camp Edwards. Past surveys and inventories have concentrated on three groups of invertebrates: moths, dragonflies, and aquatic invertebrates. A total of 521 species of macrolepidoptera (i.e., moths and butterflies), including 17 state-listed rare species, were identified during surveys of the ecosystems of Camp Edwards (Mello et al. 1999). The most significant plant communities for state-listed rare moth species on Camp Edwards are the scrub oak barrens and the grasslands. Since both of these habitats are early successional fire-adapted habitats, active management will be required to ensure their existence on Camp Edwards.

4.10.2.2 Birds

A total of 105 bird species have been documented on Camp Edwards since 1994 during the annual RTLA bird surveys. The bird surveys are conducted along the same transects as the RTLA plant surveys. The data from the bird surveys are used to determine abundance and species richness of birds throughout the ecosystems of Camp Edwards. Aside from the annual RTLA surveys, bird surveys have been conducted in the grasslands and wetlands of Camp Edwards. The grasslands of Camp Edwards and Otis ANG Base cantonment area are critical habitat for four state-listed rare bird species. Wetland bird species documented on Camp Edwards included the great blue heron (Ardea herodius), the Canada goose (Branta canadensis), the wood duck (Aix sponsa), the mallard (Anas platyrhynchos), and the mute swan (Cygnus olor).

4.10.2.3 Mammals

Camp Edwards is inhabited by at least 30 species of mammals. The most common of these mammals is likely the white-footed mouse (Peromyscus leucopus). Nine other small mammals have been captured on Camp Edwards. Ten species of medium-sized small mammals have been documented from visual observations. The only mammals that have been observed on Camp Edwards that could be classified as large mammals are the coyote and the white-tailed deer. Four species of bats have been captured throughout the training area during chiropteran surveys.
4.10.2.4 Reptiles

The reptile species that are found on Camp Edwards have been documented as a result of incidental sightings. Twelve species of reptiles, 5 turtles and 7 snakes, have been observed on Camp Edwards, including one species of special concern – the eastern box turtle.

4.10.2.5 Amphibians

Although the ponds and wetlands of Camp Edwards have been visually surveyed for amphibians, a comprehensive breeding census has not been conducted. Haphazard observations of breeding amphibians have included 11 amphibian species. The most commonly observed amphibians include bullfrogs (*Rana catesbeiana*), green frogs (*Rana clamitans*), grey treefrogs (*Hyla versicolor*), and spring peepers (*Pseudacris crucifer*), however, American toads (*Bufo americanus*) and spotted salamanders (*Ambystoma maculatum*) were also frequently observed. The redback salamander (*Plethodon cinereus*), wood frog (*Rana sylvestris*), pickerel frog (*Rana palustris*), and American toad (*Bufo americanus*) have been observed at areas of Camp Edwards not associated with delineated wetlands.

4.10.3 State-Listed Rare Species

Although no federally-listed threatened and endangered species have been observed on Camp Edwards, 41 state-listed (i.e., endangered, threatened, and special concern) and 6 watch-listed species have been observed on Camp Edwards (Table 4-1). Only 2 species of state-listed plants, broad tinker’s-weed (*Triosteum perfoliatum*) and ovate spike-sedge (*Eleocharis obtusa var. ovata*), were documented during the initial floristic survey of Camp Edwards (Jenkins 1994). As a result of annual surveys to update the list of flora on Camp Edwards, 3 more state-listed and 6 watch-listed plant species have been identified on Camp Edwards. A total of 30 state-listed animals have been observed on Camp Edwards. These species include 16 species of moths, 5 species of odonates, 6 species of birds, and 1 species of turtles.
Table 4-1. State Listed Species on Camp Edwards

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Status in MA</th>
<th>Heritage Status</th>
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<tr>
<td><strong>PLANTS (11)</strong></td>
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<td>Rhynchospora torreyana</td>
<td>Torrey's Beak Rush</td>
<td>*E</td>
<td>G5</td>
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<td>Thuja occidentalis</td>
<td>Northern White Cedar</td>
<td>E</td>
<td>G5</td>
</tr>
<tr>
<td>Triosteum perfoliatum</td>
<td>Broad Tinker's Weed</td>
<td>E</td>
<td>G5</td>
</tr>
<tr>
<td>Ophioglossum pusillum</td>
<td>Adder's Tongue Fern</td>
<td>T</td>
<td>G5</td>
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<tr>
<td>Asclepias tuberosa</td>
<td>Butterflyweed</td>
<td>WL</td>
<td>G5</td>
</tr>
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<td>Umbrella Grass</td>
<td>WL</td>
<td>G5</td>
</tr>
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<td>Least Pinweed</td>
<td>WL</td>
<td>G5</td>
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<td>WL</td>
<td>G5</td>
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<td>Nutall's Milkwort</td>
<td>WL</td>
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<tr>
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<td>Hyssop Hedge Nettle</td>
<td>WL</td>
<td>G5</td>
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<tr>
<td>Eleocharis ovata</td>
<td>Ovate Spike-sedge</td>
<td>E</td>
<td>G5</td>
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<td>G5</td>
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<td></td>
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<tr>
<td>Scaphiopus holbrooki</td>
<td>Eastern Spadefoot</td>
<td>T</td>
<td>G5T5</td>
</tr>
<tr>
<td>Terrapene carolina carolina</td>
<td>Eastern Box Turtle</td>
<td>SC</td>
<td>G5T5</td>
</tr>
<tr>
<td><strong>ODONATES (5)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anax longipes</td>
<td>Comet Darner</td>
<td>SC</td>
<td>G5</td>
</tr>
<tr>
<td>Aeshna mixta</td>
<td>Spatterdock Darner</td>
<td>E</td>
<td>G3G4</td>
</tr>
<tr>
<td>Enallagma carunculatum</td>
<td>Tule Bluet</td>
<td>SC</td>
<td>G5</td>
</tr>
<tr>
<td>Enallagma recurvatum</td>
<td>Pine Barrens Bluet</td>
<td>T</td>
<td>G3</td>
</tr>
<tr>
<td>Enallagma laterale</td>
<td>New England Bluet</td>
<td>SC</td>
<td>G3</td>
</tr>
<tr>
<td><strong>MOTHS (16)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acrocnita albarufa</td>
<td>Barrens Daggamoth</td>
<td>T</td>
<td>G3G4</td>
</tr>
<tr>
<td>Coastal Barren’s</td>
<td>Borer</td>
<td>SC</td>
<td></td>
</tr>
<tr>
<td>Hemileuca maia ssp.5</td>
<td>Buckmoth</td>
<td>G5T3T4</td>
<td></td>
</tr>
<tr>
<td>Catocala herodia gerhardi</td>
<td>Gerhard’s Underwing</td>
<td>G3T3</td>
<td></td>
</tr>
<tr>
<td>Melsheimer’s Sack</td>
<td>T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cicinnius melsheimeri</td>
<td>Bearer</td>
<td>G4</td>
<td></td>
</tr>
<tr>
<td>Faronta rubripennis</td>
<td>Pink Streak</td>
<td>T</td>
<td>G3G4</td>
</tr>
<tr>
<td>Water-Willow Stem</td>
<td>T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Papaipema sulphurata</td>
<td>Borer</td>
<td>G2</td>
<td></td>
</tr>
<tr>
<td>Cingilia catenaria</td>
<td>Chain-dotted Geometer</td>
<td>SC</td>
<td>G4</td>
</tr>
<tr>
<td>Coastal Heathland</td>
<td>SC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abagrotis nefascia benjaminii</td>
<td>Catworm</td>
<td>G4T3</td>
<td></td>
</tr>
<tr>
<td>Coastal Swamp</td>
<td>SC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metarrhantis pilosaria</td>
<td>Metarrhantis</td>
<td>G3G4</td>
<td></td>
</tr>
<tr>
<td>Papaipema sp.</td>
<td>Ostrich Fern Borer</td>
<td>SC</td>
<td>G3G4</td>
</tr>
<tr>
<td>Itame sp.</td>
<td>Pine Barrens Itame</td>
<td>SC</td>
<td>G3</td>
</tr>
<tr>
<td>Zale sp.</td>
<td>Pine Barrens Zale</td>
<td>SC</td>
<td>G3Q</td>
</tr>
<tr>
<td>Pseudagracca carnosa</td>
<td>Pink Swallow Moth</td>
<td>SC</td>
<td>G3</td>
</tr>
<tr>
<td>Oncocnemis riparia</td>
<td>noctuid moth</td>
<td>SC</td>
<td>G4</td>
</tr>
<tr>
<td>Bagirusa recticiflua</td>
<td>Straight Lined Mallow</td>
<td>SC</td>
<td></td>
</tr>
<tr>
<td>Moth</td>
<td>SC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Euchlaena madauraria</td>
<td>Sandplain Euchlaena</td>
<td>SC</td>
<td>G5S1</td>
</tr>
<tr>
<td><strong>BUTTERFLYS (1)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Callophrys irus</td>
<td>Frosted elfin</td>
<td>SC</td>
<td>G3</td>
</tr>
</tbody>
</table>

*E=endangered, T=Threatened, SC=Special Concern, WL=Watch listed
State Listed (35), Watch Listed (6) = 41 species listed
Libellula axilena-2nd in state 3rd in N. Summer 2001
4.11 Cultural Resources

Activities or management practices undertaken by the MAARNG that involve ground disturbance of any kind have the potential to impact cultural resources on Camp Edwards. These activities may include brush removal, grading and revegetation, excavation. Any of these activities that are federally funded are considered a federal undertaking and would require consultation under Section 106 of the National Historic Preservation Act.

Cultural resources management at Camp Edwards was initiated in 2000. It is apparent that one federally recognized tribe exists in eastern Massachusetts- the Wampanoag Tribe of Gay Head (Aquinnah). However, it may be determined in the future that other tribes may claim ancestral rights to lands occupied by the MAARNG. Informal consultation with the Wampanoag Tribe has included site visits and exchanges of information (e.g., environmental assessments and cultural resources survey reports from Camp Edwards). A formal consultation process between the MAARNG and the Wampanoag Tribe was completed in 2001 to address the ongoing activities at Camp Edwards. Topics for discussion during consultation included, but was not limited to, the following:

- Existence of any sacred places and historic sites on Camp Edwards.
- Developing a MOA between the MAARNG and the federally recognized tribes.
- Establishing SOPs for preserving cultural resources on Camp Edwards.
- Future comprehensive cultural resources survey of Camp Edwards.
- Activities occurring on Camp Edwards that have the potential for impacting cultural resources, including, but not limited to, training, the Upper Cape Water Supply Project and the Impact Area Groundwater Study.

Government-to-government consultation with federally recognized American Indian Tribes is required by the following Army Regulations, Federal laws, and Executive Orders:

- AR 200-4 requires that an ICRMP be developed and implemented by the end of FY01 and revised every five years thereafter.
- Section 106 of the NHPA requires that, in relation to properties eligible or listed in the National Register of Historic Places, portions of the ICRMP be developed from the beginning stages with the recommendations of the respective American Indian Tribes as well as the SHPO.
- Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (05 Jan 01)-The Primary goal is to strengthen the unique legal relationships as one domestic independent government interacting with another. It confirms the sovereign rights of the Indian tribes. This impacts those federally
recognized Indian tribes listed on the Federally recognized Indian Tribe List Act of 1994.

- NEPA requires public participation and input as well as the development of an EA in conjunction with the ICRMP

Government-to-government consultation with recognized American Indian Tribes is required by the following Army Regulations, laws, and Executive Orders:

- DA PAM 200-4 – This pamphlet provides guidance for implementation of the cultural resources requirement in AR 200-4.
- DoDI 4715.3 – Implements policy, assigns responsibilities, and establishes procedures for the integrated management of cultural and natural resources on properties under DoD control.
- National Historic Preservation Act (NHPA) – Establishes historic preservation as a national policy and defines it as the protection, rehabilitation, restoration, and reconstruction of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, or engineering.
- ARPA - Archaeological Resources Protection Act-Prohibits the removal, sale, receipt, and interstate transportation of archeological resources obtained illegally (without permits) from public or Indian lands and authorizes agency permit procedures for investigations of archaeological resources on public lands under the agency’s control.

As a result of formal consultation, the MAARNG fosters a secure and friendly cooperative working relationship with the Wampanoag Tribe. Through this relationship, the MAARNG developed an Integrated Cultural Resources Management Plan (ICRMP) for Camp Edwards and all other MAARNG properties that serves to identify the cultural resources on Camp Edwards, addresses the potential impacts to the resources, and protects all cultural resources from degradation or loss.

4.12 Socio-Economics

4.12.1 Demographics

Camp Edwards is situated within the towns of Bourne and Sandwich and is adjacent to the towns of Falmouth and Mashpee. The population in each of these four towns grew by at least 17%, a considerably greater rate than that for the entire state of Massachusetts, between 1990 and 2000 (Table 4-2). A notable trend is the dramatic increase in population within the town of Mashpee, which increased in size by 64% between 1990 and 2000. This was the greatest rate of population increase for any town in Massachusetts during that time period.
Table 4-2. Population demographics surrounding Camp Edwards, MA.

<table>
<thead>
<tr>
<th>Location</th>
<th>1990</th>
<th>2000</th>
<th>Change (%)</th>
<th>Density (people/mi²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bourne</td>
<td>16,064</td>
<td>18,721</td>
<td>17</td>
<td>458</td>
</tr>
<tr>
<td>Falmouth</td>
<td>27,960</td>
<td>32,660</td>
<td>17</td>
<td>738</td>
</tr>
<tr>
<td>Sandwich</td>
<td>15,489</td>
<td>20,136</td>
<td>30</td>
<td>468</td>
</tr>
<tr>
<td>Mashpee</td>
<td>7,884</td>
<td>12,946</td>
<td>64</td>
<td>551</td>
</tr>
<tr>
<td>Average</td>
<td>16,849</td>
<td>21,116</td>
<td>32</td>
<td>554</td>
</tr>
<tr>
<td>Barnstable County</td>
<td>186,605</td>
<td>222,230</td>
<td>19</td>
<td>562</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>6,016,425</td>
<td>6,349,097</td>
<td>6</td>
<td>810</td>
</tr>
</tbody>
</table>

4.12.2 Environmental Justice

On February 11, 1994, President Clinton issued EO 12898, “Federal Actions to Address Environmental Justice in Minority and Low-Income Populations.” The purpose of this EO is to avoid disproportionate placement of any adverse environmental, economic, social, or health impacts from federal actions and policies on minority and low-income populations. The President directed the EPA to ensure that agencies analyze the environmental effects on minority and low-income communities, including human health, social, and economic effects. A minority is considered as a person or group of persons who identify themselves as black, Asian or Pacific Islander, Native American or Alaskan Native, or Hispanic. The four Upper Cape Cod towns in which Camp Edwards is located are, on average, proportionately lower in all minority populations, with the exception of American Indians, than the Commonwealth of Massachusetts (Table 4-3).

Table 4-3. Racial and ethnic demographics (%) based on the 2000 population census.

<table>
<thead>
<tr>
<th>Location</th>
<th>Caucasian</th>
<th>African American</th>
<th>American Indian</th>
<th>Asian</th>
<th>Other</th>
<th>Hispanic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bourne</td>
<td>94.7</td>
<td>1.4</td>
<td>0.5</td>
<td>0.7</td>
<td>1.0</td>
<td>1.5</td>
</tr>
<tr>
<td>Falmouth</td>
<td>93.4</td>
<td>1.8</td>
<td>0.5</td>
<td>0.9</td>
<td>1.4</td>
<td>1.3</td>
</tr>
<tr>
<td>Sandwich</td>
<td>90.2</td>
<td>2.8</td>
<td>2.9</td>
<td>0.6</td>
<td>1.1</td>
<td>1.6</td>
</tr>
<tr>
<td>Mashpee</td>
<td>97.8</td>
<td>0.4</td>
<td>0.3</td>
<td>0.5</td>
<td>0.3</td>
<td>0.8</td>
</tr>
<tr>
<td>Average</td>
<td>94.0</td>
<td>1.6</td>
<td>1.1</td>
<td>0.7</td>
<td>1.0</td>
<td>1.3</td>
</tr>
<tr>
<td>Barnstable County</td>
<td>94.2</td>
<td>1.8</td>
<td>0.6</td>
<td>0.6</td>
<td>1.1</td>
<td>1.3</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>84.5</td>
<td>5.4</td>
<td>0.2</td>
<td>3.8</td>
<td>3.7</td>
<td>6.8</td>
</tr>
</tbody>
</table>

A low-income community is a group of persons that live in a poverty area (greater than 20 percent of the residents have incomes below the poverty threshold) or an extreme poverty area (greater than 40 percent of the residents have incomes below the poverty threshold). The poverty threshold for a family of four individuals was $12,674 at the time of the 1990 census. According to data from the same time period, approximately 17% of the households in Massachusetts lived below the poverty level.
4.12.3 Protection of Children

Executive Order (EO) 13045, “Protection of Children from Environmental Health Risks and Safety Risks” was issued on April 21, 1997, by the President of the United States. This executive order recognizes that a growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health and safety risks. This EO requires federal agencies, to the extent permitted by law and mission, to identify and assess such environmental health and safety risks.

The U.S. Bureau of the Census determined in 2000 that children under the age of 18 years old comprise 21 to 28% of the populations of the towns of Bourne, Sandwich, Falmouth, and Mashpee (Table 4-4). All four towns had proportions of children in the population that were relatively similar to that of Barnstable County and the Commonwealth of Massachusetts. Facilities that house or care for children, such as homes, schools, or daycare do not exist on Camp Edwards. However, the town of Bourne operates three public schools and family housing exists on the portion of the MMR that is occupied by the U.S. Coast Guard.

Table 4-4. Proportion of children among the population surrounding Camp Edwards, M

<table>
<thead>
<tr>
<th>Location</th>
<th># children under 18 years</th>
<th>% of total population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bourne</td>
<td>4,091</td>
<td>22</td>
</tr>
<tr>
<td>Sandwich</td>
<td>5,713</td>
<td>28</td>
</tr>
<tr>
<td>Falmouth</td>
<td>6,764</td>
<td>21</td>
</tr>
<tr>
<td>Mashpee</td>
<td>3,194</td>
<td>25</td>
</tr>
<tr>
<td>Barnstable County</td>
<td>45,440</td>
<td>20</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>1,500,064</td>
<td>24</td>
</tr>
</tbody>
</table>

4.13 Infrastructure

4.13.1 Utilities

4.13.1.1 Drinking Water Supplies

The 102nd Fighter Wing of the MAANG supplies the drinking water to most of the MMR, including Camp Edwards. The source of water for the supply system is J Well, which is located along Herbert Rd just north of the airfield. J Well supplies an average of 300,000 gallons of water each day to the MMR facilities, including the Camp Edwards cantonment area, housing, and airfield, as well as serving as a back up water source for the Town of Mashpee (102nd Fighter Wing 1999). Water is supplied to locations in the northern training area by water trucks on an as-needed basis. However, Range Control and the ASP are each supplied with water from separate wells.
Three well sites supply drinking water to the surrounding Upper Cape towns (Massachusetts National Guard 1999). The wells supply up to a 3,000,000 gallons/day reserve. It is not likely that the actual amount of water drawn for the MMR and surrounding towns will affect the groundwater supply or other natural resources in a significant manner.

The drinking water on Camp Edwards is of high quality. As a result of a single unconfirmed detection of explosives in the water from J Well, a temporary wellhead treatment system was installed and later replaced with a permanent system. This system utilizes the granular activated carbon to remove contaminants from the water prior to distribution, resulting in drinking water that meets or exceeds all state and federal drinking water requirements (102nd Fighter Wing 1999).

4.13.1.2 Wastewater

Wastewater generated at Camp Edwards is treated at the Otis Wastewater Treatment Plant located in the cantonment area of the MMR. The treatment plant has a maximum capacity of 300,000 gallons per day, with an average monthly flow of 200,000 gallons per day.

4.13.1.3 Solid Waste

All solid waste generated on Camp Edwards is hauled to the Upper Cape Regional Transfer Station located in the southern portion of the MMR cantonment area. Daily transfer amounts of solid waste range from 120 to 275 tons. The solid waste is then transferred to the Southeastern Massachusetts waste-to-energy facility in Rochester, where it is incinerated.

4.13.2 Transportation

4.13.2.1 Road System

Nearly all of the roads in the cantonment area of Camp Edwards are paved, with the exception of some older segments that have deteriorated. The paved roads are two-lane roads, with the exception of Connery Avenue, which is a four-lane road, constructed of bituminous concrete and lacking curbs. A storm water drainage system is lacking on most of the roads in the cantonment area, resulting in runoff draining into the shoulders of the roads.

In contrast to the roads in the cantonment area, a relatively small percentage of roads in the northern training area of Camp Edwards is paved. The majority of the roads in the northern training area are unimproved single-vehicle trails that are utilized by wheeled vehicles for training and remediation purposes. A track vehicle trail exists
on the western and northern portions of the northern training area and is used primarily by APCs, which may also utilize other unimproved (i.e., dirt) roads in the northern training area.

4.13.2.2 Railroads

A rail spur diverges from the Bourne-Falmouth railroad line and ends in the cantonment area of Camp Edwards and also in Otis ANGB. This rail 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.

4.13.2.3 ARNG Aviation Facility

The ARNG Aviation Facility exists adjacent to and utilizes the airfield on Otis ANGB that is also used by the USCG Air Station Cape Cod. The ARNG Aviation Facility supports UH60 (Blackhawk) helicopters and a C26 fixed-wing airplane. Approximately 29 helicopter landing zones (LZs) are located throughout Camp Edwards to serve as locations to which soldiers may be transported by helicopter.

4.14 Hazardous and Toxic Materials and Waste

The MAARNG adheres to guidance set forth in Army Regulation 200-1 to meet federal and state laws pertaining to hazardous and toxic materials and waste. A Spill Prevention, Control, and Countermeasures Plan was developed under 40 CFR112 to prevent the discharge of oil from non-transportation related facilities into or upon navigable waters of the United States. An Installation Spill Contingency Plan establishes responsibilities, lists the pre-planned rosters of people and equipment, and describes the emergency response actions for controlling, containing, and removing a spill. Furthermore, standard operating procedures have been developed as a result of the requirements of Army Regulation 200-1 and 40 CFR 261, 262, 263, and 268 to prescribe responsibilities, policies, and procedures for identification, handling, storage, transporting, and disposal of hazardous and toxic materials and waste. All of the aforementioned plans and procedures for managing hazardous and toxic materials and waste on Camp Edwards have been compiled into the MAARNG’s Integrated Contingency Plan (ICP). An objective of the ICP is to describe the actions facility personnel are taking to prevent accidents from occurring and to minimize the hazards to human health and the environment if a fire, explosion, or any unplanned sudden or non-sudden release of hazardous materials or hazardous waste occurs within the confines of, or originating from, Camp Edwards.

The only activity described in the Camp Edwards INRMP that has the potential to affect hazardous and toxic materials or waste is the selective use of herbicides to control invasive plants. Limited quantities of herbicides may be used to control
unwanted vegetation, primarily around structures, when other means are not effective. Certified pest management contractors perform all herbicide applications in accordance with product labeling and the MAARNG Pest Management Plan. Contractors are required to report the amount of herbicides used so that the MAARNG can track use in accordance with Department of the Army procedures. Herbicides are not stored at Camp Edwards.
CHAPTER 5. ENVIRONMENTAL CONSEQUENCES

5.1 Land Use

Proposed Action

Implementation of the INRMP programs would have positive effects on land use on Camp Edwards. The goal and objectives of the ITAM program and Ecosystem Management aim to preserve the natural terrestrial and aquatic ecosystems at the training site, while maintaining training lands, and restoring areas that have been disturbed by past land clearing and training activities. Implementation of the INRMP would result in an increase in ecosystem management between FY06 and FY11 but is not expected to impact military training or the use of the cantonment area of Camp Edwards. None of the management recommendations that are proposed in the INRMP would have a negative effect on present or projected land use on Camp Edwards.

No Action Alternative

Under the No Action alternative, land use on Camp Edwards would not change significantly during FY06 through FY11. Natural ecosystem restoration efforts would continue to take place; however, the management of such efforts may not be conducted in the most effective manner.

5.2 Air Quality

Proposed Action

None of the proposed INRMP projects would have a significant effect on air quality. Implementation of INRMP goals that involve the use of heavy equipment have the potential to result in minor, short-term increases in air emissions and dust generation. Smoke from prescribed burning conducted by Camp Edwards personnel would cause short-term, temporary impacts to air quality. However, prescribed burning mimics natural fires that would otherwise create the same levels of smoke if they were not prevented from occurring by land fragmentation and other fire suppression factors. Prescribed burning is only conducted under favorable climatic conditions to maximize smoke dispersion. Particulate matter, carbon monoxide, and volatile organic compounds (VOCs) are the major pollutants from controlled burning, while nitrogen oxides (NOx) are emitted at a relatively low rate and sulfur oxide emissions are negligible (USEPA, 1973). Although Camp Edwards is located in a serious ozone non-attainment area, this INRMP is exempt from the requirements of the US EPA’s General Conformity rule (40 CFR § 51) because of the specific exemption provision in 40 CFR §51.583 (c)(2)(xii). See Appendix A.
No Action Alternative

Under the No Action alternative, air quality would remain at its present condition.

5.3 Noise

Proposed Action

Certain ITAM and ecosystem management projects require the use of vehicles and equipment that create short-term increases in noise levels on Camp Edwards. Noise levels caused by these practices are generally below noise levels caused by many on-post military training activities and, therefore, are not considered to be significant impacts.

No Action Alternative

Under the No Action alternative, noise levels produced on Camp Edwards would remain at present levels.

5.4 Topography

Proposed Action

The management activities proposed in the Camp Edwards INRMP would have no significant impacts on existing topography on Camp Edwards. Certain management activities (e.g., LRAM) may cause minor positive changes to existing topography by restoring the natural contour of the land.

No Action Alternative

The topography of Camp Edwards would not be significantly impacted under the No Action alternative. Current LRAM activities may cause minor positive changes to existing topography by restoring the natural contour of the land.

5.5 Geology

Proposed Action

Since none of the management activities proposed in the Camp Edwards INRMP would include excavation down to subsurface geologic formations, the geology of Camp Edwards would not be impacted under the proposed action.
No Action Alternative

The geology of Camp Edwards would remain in its present state under the No Action alternative.

5.6 Soils

Proposed Action

Certain management practices (e.g., LRAM) proposed in the Camp Edwards INRMP have the potential to temporarily impact soils; however, the net result will be improved soil stability and reduced erosion. The following guidelines have been proposed in the INRMP to minimize soil disturbance and erosion as a result of land management and military training and to create management practices to provide long-term beneficial impacts to the soils of Camp Edwards:

- Schedule and perform land rehabilitation projects during optimum seeding periods. If projects cannot be performed within those time frames, complete them as soon as possible.
- After heavy training exercises are conducted on the site, identify areas needing rehabilitation and schedule them to receive soil amendments or reseeding.
- Use temporary erosion control methods (such as silt fences or hay bale diversions) during periods of heavy troop training and inclement weather to avoid excessive siltation to watercourses and water bodies and other sensitive areas.
- Include soil capabilities, water management, landscaping, erosion control, and conservation of natural resources in all site feasibility studies and in project planning, design, and construction.
- Contact the Tribal Historic Preservation Officer of the Wampanoag Tribe of Aquinnah in the event that any ground disturbing activities are scheduled to occur. Consultation with the tribe is mandated under Section 106 of the National Historic Preservation Act.
- Include all necessary rehabilitation work and associated costs in project proposals and construction contracts and specifications.
- Use native grasses to revegetate disturbed soils when feasible, effective, and economical.
- When planting native grasses, include non-persistent grasses that act as a cover crop for the first two or three years to minimize erosion before native species become established; for example, red top, timothy, or annual rye.
- Areas that fail to establish vegetative cover adequate to prevent erosion will be re-seeded as soon as such areas are identified and weather permits.
No Action Alternative

The levels of soil disturbance and remediation would remain unchanged under the No Action alternative. Although the LRAM portion of the ITAM Program exists on Camp Edwards, the *status quo* may not be the most effective procedure for maintaining soils and preventing erosion during FY06 to FY11.

5.7 Water Resources

5.7.1 Surface Water Resources

Proposed Action

Surface water resources would not be negatively impacted under the proposed action. Two goals of the Camp Edwards INRMP are to (1) Protect and maintain wetland ecosystems on Camp Edwards for the purposes of rare species protection, water quality, and wildlife habitat, and (2) restore disturbed wetland ecosystems to their historic conditions to enhance rare species habitat, water quality, and biodiversity. Therefore, the proposed action would result in long-term benefits to the surface waters of Camp Edwards.

No Action Alternative

Current wetland protection would still take place under the no action alternative. However, federal funds for certain management activities such as the restoration of Donnelly and Deep Bottom Ponds would not likely be available. Therefore, the long-term benefits to the surface waters of Camp Edwards under the proposed action may not be realized under the No Action alternative.

5.7.2 Groundwater Resources

Proposed Action

Implementation of the Camp Edwards INRMP would indirectly benefit groundwater because much of Camp Edwards is a recharge area for the Sagamore Lens of the Cape Cod aquifer. Therefore, INRMP programs that aim to preserve and improve surface waters at Camp Edwards would also be beneficial to groundwater. The use of vehicles and machinery during the implementation of the INRMP would theoretically result in the potential to impact groundwater resources. However, the operation of all vehicles and machinery in the field must adhere to established guidelines and standard operating procedures regarding hazardous and toxic materials and waste.
No Action Alternative

Under the No Action alternative, current measures to protect groundwater resources on Camp Edwards would still be maintained. However, groundwater resources may not be managed in the most effective manner.

5.8 Biological Resources

The focus of maintaining and managing the biological resources Camp Edwards will be based on a holistic, ecosystem-oriented approach. Over the long term, that approach will maintain and improve the sustainability and biological function of ecosystems; while supporting sustainable economies, human use, and the environment required for realistic military training operations (DoD Instruction 4715.3). It is important to note that though this plan takes an ecosystem approach to managing the lands of Camp Edwards, the Massachusetts Endangered Species Act still requires recovery of individually listed species. Combining both management methods will ensure that ecosystems maintain their integrity - their constituent species and dynamics - and continue to support those species that are most vulnerable to ecosystem change-state-listed rare species.

5.8.1 Plants

Proposed Action

Implementation of the INRMP would have long-term positive effects on the vegetation of Camp Edwards. The RTLA program monitors changes in plant communities on established plots to determine how land use, primarily military training, affect vegetation. The TRI land management units act to minimize military training impacts to areas where the vegetation is considered ecologically sensitive (e.g., grassland ecosystems), or that are undergoing restoration. A primary goal of the LRAM program is to maintain adequate vegetative cover in military training areas to minimize erosion from training activities.

Certain management practices such as prescribed burning, mowing, or mechanical removal of invasive species, may result in short-term negative impacts to the vegetation on Camp Edwards. However, these practices will ultimately result in long-term benefits to the plant communities of Camp Edwards by maintaining a mosaic of native ecosystems in a spectrum of ecological succession.

No Action Alternative
Under the No Action alternative, current practices to manage the plant communities on Camp Edwards would still take place. However, plant communities may not be managed in the most effective manner without implementing the INRMP on Camp Edwards.

5.8.2 Wildlife

Proposed Action

Implementation of the INRMP would have long-term positive effects on the wildlife of Camp Edwards. The ecosystem management approach would serve to maintain native populations of wildlife in their characteristic habitats. The following guidelines have been established for managing the ecosystems of Camp Edwards to maximize the benefit to wildlife:

- Protection of large, non-fragmented tracts of quality habitat are required as territory for survival and maintenance of viable species populations. Configuration of protected habitats should conform to shapes that minimize edge-to-area ratios. Circular shapes are preferable in achieving this goal. Narrow, linear, or small protected habitats should be avoided if possible.
- Buffer areas surrounding preserved habitat should be designated if adjacent activities may result in negative impacts.
- Leave standing dead trees (snags) and fallen logs (coarse woody debris) when they are not safety hazards. Snags and course woody debris serve several important ecological functions. They provide structural habitat characteristics for various plant and animal species, are potentially important in long-term nutrient cycling, and help minimize effects, caused by erosion, to soil and water resources.

Wildlife populations will be monitored through annual RTLA surveys for birds and small mammals and through other surveys (e.g., bat survey, grassland bird surveys) and research projects (e.g., Whip-poor-will habitat selection study). The effects of the proposed ecosystem management on wildlife populations will be determined based upon the results of the surveys. Modifications to the implemented management practices may be proposed at any time as the INRMP is periodically revised.

No Action Alternative

Current practices established to manage the wildlife on Camp Edwards would still take place under the No Action alternative. However, the wildlife of Camp Edwards may not be managed in the most effective manner without implementing the INRMP.
5.8.3 State-Listed Rare Species

Proposed Action

The proposed action, implementation of the Camp Edwards INRMP, would provide long-term benefits to the state-listed rare species of Camp Edwards. An objective of the Camp Edwards INRMP is to protect and conserve state-listed rare species while continually achieving the training requirements of the MAARNG. Identifying the distribution, abundance, and requirements of these species is essential in conservation. The general requirements of the state-listed rare species on Camp Edwards will be determined from field investigations as well as from the Massachusetts NHESP Fact Sheets. Although the management of the natural resources on Camp Edwards is based on an ecosystem approach, management practices and recommendations will be inclusive of the requirements of state-listed rare species.

Any management activities that are proposed for conserving state-listed rare species will be coordinated with recommendations and advice from the appropriate state environmental agencies, including, but not necessarily limited to, the Massachusetts NHESP and DFW. Maps will be created to display the general vicinity of state-listed rare species and distributed to Camp Edwards Range Control and Natural Resource Office personnel to aid in the protection of the species.

No Action Alternative

Current efforts to protect and enhance populations of state-listed rare species on Camp Edwards would continue under the No Action alternative. However, resources required to conduct rare species surveys, research projects, and habitat management would likely be less available under the No Action alternative.

5.9 Cultural Resources

Proposed Action

Natural resources management practices that are recommended in the Camp Edwards INRMP may require ground disturbance and therefore have the potential for impacting cultural resources. These activities may include, but not necessarily be limited to, erosion control, revegetation, soil aeration, or brush removal.

Any afore mentioned activities that are federally funded are considered a federal undertaking and would require consultation under Section 106 of the National Historic Preservation Act. Federally recognized Native American Tribal consultation is required if the federally recognized Native American Tribe notifies the proponent (MAARNG) that there is/are tribal resources that could be affected. With this, the MAARNG will
make an internal determination as to whether a particular federal decision “may have
the potential to significantly affect protected tribal resources, tribal rights, or Indian
lands.”

In order to minimize the impact to cultural resources on Camp Edwards, the
following guidelines have been established:

• MAARNG units and environmental personnel shall not remove or disturb, or
cause or permit to be removed or disturbed, any historical, archaeological,
arheological or other cultural artifacts, relics, vestiges, remains or objects of
antiquity. In order to avoid disturbance of cultural resources, units should
coordinate with the Camp Edwards Range Control and Natural Resource Office
when planning training and other activities to ensure that potentially disruptive
activities are located away from sensitive areas.

• If buried cultural resources, such as chipped or ground stone, historic debris,
building foundations, or human bone, are inadvertently discovered during
ground-disturbing activities, work will stop in that area and within 100 feet of the
find until a qualified archaeologist can assess the significance of the find and, if
necessary, develop appropriate treatment measures in consultation with federally
recognized tribes, the SHPO and other appropriate agencies.

• If human remains of Native American origin are discovered during construction
or other activities, it is necessary to comply with state laws relating to the
disposition of Native American burials, which fall within the jurisdiction of the
remains are discovered or recognized in any location other than a dedicated
cemetery, there will be no further excavation or disturbance of the site or any
nearby area reasonably suspected to overlie adjacent human remains the
procedures outlined in the ICRMP have been followed. If human remains are
discovered during a unit activity or any other time, contact the Camp Edwards
Natural Resource Office immediately.

• Government-to-government consultation with federally recognized American
Indian Tribes is required by the following:

  o Executive Order 13175-Consultation and Coordination with Indian Tribal
    Governments January 5, 2001

  o 27 Oct 1999, Annotated Policy Document for DoD American Indian and
    Alaska Native Policy
o Presidential Memorandum for Heads of Executive Departments and Agencies dated April 29, 1984: Government-to-Government Relations with Native American Tribal Government

o The following are policies and guidelines relating to government-to-government relations:

- AR 200-4 requires that an ICRMP be developed and implemented by the end of FY01 and revised every five years thereafter.

- DA PAM 200-4, DoDI 4715.3

- Section 106 of the NHPA requires that, in relation to properties listed in the National Register of Historic Places, portions of the ICRMP be developed from the beginning stages with the recommendations of the respective American Indian Tribes as well as the SHPO

- 36 CFR 800

- ARPA- Archaeological Resources Protection Act

- NEPA requires public participation and input as well as the development of an EA in conjunction with the ICRMP

**No Action Alternative**

Under the No Action alternative, measures for preventing impacts to cultural resources at Camp Edwards from military and natural resource management activities would still be taken, given that an ICRMP is implemented. However, protective measures for cultural resources would not likely be completely integrated with natural resources management activities without implementation of the INRMP.

**5.10 Socio-Economics**

5.10.1 Demographics
Proposed Action

The proposed action would not result in any significant impacts to the population of the four towns surrounding Camp Edwards or to Barnstable County. The implementation of the Camp Edwards INRMP would require the employment of 6 full-time and 7 part-time personnel. Furthermore, the indirect impacts to employment and income resulting from expenditures associated with the proposed Camp Edwards INRMP are not expected to affect the population by inducing a large number of persons to move to the area.

No Action Alternative

There would be no change in the demographics of the surrounding population under the No Action alternative.

5.10.2 Environmental Justice

Proposed Action

The implementation of the Camp Edwards INRMP would not result in significant impacts to air quality, surface water, or groundwater, and would not cause the release or mismanagement of hazardous/toxic materials or wastes nor any socio-economic impacts that would result in a disproportionate placement of any adverse environmental, economic, social, or health impacts from federal actions and policies on minority and low-income populations. The facility does not border or is not in proximity to affect minority and low-income populations. Also, actions undertaken as a result of the INRMP are to improve environmental quality.

No Action Alternative

No activities would be conducted under the No Action Alternative that would disproportionately affect low income or minority populations.

5.10.3 Protection of Children

Proposed Action

The proposed action, implementation of the Camp Edwards INRMP, would not result in significant impacts to resources that may affect the health of children, and would therefore not disproportionately impact children in the surrounding communities. The use of chemicals, including pesticides and herbicides, on Camp Edwards would be minimized. Actions undertaken as a result of the INRMP are to
improve environmental quality and would be implemented in such fashion that any threat to the surrounding communities would be avoided or the action canceled.

No Action Alternative

Under the No Action alternative, no activities that have potential negative effects to the health of children would occur. Therefore, children would not be disproportionately impacted.

5.11 Infrastructure

5.11.1 Utilities

5.11.1.1 Drinking Water Supplies

Proposed Action

The drinking water supplies on Camp Edwards would not be significantly impacted by the implementation of the Camp Edwards INRMP. Additional personnel that are hired would result in an increase in water consumption; however, the effects to the drinking water supply would be minimal. No activities proposed in the Camp Edwards INRMP have a realistic potential to impact the drinking water supplies.

No Action Alternative

There would be no changes to the drinking water supplies under the No Action alternative.

5.11.1.2 Wastewater

Proposed Action

The implementation of the Camp Edwards INRMP would not result in a significant increase in wastewater generation on Camp Edwards. The effects of additional personnel and contractor labor on the wastewater treatment facility would be insignificant relative to the current usage.

No Action Alternative
No changes in wastewater generation on Camp Edwards would occur under the No Action alternative.

5.11.1.3 Solid Waste

Proposed Action

The implementation of the Camp Edwards INRMP would not result in a significant increase in solid waste generation on Camp Edwards. The effects of additional personnel and contractor labor on solid waste generation would not result in any significant impacts on Camp Edwards. All solid waste generated during INRMP activities would be disposed at specified locations on-post for pick up by licensed solid waste contractors.

No Action Alternative

No changes in solid waste generation on Camp Edwards would occur under the No Action alternative.

5.11.2 Transportation

5.11.2.1 Road System

Proposed Action

The proposed action, the implementation of the INRMP, would not have any significant impacts to the roadways and traffic on Camp Edwards. A slight increase in road use would result from contractor assistance during some of the activities proposed in the INRMP. However, the effects on the road system from Camp Edwards Natural Resource Office personnel and contractors would be negligible when compared to the annual road use by the MAARNG and other contractor vehicles.

No Action Alternative

There would not be a change in traffic and its effects on the road system of Camp Edwards under the No Action alternative.

5.11.2.2 Railroads

Proposed Action
There would not likely be any change in railroad use as a result of implementing the Camp Edwards INRMP.

No Action Alternative

No change in railroad use would occur under the No Action alternative.

5.11.2.3 ARNG Aviation Facility

Proposed Action

There would not likely be any change in the ARNG Aviation Facility as a result of implementing the Camp Edwards INRMP.

No Action Alternative

No change in the ARNG Aviation Facility would occur under the No Action alternative.

5.12 Hazardous and Toxic Materials and Waste

Proposed Action

Implementation of the Camp Edwards INRMP would not impact or be impacted by hazardous/toxic material and waste storage and handling. None of the proposed INRMP projects are located in the vicinity of the storage and handling areas on Camp Edwards and none of the projects propose changes to the sites or the material handling protocols.

The types and quantities of hazardous materials that would be used for INRMP activities are limited to herbicides, pesticides, and materials associated with vehicle and equipment operation and maintenance. All hazardous and toxic materials used for INRMP activities would be handled, stored, and used in accordance with regulations and guidelines provided in the Camp Edwards Installation Contingency Plan.

No Action Alternative

The No Action alternative would not affect hazardous/toxic material storage and handling areas since no INRMP activities would be conducted.

5.13 Mitigation Measures
The proposed action, implementation of the Camp Edwards INRMP, would have no significant environmental or socio-economic impacts. Minor impacts to air quality resulting from small increases in exhaust emissions and dust from vehicles traveling on dirt roads, and smoke from prescribed fires would not be significant. The impacts that brush removal, erosion control, and ground preparation have on soils, vegetation, and wildlife are considered to be insignificant because they are temporary short-term effects and should result in long-term benefits. Other ecosystem management activities such as prescribed burning benefit native ecosystems, such as the scrub oak barrens, and plant and animal species because they mimic natural wildfires to which the ecosystems are adapted. Any impact to natural resources that may result from INRMP activities would be mitigated for as part of other INRMP efforts. Since the goals and objectives of the INRMP aim to protect, restore, and enhance environmental conditions at Camp Edwards, no mitigation measures are necessary for the proposed action. Most of the INRMP programs themselves serve to mitigate military training impacts to natural resources.

5.14 Cumulative Effects

Cumulative effects are considered to be an impact that could result from incremental effect of the proposed action when added to other past, present, and planned actions. The potential direct environmental and socio-economic impacts associated with the proposed action are insignificant. Therefore, the proposed action would also have no significant cumulative effects. Impacts to resources such as air quality, soils, vegetation, and wildlife would be short-term and temporary. Therefore, no significant indirect or cumulative effects are expected to result. Since the impacts to employment and income resulting from expenditures associated with the proposed Camp Edwards INRMP are not expected to affect the population by inducing a large number of persons to move to the area, no cumulative effects on regional demographics, employment, expenditures, or services would occur. The proposed action would have positive cumulative effects on training site natural resources and on the mission of MAARNG units that utilize the training site. The INRMP consists of several activities that have the same goals and objectives of protecting, restoring, and enhancing natural resources at Camp Edwards. Implementation of the INRMP would, therefore, enable the combined programs to have a total positive effect on the environment. Ultimately, the proposed actions long-term, beneficial, cumulative effects would be the maintenance of natural (and cultural) resources, ecosystem health, biodiversity, and of the training mission.
CHAPTER 6. COMPARISON OF ALTERNATIVES AND CONCLUSION

6.1 Comparison of the Alternatives

No significant socio-economic or environmental impacts have been identified for the proposed action. The projected environmental and socio-economic impacts of the preferred alternative and the No Action alternative are summarized and compared in Table 6-1.

6.2 Conclusions

The MAARNG is required under the Sikes Act and AR 200-3 to develop and implement an INRMP for Camp Edwards. The proposed action within this EA is to implement the Camp Edwards INRMP. This EA summarizes and compares the effects and impacts of the proposed action and the No Action alternative. Based on the findings of this EA, implementation of the Camp Edwards INRMP would have no significant direct or cumulative environmental or socio-economic impacts. The proposed action would result in long-term positive effects on the land use, soils, water resources, biological resources, and cultural resources on Camp Edwards. The goal and objectives of the ITAM program and Ecosystem Management aim to preserve the natural terrestrial and aquatic ecosystems at the training site, while maintaining training lands, and restoring areas that have been disturbed by past land clearing and training activities. Impacts to resources such as air quality, soils, vegetation, and wildlife would be short-term and temporary. Therefore, no significant indirect or cumulative effects are expected to result. Therefore, the proposed action would result in the MAARNG providing realistic and sustainable training opportunities while successfully managing and preserving the natural resources on Camp Edwards. As a result, the activities proposed in the Camp Edwards INRMP would benefit and support the overall mission of the MAARNG.

Any impact to natural resources that may result from INRMP activities would be mitigated for as part of other INRMP efforts. Since the goals and objectives of the INRMP aim to protect, restore, and enhance environmental conditions at Camp Edwards, no mitigation measures are necessary for the proposed action. Most of the INRMP programs themselves serve to mitigate military training impacts to natural resources.

Based upon the analysis contained in this DEA, it has been determined that the known and potential impacts of the proposed action on the physical, cultural, and natural environment would be positive in nature. Implementation of the MAARNG’S INRMP would result in the efficient management of natural resources at Camp Edwards. The INRMP establishes explicit responsibilities, standard operating procedure, and long-range goals for managing natural resources at ARNG lands in
compliance with all applicable federal laws, regulations, and NGB guidelines. The goals included in the INRMP require close interaction between the ARNG natural resource program manager and other natural resources professionals. As a result, all natural and human resources under the MAARNG control will receive greater consideration and protection than previously afforded. Implementation of the proposed action would not result in significant environmental effects and an EIS is not required.
Table 6-1. Comparison of Environmental and Socio-Economic Impacts.

<table>
<thead>
<tr>
<th>Resource</th>
<th>Preferred Alternative</th>
<th>No-Action Alternative</th>
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<tbody>
<tr>
<td>Land Use</td>
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<td>Air Quality</td>
<td>Short-term minor impacts</td>
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</tr>
<tr>
<td>Noise</td>
<td>Short-term minor impacts</td>
<td>No effect</td>
</tr>
<tr>
<td>Topography</td>
<td>Minor positive effects</td>
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<td>Geology</td>
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<tr>
<td>Soils</td>
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<tr>
<td>Water Resources</td>
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<td>Surface Water Resources</td>
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<td>Groundwater Resources</td>
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<td>Biological Resources</td>
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<tr>
<td>Plants</td>
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<td>Wildlife</td>
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<td>Cultural Resources</td>
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<td>Hazardous and Toxic Materials and Waste</td>
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</tbody>
</table>
GLOSSARY

**Animal:** any member of the animal kingdom; any part, product, egg, or offspring, or the dead body or any part thereof

**Aquatic:** of the water as opposed to land or air

**Bivouac:** field lodging area for troops

**Cantonment:** built-up area of a military (ARMY) installation

**Common:** ubiquitous throughout the habitat

**Community:** A naturally occurring group of different species of organisms that live together and interact as a self contained unit

**Disturbed:** habitat that has been altered either naturally or anthropogenically

**Ecosystem:** a dynamic complex of plant, animal, fungal, and microorganism communities and their associated nonliving environment, interacting as an ecological unit

**Endangered:** (E) species are native species which are in danger of extinction throughout all or part of their range, or which are in danger of extirpation from Massachusetts, as documented by biological research and inventory.

**Erosion:** the process whereby wind and water remove sediment from the land surface

**Fauna:** the animals of a region or period

**Federally listed species:** any species on the federal list

**Flora:** the plants of a region or period

**Habitat:** an area that provides important elements for the growth and survival of plants or animals such as food, shelter of living space, and includes without limitation breeding, feeding, resting, migratory, or overwintering areas

**Invasive species:** a non-native species that negatively affects other species

**Kettle hole:** depression left during glacial recession by melting buried blocks of ice

**Lepidoptera:** Ordinal name given to the insects commonly referred to as butterflies and moths

**Moraine:** A mound of hill made up of glacial till
Native: a species which either occurs, or has occurred, within Massachusetts; provided that the original occurrence of such species is not the result of a deliberate or accidental introduction by humans into Massachusetts nor an introduction elsewhere which spread into Massachusetts Natural resource:

Odonate: Ordinal name given to the insects commonly referred to as dragonflies and damselflies

Ordinance: ammunition or explosives

Outwash plain: areas of sand and gravel deposited by glacial melt water streams

Palustrine: marshy

Plant: any member of the plant kingdom, including seeds, roots or other parts

Riparian: having to do with in any way with the banks of a river or lake

Snag: The upright trunk of a dead or dying tree: important as feeding, perching, and/or nesting sites for many species.

Special concern: (SC) species are native species which have been documented by biological research or inventory to have suffered a decline that could threaten the species if allowed to continue unchecked, or which occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become threatened within Massachusetts.

Species: a classification of related organisms that can freely interbreed

Succession: the progression from initial colonization of an area by organisms to the climax population. The term usually refers to plants.

Telemetry: employment of equipment for the reception and transmission of radio signals for tracking animal movements

Terrestrial: of the land as opposed to water or air

Threatened: (T) species are native species, which are likely to become endangered in the foreseeable future, or which are declining or rare as determined by biological research and inventory.

Topography: the outline of the form of a place showing its relief and the position of features (rivers, roads, cites, etc.)
REFERENCES


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Massachusetts. In cooperation with Massachusetts Agricultural Experiment 
Station.
Appendix A

Record of Non-Applicability Concerning the General Conformity Rule

CONFORMITY RULE COMPLIANCE
RECORD OF NON-APPLICABILITY (RONA)

Project/Action Name:

Camp Edwards Training Site, Integrated Natural Resources Management Plan (Massachusetts Army National Guard)

Project/Action Name: Michael A. Ciaranca, Ph.D., MAARNG-ARE; 508-968-5121

Conformity under the Clean Air Act (CAA 1990), section 176 has been evaluated for the above described project IAW 40CFR 51.

This action, as described within the NEPA Environmental Assessment Document, has been determined to be a federal action.

The actions have been determined to potentially emit non-attainment pollutants.

The actions are not exempt under 40 CFR 51.853 (c)(i).

The emissions (direct and indirect) resulting from the proposed actions are reasonably foreseeable.

The emissions (direct and indirect) resulting from the proposed actions are below the de-minimis levels.

The project/action is not considered “regionally significant” under 40 CFR 51.853 (i).

Prepared by:

Michael A. Ciaranca, Ph.D.
MAARNG Natural Resource Manager

Concurred By:

David Jacobson
MAARNG Training Site Environmental Manager
Appendix B

Agency Correspondence