PREFACE

Protecting natural resources while conducting the necessary military training at the Massachusetts Military Reservation is the overarching goal for Massachusetts National Guard. In following this goal, the Massachusetts National Guard is committed to meeting all environmental regulatory standards applicable to its training activities; planning its future activities to minimize environmental impacts; managing responsibly the irreplaceable natural and cultural resources it holds in public trust; and improving all its activities. This document, the Massachusetts National Guard's Final Environmental Impact Report includes a discussion of this commitment.

The three, very important components of this goal that create a comprehensive and inclusive plan for environmental resource and land management program are:

Ground Water Resources

The citizens of the Upper Cape expect and deserve the full level of protection for the potential supply of groundwater under the northern portion of the Massachusetts Military Reservation that they would give to their own water supplies. This must be done so that they may obtain new sources on the Massachusetts Military Reservation, and to accommodate a rapidly expanding population in those communities, including the Base users.

Stakeholders: Upper Cape communities, Massachusetts Military Reservation users, Federal, state, regional and local regulatory agencies, and the Commonwealth of Massachusetts.

Needs: Long-term protection of the groundwater supplies.

Requirements: Programs for water supply development and restrictions on land use activities to protect water quality.

Open Space and Habitat

The military and the residents of the Upper Cape have benefited from the relatively undeveloped sections of the Massachusetts Military Reservation, which has provided habitat for a variety of native flora and fauna species. The military's environmental personnel, along with the regional and state agencies, recognize the value of the habitat and wildlife that have co-existed and flourished while the military trained within this large area of relatively undisturbed land. The undisturbed nature of the area is also a requirement for realistic military training.

Stakeholders: Upper Cape communities, Fish, wildlife and forestry agents, Massachusetts Military Reservation users, Military trainers and trainees, and the Commonwealth of Massachusetts

Needs: Protection and sustainment of the natural habitat and surface resources.

Requirements: Programs for enhancement of natural habitat and restrictions on land use activities to ensure the long-term sustainment of those resources and the activities.

Sustainable Military Training

The military must continue to train to justify federal investment in management of the land and resources. The land has been previously set aside for the federal government to conduct controlled military training activities. The military must provide a high level of resource management and protection so that it can continue to train its soldiers on the land in realistic settings.

Stakeholders: Military trainers and trainees, United States Army and Department of Defense, Upper Cape communities, Massachusetts Military Reservation users, the National defense and welfare of the general public and the Commonwealth of Massachusetts.

Needs: A comprehensive field training program to prepare soldiers for mission essential tasks which maintain the natural resources in their settings.

Requirements: Develop military training programs that are compliant with Army doctrine and regulations, that protect the water supply and habitat, through the careful management of land use and training activities.

The following documentation has been prepared to show how the Massachusetts National Guard intends to meet all three of these over-riding needs. This document is, just as importantly, also filed as the Massachusetts Environmental Protection Act documentation required by the Massachusetts Secretary of Environmental Affairs, as laid out in the October 30, 1999 Certificate. It must also be clear that the Massachusetts National Guard has not completed this documentation in isolation. This document reflects extensive input of the Community Working Group and the Task Force of State agencies created by Secretary Durand.

The lengthy process of planning and management still does not end with this submittal. This is part of a long and necessary track of public discourse that will ensure the high value placed on the Massachusetts National Guard properties can be maintained as a legacy for future generations. Please read this document carefully, and participate in the next step by forwarding your comments and questions to the Secretary of Environmental Affairs.

EXECUTIVE SUMMARY

The Final Area-wide Environmental Impact Report for the Massachusetts National Guard is presented in four main parts to meet the requested terms of the October 22, 1999 Certificate from the Secretary of Environmental Affairs. Those four parts are as follows:

I. The Environmental Performance Standards and Environmental Management Programs that have been developed to best manage the lands within the Camp Edwards portion, also known as the Water Supply Management Area (Community Working Group and Massachusetts National Guard) or the Upper Cape Water Supply Reserve (Governor and Secretary's Certificate).

II. The design of and alternatives to the Military training programs which use the northern areas of the Massachusetts Military Reservation.

III. A Master Plan for the Cantonment Area, which identifies on a planning level the present and intended use of the properties within this southern area.

IV. Actual means proposed for mitigation of activity impacts with the application of the Environmental Performance Standards and implementation of the military's environmental programs.

Following are summaries of each of those parts as prepared for this document.

I. ENVIRONMENTAL MANAGEMENT PROGRAMS

The Need for a Strong, Comprehensive and Inclusive Environmental Management Program To Ensure No Net Loss of Training Capabilities

The National Guard's environmental management programs have grown from two needs: the first is to maintain a comprehensive military training program as required by military standards and doctrine; the second is to properly manage the available training lands so that those training programs may continue on those lands. Under the federal law and military regulations governing these programs, this has created a unique marriage of environmental stewardship and land management. This section summarizes those environmental programs and the particular application of those programs to the Massachusetts National Guard properties. Also included in this section are the Environmental Performance Standards, which were created as a means to focus the efforts in completion of those environmental management programs.

Environmental Performance Standards

The Environmental Performance Standards were recommended to present the basic parameters for full development of an environmental management program. By first discussing the standards that would determine the level of care necessary for management of the Massachusetts Military Reservation's resources, the subsequent management

programs can incorporate the standards and further specify the means and methods to accomplish those goals and standards. This method of program design recognizes both the values and use of the land resources.

Recognizing the opportunity, the Secretary asked in the Certificate on the Draft to enter in to consultations with the state and regional agencies to craft a finer version of the Environmental Performance Standards. Meetings have been held with the agencies and revised versions have been developed for this Draft Final Environmental Impact Report.

The process of consultation with the State agencies is not yet completed. However, below is a partial list of the changes that were made in the last revision in response to comments from the Task Force members. In addition, a number of other word changes and structural changes in the introductory text came from the Task Force.

- The goals of the Community Working Group were specifically added.
- The clear separation of the Installation Remediation Program and water supply development activities was stated.
- The water quality goals established in the remediation process are assumed as goals in the Environmental Performance Standards by reference to the clean-up programs.
- All the standards in the Environmental Performance Standards are to match or exceed the revised Groundwater Protection Policy, which is one of the chief enforcement, tools for the four major base commands.
- The wetland management area was extended to protect migratory pathways during breeding seasons of amphibians in a protected area up to 500 feet from the wetland.
- Restrictions on road maintenance were added which prevent unmitigated impacts.
- Restrictions on the types of plant materials that could be used were added to ensure use of native species.
- Clarification of the goals for maintaining the existing biodiversity was included.
- Restrictions on impervious coverage and the recharging of stormwater were added as standards.
- A new section on Rare Species was added to highlight this resource management need.
- The original wastewater standards were superimposed by the higher standards of the State Department of Environmental Protection for large (non-Title V) systems.

- Hazardous materials and waste standards were modified and clarified. Other sections discuss restrictions on the amount of hazardous materials allowed.

- A clear restriction was made on off-road vehicle use just to necessary management, not training, activities. Vehicles are only authorized to use the existing network of improved and unimproved roads, road shoulders, ranges and bivouac areas.

- The Land Classification Map has been replaced by the more detailed Integrated Training Area Management resource maps.

In addition, as a result of comments on the Draft Area-wide Environmental Impact Report, the Environmental Performance Standards were split into two sets of standards that would apply separately to the Camp Edwards Training Area and the Cantonment Area.

Environmental Management Programs

These standards will be implemented through the applicable military environmental and land management programs. Those programs start from the broadest and most comprehensive management plans and move throughout the full hierarchy of users and management down to the specific actions required from each user. The military and the users of the Massachusetts National Guard properties use the principal environmental and land management programs:

Integrated Natural Resources Management Plan. In accordance with the Federal Sikes Act, Army Regulation AR 200-3, and Department of Defense Instruction 4715.3, an Integrated Natural Resources Management Plan is required to properly manage the natural resources at military installations. The creation of this plan is currently in progress.

The Plan includes three main components: natural resource management, protection of the ecosystem integrity, and support to the military training missions. Principal objectives of the program are:

- Significantly reduce or eliminate impacts of military training on the natural resources of Camp Edwards.

- Instill or enhance cooperation and partnerships with military, federal and state agencies, local government, and private organizations.

- Enhance environmental awareness.

- Management guidelines to protect and manage natural resources on Camp Edwards.

- Coordinate management of natural resources with military trainers and the training mission.

Integrated Land Use Management Plan. This documented plan is similar to the Integrated Natural Resources Management Plan, but is the Air National Guard's equivalent for airfields and associated land areas where natural resources are limited and field-training areas are not a significant portion of the facility. In the case where more significant natural resources exist, the Air Guard has the option of developing an Integrated Natural Resources Management Plan as the preferred management plan.

Massachusetts Military Reservation Groundwater Protection Policy. The Groundwater Protection Policy is equivalent to a municipal wellhead protection (Zone II) zoning regulation. However, because of the unique conditions of management and control of the Massachusetts Military Reservation commands, the Groundwater Protection Policy goes beyond the Department of Environmental Protection's recommended standard regulation to include specific operating and management actions that further protect the groundwater resources.

Integrated Training Area Management Program. The Integrated Training Area Management Program establishes a systematic framework for decision-making and management of Army training lands. It integrates elements of operational, environmental, master planning, and other programs that identify and assess land use alternatives. The Integrated Training Area Management Program also supports sound natural and cultural resources management practices and stewardship of land assets, while sustaining those assets to support training, testing, and other installation missions. There are four components to the program:

- Land Condition Trend Analysis, which entails long and short term monitoring of ecosystem health.

- Environmental Awareness Program, which is a multi media educational program to instruct all users of their possible impact on the environment.

- Training Requirements Integration Program, which considers the need for training land and compares that to the condition of natural resources, and which coordinates training land use with trainers, natural resource personnel, and other agencies.

- Land Rehabilitation and Maintenance Program, which is used for implementation of best land management practices, ensures long term environmental stability of training land.

Integrated Cultural Resources Management Plan. This plan integrates with other management plans, such as the Integrated Natural Resources Management Plan.

The plan identifies known cultural resources such as historic buildings and other structures, archaeological sites, and traditional cultural properties. Integrated The Cultural Resources Management Plan also identifies potential conflicts between the installation's mission and cultural resources, and the compliance action necessary to maintain the availability of mission essential properties. Another component ensures that government to government consultations with federally recognized Indian tribes are initiated. The Integrated Cultural Resources Management Plan meets stewardship responsibilities by protecting and managing sensitive cultural resources while supporting mission readiness.

Camp Edwards Range Regulations. All military areas are covered by regulations regarding the use and activities at those locations. The regulations are comprehensive in that they apply to all actions during the time from the initial coordination between the user and the Training Command to the closure of the activity and confirmation of proper conduct during the activity.

Standard Operating Procedures. All military training activities are judged by conformance to a set of standardized actions set down in the Training Manuals issued to all trainers and leaders. Each activity or action requires compliance with the standardized procedures to ensure completion of the task to a minimum standard. These Standard Operating Procedures include actions that protect against accidents which could cause environmental damage.

Environmental Approvals. The implementation of the military training and environmental management strategy is contingent on the approval of the environmental agencies under the mandated reviews. This will entail completion of the National Environmental Policy Act process and documentation before initiation.

Environmental Investigations and Remediation. The Massachusetts Military Reservation, with external oversight, has been the subject of investigations and remediation efforts aimed at identifying and remediating environmental conditions caused by past practices. Within the Camp Edwards Training Areas, the program involves the Impact Area Groundwater Study. These program activities take precedent over other potentially competing activities.

Groundwater Development for Public Water Supplies. The regional Upper Cape Water Supply Cooperative is actively in the process of developing groundwater supplies for public distribution to the base users and the surrounding towns, supported in part by the National Guard Bureau. The activities associated with this program also take precedent over other potentially competing activities.

Reporting, Monitoring and Oversight

Environmental management, monitoring, reporting and accountability are provided by the Massachusetts National Guard to ensure that the protections in these programs are meeting the objectives of resource protection. Yearly reporting will be presented in a "State of the Reserve" report, which is suggested as a means to present information on conditions and use of the military training areas. In addition to this report, a Cantonment Area Advisory Board is proposed specifically to review civilian project proposals within the Cantonment Area. A very similar procedure was followed by the Community Working Group in review of proposals made during their reviews. Third, a Scientific and Technical Advisory Board is proposed to provide the Massachusetts National Guard with an expert panel to review and make recommendations on the important environmental management and review projects at the Massachusetts Military Reservation.

II. MILITARY TRAINING AND ALTERNATIVES IN THE CAMP EDWARDS TRAINING AREA

Necessary Military Training Activities: Mission Essential Training

The Secretary requested an analysis that would potentially look for further modifications in the Army military training program at Camp Edwards. Generally, alternative training sites are already being used in accordance with the requirements of the Army training standards, and the availability to access and use those sites for the specific training tasks required of the Massachusetts units. Moreover, significant portions of the training program have been banned at Camp Edwards such as live artillery and mortar fire, and restrictions on off-road vehicle use. Additional modifications of the training regime would likely result in a lack of readiness of the Guard's existing units and subsequent force structure changes. Consequently, these are not considered reasonable alternatives. They do not conform to the Massachusetts National Guard's proposals, needs or objectives in this process.

Major Issues for Military Training

Some major concepts impacting the scope and nature of military training have to be considered in this analysis:

- Recent national policies, calling for the Army National Guard assistance in world actions, are challenging them to train for a high level of readiness. The training activities which the Army National Guard and other military units take part in at Camp Edwards are *part of a national system to ensure that the country's soldiers are prepared for their individual mission within a collective force.*

- Because of increased resource competition, training expenditures must be maximized. While available land for military training is reduced with previous congressional base closures, scheduling conflicts and environmental concerns, the remaining space must be matched first with the needs of the collective forces and secondly with the needs of the units. Units must work up through a series of training scenarios into even larger areas with greater coordination between different units – the concept of Collective

Training. *Camp Edwards is an important, but interim step in the validation of fully trained soldiers and units towards collective forces.*

- While training, *the commanders*, *soldiers and their trainers must always be responsible for protecting the environment they train in, and a natural resource management structure must be in place to improve these natural environments* regardless of where the training activity is located. The command structure of the Department of Defense and the Massachusetts National Guard are committed to this requirement.

- In a highly unusual action, *the Massachusetts Army National Guard has ceased performing significant components of the previously allowed training activities at Camp Edwards*; the most significant of which was the elimination of live artillery and mortar fire into the Impact Area. In a follow up action, the Army National Guard also initiated investigations and remediation plans for the resources affected by the past artillery and mortar fire.

- Simulation is an excellent, cost effective training "tool;" however, simulation can never replace the requirement for our soldiers to train collectively on the ground to meet the required standard. Realism in training can not be simulated.

- Army regulations specify that the training lands at Camp Edwards must be managed in an environmentally sound way to maintain, protect, and improve environmental quality, and ensure *no net loss of training capabilities*. If this standard is not met, Federal resources may be restricted. Although the Army National Guard has significantly reduced the scope of training at Camp Edwards, the focus is on the necessary environmental programs to maintain the resources for the training.

Types of Training Lands

Training lands are categorized in accordance with their capabilities for evermore realistic, collective maneuver and weapons training. There are three basic types of areas:

- Armories and Local Training Areas. Armories are used much like classrooms in basic soldier skills training.

- Major Training Areas. These have enough area to allow collective and combined arms training, and can support a wide number of unit types and exercises.

- Combat Training Centers. These are large areas for complex training scenarios.

Army Training Requirements

Training prepares soldiers, leaders and units to fight and win in combat – the Army's basic mission. The soldiers must train for specific tasks, under specific conditions and to specific standards. Training is dictated by the following guidelines:

- Army training doctrine and policy
- Headquarters guidance documents, including actions for the federal and State missions
- Mission Essential Task Lists
- Army Training and Evaluation Program

Training Task, Land and Scheduling Requirements

The Army specifies certain areas and schedules for each training unit type and task. This includes the area requirements to distribute the trainees and equipment, the required repetitions of each task for proficiency, and the days required for each repetition.

Travel Distance and Time

Training area locations play a critical role in ensuring National Guard soldiers have adequate training time available to obtain proficiency. The resources and time available to travel to training locations is of high importance when considering training programs and use of training money for Reserve and National Guard soldiers. Consequently, maintaining readiness means considering the costs associated with travel both in terms of available money and training time.

Military Training Activities at Camp Edwards

Camp Edwards is one of the Major Training Areas in the Northeastern United States. However, because of the limitations placed on any live artillery and mortar fire, the Camp Edwards facility cannot be used for meeting all of the basic Army mission tasks. Training activities at Camp Edwards can be grouped generally into four categories:

<u>Weapons Systems: Small Arms Training</u>

The weapons used in combat by a soldier are primarily small arms consisting of rifles, pistols, and machine guns. Small arms training is designed to train a soldier to be "qualified" in the use and maintenance of his/her assigned weapon. Small arms training at the Massachusetts Military Reservation presently takes place on up to 15 different ranges that surround the Impact Area in the northern portion of the installation.

<u>Weapons Systems: Training Simulators</u>

Simulations provide realistic, hands-on, performance-oriented training environments. Existing simulators include the Fire Support Combined Arms Tactical Trainer, the Engagement Skills Trainer, and the Fire Arms Training System. These are all computer-based virtual reality training devices that enhance training. They include small arms and field artillery simulators and simulations.

Maneuvering

The majority of maneuver training exercises takes place dismounted (on foot). Maneuvering training involves the coordinated movement of increasingly larger groups of individuals with planned objectives to show the effectiveness and success of the training activity. Vehicles are used to transport the soldiers or equipment over the established road network and provide driver training.

Support Units

As the name implies, Support Units provide the support to other operations and units. These include truck companies, intelligence, aviation, vehicle maintenance, supply, chemical defense, and military police.

Restricted Training Activities at Camp Edwards

The following field training activities are under restrictions or prohibitions.

- Outside of established ranges only the firing of blank ammunition is allowed within the training areas designated.

- On the ranges, only plastic, frangible or "green" ammunition is allowed.

- Certain military training activities are banned including the following:
  - Artillery live fire
  - Mortar live fire
  - Demolition live fire training
  - Artillery bag burning
  - Deforestation
  - Unapproved digging or vegetative clearing without Natural Resource Office approval
  - Use of tear gas outside of the 'NBC' training bunkers
  - Use of open bottom field latrines
  - Vehicle refueling outside designated locations
  - Field maintenance above operator level

Necessary Training Activities at Camp Edwards

Current military training in Camp Edwards includes all of the activities necessary to train military units within the legal requirement or policy decision of the Massachusetts National Guard. Training activities are defined as *necessary* for completion at Camp Edwards when the training activities meet the following criteria:

- Those tasks listed for each unit participating as Mission Essential Tasks (essential for their role in combat) tasks.
- Those tasks that require collective training; i.e., require coordination with other units or require a large number of soldiers to properly complete the task.
- Those tasks that cannot be scheduled at another training location because of the following constraints:
  - Scheduling and availability of an appropriate time slot at other military facilities
  - Travel costs
  - Time availability for trainees
  - Level of preparedness of the unit (i.e., Army Training and Evaluation Program rating)

Camp Edwards offers the type and range of terrain and cover type needed to allow this particular training experience as well as the infrastructure or improvements, such as simulators and simulations, pop-up targets, surveyed gun positions and navigation courses, obstacle courses, rappel tower, etc., necessary for certain training activities.

Necessary Environmental Management at Camp Edwards

Also necessary are the military's environmental management programs that allow the continuation of the training activities while minimizing and mitigating impacts to the natural resources. This entails the following type of actions:

- Training areas located and sized to allow for rotation of land areas impacted by the particular training activities.
- Land use restrictions in accordance with the Groundwater Protection Policy (Zone II wellhead protection areas).
- Seasonal and other time limitations placed on certain areas to protect biological production.
- Continued inventories for resources and trends.
- Maintenance activities and land rehabilitation projects.
- Access for public access and civilian use.

Analysis of Alternative Training Scenarios

Alternative 1: Relocating Annual (two-week) Training

Other locations are being used for Annual, two-week training activities. However, as discussed previously, there are a number of reasons for training to occur at Camp Edwards. As well, the total relocation of Annual Training to other training sites is not feasible for a number of other reasons:

- Time and distance
- Allocation of resources
- Scheduling and availability of training areas
- Unit mission
- Transportation of equipment

Alternative 2: Relocating training activities to the Cantonment Area

Certain training activities already take place within the Cantonment Area. However, a number of range safety, land area, and training task requirements would make it infeasible to use the Cantonment Area for training for almost all field maneuvers. Still, several improvements could be made to increase the opportunities to use the Cantonment Area in place of creating new training facilities in the field areas north of Connery Avenue. The proposed training and support project is the new *Unit Training Equipment Site* facility, which would consolidate three existing, older vehicle maintenance facilities in the Cantonment Area into one modernized facility.

Alternative 3: More Simulations and Simulators

Simulators provide a means to train for collective tasks, and ensure that when the opportunity arises for conducting field-training exercises, trainees will receive the optimum benefit. However, until robotics and holographic imagery are better developed, the simulations will still lack the effect of actual field training.

The existing facilities include the Fire Support Combined Arms Tactical Trainer and Small Arms Simulators, with the JANUS system proposed to be installed in fiscal year 2001. Additional simulators may be available depending on future funding.

Alternative 4: Limiting Bivouacs to the Cantonment Area

The purpose of a bivouac is to learn *sustainability and survivability*. It is a life support area that becomes the platform for almost all the other training activities. Each unit has its requirements for tentage, a defensive perimeter, linkages as part of the collective training

system, ability to move into training actions, and training for the support system. Bivouacs limited to the available sites within the Cantonment Area would not meet the Army Training Standards, would have limited vegetative cover or topographic relief, and could not provide the conditions, dispersion, or variety necessary for proper training.

Alternative 5: Limiting Vehicle Use to Existing Roads

Camp Edwards has a number of roads and trails used for a number of purposes including fire breaks and land maintenance as well as training. No military vehicle is given permission to travel off of the established road network and parking areas unless it is for natural resource and land management. In addition, use of military vehicles in the training areas does not present an undue risk to groundwater for the following reasons:

- Vehicle travel in Zone II, wellhead protection areas is permitted in the State of Massachusetts.

- The risk of spills or impacts from spills to groundwater resources from military vehicles is very limited. This assessment comes from the history of vehicle accidents and the actions taken under the Emergency Response Plan (Spill Prevention, Containment and Cleanup) for accidental spills.

- The number of vehicles allowed in the field at any time or over the training periods is significantly less than the typical density of vehicles found in most other Zone II areas.

Alternative 6: Ending Off-road Tracked Vehicle Use

As discussed above, all military vehicles, including tracked vehicles use unimproved trails to eliminate maintenance of paved or graded roads. All tracked vehicles, however, are currently limited to the existing trail system designed specifically for the use of these vehicles. As a consequence, off-road tracked-vehicle use is not an option that can be utilized for training or carried forward as an alternative.

III. MASTER PLAN FOR THE MASSACHUSETTS MILITARY RESERVATION CANTOMENT AREA

A Land Use Plan for the Massachusetts National Guard Properties

The Cantonment Area of the Massachusetts Military Reservation is a flat, developed area with roads, utilities, an airfield, support buildings, and housing on about 5,900 acres. The Commonwealth of Massachusetts owns the majority of the Massachusetts Military Reservation in fee. However, the Cantonment Area also includes certain parcels that have been acquired or are owned by others.

Cantonment Land Use		*Acres*	*Percent*
Air National Guard Airfield/Airfield Operations	2,113	35%	
Airfield Clear Zones		143	3%
Air National Guard Combat Comm.		282	5%
Air National Guard Infrastructure Area		154	3%
Air National Guard land use total		**2,692**	**45%**
US Coast Guard Housing / Recreation Area		936	16%
US Coast Guard land use total	**936**	**16%**	
Army National Guard Maintenance Facility		236	4%
Army National Guard Training Support Facilities		445	7%
Army National Guard Aviation Facility		16	< 1%
Army National Guard land use total		**697**	**12%**
Veterans Administration National Cemetery		749	13%
Bourne School System		35	1%
Crane Wildlife Management Area (Mass. DF&W)		134	2%
Non-airfield grassland management zone	662	11%	
Other land use total		**1,580**	**27%**
Total Cantonment Land Area		**5,905 acres**	

Cantonment Area Infrastructure Assessment

In accordance with the Secretary's Certificate, the analysis is made to determine the "cumulative impacts of future individual projects."

Storm Water: System Capabilities

The Cantonment Area drainage systems vary in capabilities. Since the Western System has not been extended over capacity, it can physically handle additional flows. However, significant expansion of the system's design for areas outside the housing area is not considered a near-term option.

The Eastern System handles a very large area of impervious surface and all new development within the catchment of these drainage areas would probably be required either to reduce other impervious surfaces to maintain total flows, or to add new system capabilities to increase treatment and/or infiltration before discharge to the existing outfalls.

Wastewater: System Capabilities

The Massachusetts Department of Environmental Protection has identified the Massachusetts Military Reservation as a single facility. The first effect of this higher regulatory standard is to require all new projects to consider connection to the Wastewater Treatment Plant.

Water System: Privatization and New Sources

Two actions are currently changing the status and limitations of the on-site water system. The Department of Defense is conducting studies regarding the privatization of all utilities operated by the military, including the system at the Massachusetts Military Reservation. The expected result is that the Air National Guard will no longer be responsible for the on-site water utilities.

The other action is the exploration and construction of new wells on the Massachusetts Military Reservation properties. Additional water sources suitable for development of a large public supply have been located and are expected to provide sources for future development outside the Massachusetts Military Reservation and within the adjacent towns of the Upper Cape as well as benefit the Massachusetts Military Reservation users.

Army National Guard Project

The Army National Guard has proposed one project, the Unit Training Equipment Site facility. This project would consolidate three existing, older vehicle maintenance facilities into one modernized facility, reduce the vehicle miles required to move the vehicles to the main assembly area at the 3600 area, and remove the Unit Training Equipment Site facility near the Greenway neighborhood. However, several commentors noted that the 3600 area is within Zone II of a Bourne public water supply well. The groundwater underneath the 3600 area has already been impacted by the landfill, LF-1 plume. Consequently, consideration was given to locating the proposed facility at some other site. Alternatives, including co-existence on the County Jail site, are considered.

Air National Guard Projects

The Air National Guard previously proposed three projects that were included in the Draft Area-wide Environmental Impact Report. They are the Aircraft Control Tower, the Fire Station, and the Consolidated Services Facility.
Aircraft Control Tower: This project would build a replacement control tower to provide a modern, 24-hour, centralized point of control and observation for all aircraft and ground

vehicles that utilize the Otis Air National Guard Base airfield. The existing tower would be demolished with the new construction.

Fire Station: This project would provide a modern facility with adequate berthing, classroom, and indoor vehicle parking areas for the Massachusetts Air National Guard/Otis Fire Department personnel and equipment. The number of personnel and equipment currently assigned to the facility would not increase.

Consolidated Services Facility: The new Consolidated Services Facility would consist of a multi-story building located within the Otis Air National Guard Base. Personnel located in other buildings would be relocated to the new structure. The number of Massachusetts Air National Guard personnel at the Massachusetts Military Reservation would not increase as a result of this proposed project.

IV. MITIGATION

The Application of the Environmental Performance Standards to the Training Areas

In accordance with the analysis that has been performed during this environmental review process, modifications in training area use within Camp Edwards were proposed.

- As the Environmental Performance Standards were developed, several specific actions were considered to implement those standards for wetland protection, water supply protection, and wetland buffer management.

- As the Integrated Training Area Management Program has been forming and being applied within Camp Edwards, several conditions have been found within the field training areas that warrant a response for land management needs.

- As the Integrated Natural Resource Management Plan database has been developing, area-wide resource analyses have been possible with new Geographic Information System data that better locate resource areas.

With this higher level of knowledge of the systems involved and a more focused management plan in development, the application of the concepts created clear reasons and a true basis for changing certain areas of activity and provided the specific management actions to accomplish those changes. This section reviews those resulting management recommendations.

The management recommendations are mitigation measures arising from the initial implementation of the planning documents prepared under these regulations and public process. As comments are received on these mitigation measures during the review process, the Massachusetts Army National Guard will consider the means and methods to provide the resources necessary to complete the recommended measures.

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I. ENVIRONMENTAL MANAGEMENT

Performance Standards and Programs to Manage the Land

Introduction

The Massachusetts Military Reservation has great significance to Cape Cod because of the natural resources found on the property. The Massachusetts Military Reservation is the largest tract of contiguous open land on the Cape currently held under government ownership. The Massachusetts Military Reservation is even more unique in that it supports thirty-five, State-listed, rare (i.e., endangered, threatened, or special concern) species of plants and animals, second in number only to the National Seashore.

Most importantly, the property covers the most significant source of existing and potential public water supply on the Upper Cape. The value of these resources, as determined by general public agreement and confirmed by the relevant state agencies, requires that a comprehensive management plan be developed to satisfy the management needs of this land and its resources. This environmental section is part of the comprehensive management plan to be used for implementation of the environmental elements of the Community Working Group's Master Plan.

The purpose of this Environmental Management section is to further the development of a system-wide, adaptive management plan that will govern the operation and use of the Massachusetts Military Reservation through a team of managers brought together by cooperative agreement. Based on the military training which occurs at Camp Edwards, environmental management will be completed through the federally-funded Integrated Natural Resource Management Plan, Integrated Training Area Management Program, the Camp Edwards Range Regulations, and Range Control personnel, in accordance with the Federal Sikes Act and Department of Defense regulations, and through the Environmental Quality Committee for the Groundwater Protection Policy signed by the four major commands at the Massachusetts Military Reservation. In accordance with the same laws, cooperative agreements with the state agencies and other partners could be created for onsite managers to report activities and receive advice.

The plan is focused on ecosystem, rather than only resource-based, management. The plan allows:

- Current methods and management techniques for protecting groundwater supplies.
- Management to maintain all of the habitat areas: pine barrens, scrub oak shrublands, grasslands, forests, and wetlands.
- Activities that are compatible with water supply and rare species habitat protection.
- Use of erosion control, forestry management, restoration, revegetation, and prescribed burns to maintain habitat.
- Means to control off-road vehicle use.
- Integrated protection of cultural resources.
- Continued monitoring of resources and analyses of trends.
- The ability to modify management direction as a result of its own findings.
- The capacity to respond to natural succession of the environment, as well as to changes from interventions and changes from disasters such as drought, uncontrolled fires, or hurricanes.

As suggested by the number of elements listed above, which is not a complete list, developing an appropriate adaptive ecosystem management plan is a significant undertaking. Evolving, dynamic ecosystems cannot be maintained as static, untouched systems. The manual "Conserving Biodiversity on Military Lands" (1996) stated the issue in this way,

> "Not only are ecosystems inherently complex with a large component of uncertainty, but this must be multiplied by the complexities and uncertainties of socio-economic and institutional perspectives; Thus, one of the major hurdles to overcome in a realistic ecosystem approach to natural resources management is to *abandon outdated notions of system control and prescriptive management*. This model must be replaced by *acceptance of complexity and a high degree of uncertainty, abandonment of notions of complete control and prescription, and adoption of a predictive management style that changes and adopts over time as new information is gathered."*
>
> (Conserving Biodiversity on Military Lands, 1996, page 9, emphasis by author)

For example, without active management intervention, rare and endangered bird species' habitat, such as the grasslands, will not naturally grow, resulting in a loss of the habitat and a subsequent loss of the species. Although this is an obvious example of ecosystem management, the more subtle and complex interactions of species, including man and their habitat, may not be obvious, and only become apparent after careful and long-term evaluation. Protection of biodiversity requires understanding the changing relationships that are included in the science of biodiversity.

It is for these reasons that environmental management is recommended not as a single action or product, but rather as a management process that must be continually developed or updated for the resources found at the Massachusetts Military Reservation.

The proposed environmental management has the following intentions:

- Consolidate and coordinate environmental standards and add these new criteria into the decision-making procedures for all uses and projects on the Massachusetts National Guard properties for the National Guard. These standards are intended to maintain the habitat, protect the water quality found at the facility, and govern the military training exercises and civilian activities at the Massachusetts National Guard properties.

- Utilize the Integrated Training Area Management land descriptions as a tool to identify both landscape to be protected and conserved, and those areas where more active or even intensive land uses will be allowed.

- Integrate regulatory natural resource management programs with all the activities and actions at the Massachusetts National Guard properties. The environmental management programs are intended to make the activities on the Massachusetts

National Guard properties consistent with the applicable local, federal, and state environmental standards currently required for all projects under any jurisdiction.

- Ensure conformance with all military regulations, procedures and standards for operations, management, and training.

- Ensure sustained, realistic training activities and support to the military mission by avoiding the degradation of the land. Military training requires an understanding of how to blend with the landscape, so the landscape forms must be protected for the training to be realistic.

- Incorporate the ecological research and studies performed at the Massachusetts Military Reservation by the military, civilian, and private (non-profit) entities. The basis for an adaptive ecosystem management program will result from the best understanding of both the conditions and elements found at the Massachusetts Military Reservation and the interrelationships of these resources with the surrounding human elements.

COMPONENTS OF ENVIRONMENTAL MANAGEMENT

There are four main components of Environmental Management:

- Goals and Objectives – Principles which will guide the future use and direction of the Massachusetts National Guard properties, including an approach to environmental management.

- Environmental Performance Standards – Special regulations and standards to be applied at the Massachusetts National Guard properties in accordance with the locations and use of the property.

- Land and Resource Information Map – Specific geographic restrictions on land uses and activities that are linked to the Environmental Performance Standards.

- Authorities and Implementation Plan – Outline for the adoption of the program elements and environmental standards.

Goals and Objectives

The main goals proposed in the creation of this environmental management system are the Guiding Principles established by the Community Working Group. The following is the list of Guiding Principles as adopted by the Community Working Group.

Principle: *The goal of the Master Planning process is to achieve consensus on the long-range uses allowable on the MMR for the foreseeable future.*

Principle: *The planning process will involve full participation by all interested parties and will serve as a Cape Cod model for community-level conflict resolution.*

Principle: *The Plan will be comprehensive, including both future civilian and military uses of the MMR.*

Principle: *Cumulative environmental impacts will be considered in making decisions about future uses.*

Principle: *Economic impacts will be considered in evaluating proposed uses.*

Principle: *The Barnstable County Regional Policy Plan, Local Comprehensive Plans and Water District plans of surrounding towns, as well as military plans and policies, will be used as a guide in the planning process.*

Principle: *Resource management and carrying capacity issues will have priority in the planning process.*

Principle: *Future uses will be consistent with sustainable development principles.*

Principle: *The Plan will protect existing and future drinking water supply areas by protecting their Zones of Contribution.*

Principle: *The Plan will protect surface water resources by providing buffers around these areas and protecting them from adverse hydrologic impacts.*

Principle: *The Plan will take into account what has been learned about contamination of the MMR through the Installation Restoration Program and will not hinder ongoing clean up containment and/or monitoring of contaminated areas.*

Principle: *The Plan will incorporate the results of the ongoing Groundwater Study and the Regional Water Supply Study and Development of Upper Cape Cod.*

Principle: *The Plan will propose uses that minimize adverse impacts on rare species habitat, and will enhance management of these and other important habitats.*

Principle: *The Plan will minimize fragmentation of forest habitat and other natural areas.*

Principle: *The Plan will foster the creation of permanent open space areas, linking existing forests and refuges within and adjacent to the MMR.*

Principle: *The Plan supports the development of non-polluting alternative energy sources on the MMR.*

Principle: *Proposed uses will demonstrate that adequate infrastructure exists or can be provided to serve the proposed use while minimizing impacts to natural resources or community character.*

Principle: *Impacts on residential areas by proposed uses will be minimized.*

Principle: *Proposed uses will respect and/or reflect the history and traditions of Cape Cod.*

Principle: *Proposed uses will minimize impacts to areas of archaeological significance.*

Principle: *The Plan recognizes the role of the military operations and public safety at the MNG properties and seeks to successfully integrate those operations with environmental protection.*

Environmental Performance Standards

This part of the plan is a resource-based list of requirements that are intended to protect the resources found on the Massachusetts National Guard properties. It lays out the goals for all actions and activities that may impact or affect the listed resources and sets these goals as standards for performance by all users. Certain performance standards are mutually supportive, while others result in a need to resolve the competing demands for the same resources. An example of the first is vegetation, habitat, and wildlife management goals which could be mutually supportive if focussed on the same species, but require resolution from a technical and scientific basis when used to support multiple species competing for the same resources or areas. The ultimate purpose for these standards will be to incorporate them into the environmental management programs the National Guard and other users have developed to sustain their activities in conformance with the regulatory standards.

Land and Resource Information Map

This element of the Plan identifies environmental resource areas where the performance standards apply. This Plan is intended to assist the users in identifying the key areas of protection. Additional information is now shown in the Integrated Training Area Management Program documentation as the Camp Edwards Massachusetts National Guard Trainers Guide.

Implementation

For the Massachusetts National Guard properties, the Environmental Performance Standards are to be implemented through the required environmental management programs of the military. These include the following:

Massachusetts Military Reservation Groundwater Protection Policy

Integrated Natural Resources Management Plan

Integrated Land Use Management Plan

Integrated Cultural Resources Management Plan

Integrated Training Area Management Program

Camp Edwards Range Regulations

Standard Operating Procedures

These programs and their oversight options are discussed at the end of this section. The implementation of the Environmental Performance Standards by the Massachusetts National Guard will be completed through these programs.

PART I. ENVIRONMENTAL PERFORMANCE STANDARDS

Introduction

To accommodate the needs for protection of resources and management of activities in a manner that can be understood by the broad number of users, stakeholders, and interest groups, a concept was developed to prepare Environmental Performance Standards. These performance standards are structured as a combination of resource and activity standards proposed to manage actions within the defined resource areas. However, they are not stand-alone standards. These performance standards are presented for incorporation into more comprehensive management programs that may not only include but implement these concepts. Additional discussion on those programs is included in the later sections of this chapter.

Two significant changes have been made in the structure of the Environmental Performance Standards since the Draft Master Plan/Area-wide Environmental Impact Report:

- An Environmental Restrictions Map was previously discussed within the Draft Master Plan/Area-wide Environmental Impact Report. This is to be replaced with the Integrated Training Area Management Trainers Guide documentation.

- Based on the broadest level of discussions and comments received during this planning process, the Massachusetts Military Reservation is divided into two broad districts, the Camp Edwards Training Area and the Cantonment Area.

In addition, a number of changes have been made to the Environmental Performance Standards as a result of the discussions that have been held with the State agency Task Force proposed in the Secretary's October, 1999 Certificate.

A. Definitions of the Districts

CAMP EDWARDS TRAINING AREA

lies mostly north and outside the Cantonment area. Those associated or otherwise compatible activities that allow the continued management and protection of those resources fall under these Environmental Performance Standards. The licenses and leases define the principal users of the land in this area. These standards will apply to activities under the control of the Massachusetts National Guard and to any other signatories to this plan.

THE CANTONMENT AREA

encompasses the area where the most land use intensive activities of the Massachusetts Military Reservation occur associated with the activities of the United States Coast Guard, the military base, the Installation Restoration Program, and a number of civilian activities. These activities are guided by the ownership, permits and leases issued for that land, including approved civilian activities and development in accordance with the delineations of districts. However, as previously noted, the proposed Environmental Performance Standards only apply to the Massachusetts National Guard properties and users of those properties.

Within each of these two broad areas are subdistricts that each have categories of performance standards. An example is a wellhead protection area (Zone I) which would be defined and located based on the approved location of a water supply well. Because all of the currently proposed well sites are within the Camp Edwards Training Area, these Zone I's, with their highest level of protection would be located somewhere within the district. Public water supply well sites have been approved and are under development. Another example is the grassland bird habitat areas included within the Cantonment Area, or the groundwater resources under the Camp Edwards Training Area that are contiguous and connected with the ground water resources under the Cantonment Area and surrounding communities. So, although the Cantonment Area is considered appropriate for the most intensive uses, many restrictions on uses and activities still apply. Most of these restrictions emanate from existing laws and regulations. However, where appropriate or demanded by the resource needs, the additional standards for performance are included in the district.

B. Standards and Requirements for the Districts

CAMP EDWARDS TRAINING AREAS

The environmental activities for Camp Edwards Training Area are proposed to be guided by the Environmental Performance Standards, as developed and further refined through the process defined by the State Executive Office of Environmental Affairs Secretary, and as more specifically implemented through the environmental programs of the

Department of Defense. The Environmental Performance Standards proposed for the Camp Edwards Training Area are as follows.[1]

General Performance Standards for the Camp Edwards Training Area

COMMENT*: These provide the overview to the standards which apply to all activities, and limit the military training activities to those not previously banned by the Massachusetts National Guard. The more specific standards for each of the environmental media are found in the later sections*.

None of the banned military training activities will be allowed in the Camp Edwards Training Areas. The restrictions fall into two categories:

- Live weapon fire limitations:

– It is not allowed outside of the established ranges.
– Blank ammunition for small arms may be used in areas outside of the ranges, as appropriate.
– Lead-bullet ammunition is prohibited from all training areas.

- Banned military training activities:

– Artillery live fire
– Mortar live fire
– Demolition live fire training
– Artillery bag burning
– Non-approved digging, deforestation or vegetative clearing
– Use of 'CS', riot control, or tear gas for training outside the NBC bunkers
– Use of field latrines with open bottoms
– Vehicle refueling outside designated locations
– Field maintenance of vehicles above operator level

All users of the Camp Edwards Training Area must comply with the provisions of the Groundwater Protection Policy and any future amendments or revisions to the restrictions and requirements. These will apply to all uses and activities within the overlays relative to Wellhead Protection, Zone II's within the Cantonment Area, and the Camp Edwards Training Areas.

COMMENT: *The current Groundwater Protection Policy has been signed by the four major commands at the Massachusetts Military Reservation. It is further described in Part II of this chapter.*

Protection and management of the groundwater resources in the Camp Edwards Training Area will focus on the following:

- Development of public and Massachusetts Military Reservation water supplies.
- Preservation and improvement of water quality and quantity (recharge).

[1] Comments on the performance standards reflect responses to questions raised during the review process.

- Activities compatible with the need to preserve and develop the groundwater resources.

COMMENT: *Much of the previous discussion with the Task Force resulted in the removal of sections that would apply to water supply development and remediation projects, and these two sections below were requested to clarify that separation.*

Development of water supplies will be permitted within the Camp Edwards Training Area after review and approval by the managing agencies, principally the Department of the Army and its divisions, together with the Massachusetts Department of Environmental Protection, and the Massachusetts Division of Fish and Wildlife.

COMMENT: *The first three water supply wells on the Massachusetts Military Reservation as planned for the Upper Cape communities are currently in the process of development and construction.*

All phases of remediation activities will be permitted within the Camp Edwards Training Area after review and approval by the managing agencies, principally the Department of the Army and its divisions, together with the federal and state agencies who will have jurisdiction for remediation.

COMMENT: *The Installation Restoration Program and the Impact Area Groundwater Study are the two major remediation projects.*

Protection and management of the vegetation of the Camp Edwards Training Area for focus on the following:

- Preservation of the habitat for federal- and state-listed rare species and other wildlife.
- Preservation of the wetland resource areas.
- Activities compatible with the need to manage and preserve the vegetative resources.
- Realistic field training needs.

Each user will be responsible for proper collection, management, and disposal of the wastes they generate, as well for reporting on those actions.

Use and application of hazardous materials or disposal of hazardous waste shall be prohibited except as described in the Groundwater Protection Policy.

Vehicle travel will be limited to the approved road system and activity areas, except where necessary for land rehabilitation and management, water supply development, and remediation, or where roads are closed for land rehabilitation and management, and authorized bivouac areas.

COMMENT: *Additional information on the roads within Camp Edwards is included in the next chapter.*

Goals for the Adaptive Ecosystem Management approach to management of the Camp Edwards properties will be as follows:

- Management of the groundwater for drinking water resources.
- Conservation of endangered species.
- Management of endangered species habitat for continuation of the species.
- Ensuring compatible military training activities.
- Allowing for compatible civilian use.

COMMENT: *Goals for the Adaptive Ecosystem Management approach (see description in introduction to this chapter) were recommended by David Dow of the Community Working Group.*

Specific Resource Performance Standards in the Camp Edwards Training Area

1. Groundwater Resources Performance Standards

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

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

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

COMMENT: *Massachusetts Department of Environmental Protection regulations describe the Zone I and Zone II boundaries and the restrictions within each of those*

areas. All community water supply systems in the State follow these standards of protection. The location of the regulations is specified below.

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

COMMENT: *The Groundwater Protection Policy is same as the Zone II regulations specified for all community water supply systems in the State.*

1.4. All activities will support and not interfere with either the Impact Area Groundwater Study and/or the Installation Restoration Program. All activities shall conform to the requirements of Comprehensive Environmental Response, Compensation and Liability Act, the Massachusetts Contingency Plan, and the Safe Drinking Water Act.

COMMENT: *The remediation projects will continue without interference from these requirements.*

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

COMMENT: *Although the public water supply projects are not to be otherwise restricted by these standards, the proper protection of the surface water resources is still considered an important standard for any activities at Camp Edwards.*

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

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

COMMENT: *The Cape Cod Commission's Regional Policy Plan has been consulted for conformance with these standards; the proposed standards were found to comply adequately with that plan. However, because no State or federal agency must otherwise be subject to the Regional Policy Plan, it would be inappropriate to include that listing here.*

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

- Groundwater Protection Policy.
- Federal and Department of Defense environmental programs: Integrated Natural Resources Management Plan, Integrated Training Area Management Program, Range

Regulations, Spill Prevention Control and Countermeasures Plan (or equivalent), Installation Restoration Plan, Impact Area Groundwater Study, or other remediation programs.

- State and federal laws and regulations pertaining to water supply.

COMMENT: *Sections 1.6 and 1.7 above, summarize the existing regulations that pertain to all land uses and activities, with the additional standard of accommodation for the water supply and remediation projects.*

1.8 Only lead-free bullet ammunition will be allowed within the Camp Edwards Training Area.

COMMENT: *This standard will apply to all users under the authority of Camp Edwards Range Control, including police departments practicing at the ranges and recreational hunters.*

2. Wetlands and Surface Water Performance Standards

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

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

COMMENT: *Land rehabilitation projects, such as erosion control and revegetation and restoration projects, are part of the environmental management programs of the Army National Guard to improve existing conditions. Otherwise the water resource regulations and standards require consideration for reasonable alternatives, and reduction and mitigation for any new project impacts.*

2.3 Wetland areas management priorities:

- Protection of existing wetland resource areas that contribute water to existing and potential drinking water supplies.
- Protection of wetlands, rare species and their habitats.
- Protection of human health and safety.

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

2.5 All land altering activities within 100 feet of a certified vernal pool must be reviewed before commencement by the Massachusetts Department of Environmental Protection/Wetlands Unit and the Natural Heritage and Endangered Species Program within the Division of Fish and Wildlife for impacts to wildlife and habitat.

COMMENT: *The standard in 2.5 clarifies the State laws and regulations on vernal pools. Most if not all of the wetlands in Camp Edwards are considered vernal pools.*

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

- The relocation doe not cause environmental impact to other resources.
- There are funds and resources approved and available for the relocation.

COMMENT: *Both the wetlands and their 100-foot buffers are to be protected under this standard.*

COMMENT: *The period of time suggested by item 2.7 below is a generally accepted period for amphibian breeding. However a commentor suggested increasing the period of breeding. This should be an item of further discussion between experts on breeding season variability using the natural resource information generated by the Environmental and Readiness Center office.*

2.7 During the period of 15 March to 15 June, roads within 500 feet of all wetlands will be restricted for vehicle access to protect the migration and breeding of herptiles, with the following exceptions:

- The primary roads - Frank Perkins, Burgoyne, Gibbs and Greenway Roads will not normally be closed during this period.
- Emergency response and environmental management activities will not be restricted.

COMMENT: *This higher level of protection is specifically designed to protect amphibians that rely on the wetland resources and the adjacent natural land areas during the breeding seasons.*

2.8 No new bivouac area shall be located within 500 feet of any wetland.

COMMENT: *In conjunction with section 2.5 above, this standard adds a higher level of protection for the wetland resources including their buffers.*

3. Rare Species Performance Standards

COMMENT: *The State has identified the whole of the MMR as Priority Habitat and this is now specified in these standards. Established in consultation with NHESP, the INRMP includes criteria for habitat management. New activities or actions that are required to be reviewed under MESA will also require consultation with NHESP. The changes below propose using the established program guidelines under the INRMP to be administered by the MMR Environmental and Readiness Office through Range Control and to initiate special and additional consultations with NHESP when activities are outside those guidelines or specifically require NHESP the additional consultation and review. This consultation is specified for all programs and activities.*

3.1 As the Natural Heritage and Endangered Species Program of the Massachusetts Division of Fisheries & Wildlife has identified the entire Massachusetts Military Reservation as State Priority Habitat for state-listed species (version dated 2000-2001), all activities and uses must comply with the Massachusetts Endangered Species Act and its regulations.

COMMENT: *A request was made to add the Integrated Natural Resource Plan to this next section. Because the Integrated Natural Resource Plan is a federal program, the Massachusetts National Guard must apply these standards through the Integrated Natural Resource Plan program rather than the reverse. The implementation of the Environmental Performance Standards will be completed through the Section 61 Findings. The draft Section 61 Findings included in this document specifically refers to the implementation of these standards through the Integrated Natural Resource Plan and other environmental programs of the Massachusetts National Guard.*

3.2 Activities and uses not regulated under the Camp Edwards Training Area Range and Environmental Regulations, including these Environmental Performance Standards, must be reviewed by the MMR Environmental and Readiness Center in consultation with the Natural Heritage and Endangered Species Program.

COMMENT: *This next section clarifies responsibilities of agencies.*

3.3 All activities impacting rare species habitat must be designed to preserve or enhance that habitat as determined by the MMR Environmental and Readiness Center in consultation with the Natural Heritage and Endangered Species Program.

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

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

4. Soil Conservation Performance Standards

COMMENT: *The soils of Camp Edwards have been described in the Integrated Natural Resource Management Plan documents together with their limitations for different land uses. Together with the Integrated Training Area Management Program that includes land rehabilitation projects, such as erosion control, this unique combination of military programs ensures a high level of management activity.*

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

4.2 Agricultural soil types will be preserved for future use.

4.3 Any perennial or intermittent stream identified by the Environmental Office will be protected from siltation by retaining undisturbed vegetative buffers to the extent feasible.

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

4.5 An erosion control analysis will be made part of the land management programs (Integrated Natural Resource Management Plan, the Integrated Training Area Management Program, Range Regulations, Civilian Use, and Standard Operating Procedures) for the Camp Edwards Training Area, including appropriate mitigation measures where problems are identified.

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

- All unimproved roads, ditches, roads and drainage ways identified for maintenance will be cleaned of logs, slash and debris.
- Unimproved roads and roads may not otherwise be improved unless approved for modification.
- Any trail, ditch, road, or drainage way damaged by activities will be repaired in accordance with the hazard and impact it creates.

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

5. Vegetation Management Performance Standards

COMMENT: *As with soils, the vegetative coverage of Camp Edwards has been described in the Integrated Natural Resource Management Plan. Together with the Integrated Training Area Management Program that includes land rehabilitation*

projects, such as revegetation, this unique combination of military programs ensures a high level of management activity.

5.1 All planning and management activities impacting vegetation

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

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

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

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

6. Habitat Management Performance Standards

COMMENT: *All of Camp Edwards has been identified as priority habitat for state-listed species. However, general habitat management includes activities for non-listed species as well. This comprehensive management approach to the resources and their habitat values is presented here. Implementation of these standards will come through the Environmental Management programs described in Part II of this Chapter.*

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

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

6.2 The adaptive ecosystem management program will include:

- Coordinated documentation for the management programs, Integrated Natural Resource Management Plan, the Integrated Training Area Management Program, Range Regulations, Civilian Use, and Standard Operating Procedures.

- The Massachusetts National Guard Environmental and Readiness Center staff and necessary funding to support its ecosystem management plans, as related to the amount of training occurring.

- Cooperative agreements to create a management team of scientific and regulatory experts.

- Long-term land maintenance, monitoring of resources and trends, study and analysis.

- Recovery plans for species and habitats identified for improvement.

- Consultation with Federal and State agencies charged with oversight of the Endangered Species Program before any actions that may affect state and federal-listed species habitat.

- Reduction of adverse impacts to the maximum extent possible, including consideration for the relocation of the activity or encouraging only those activities that result in meeting a habitat management goal.

- Habitat management activities designed to promote protection and restoration of native habitat types.

7. Wildlife Management Performance Standards

COMMENT: *Wildlife is separately listed to ensure the management activities for the other environmental media also consider the impact to existing wildlife. This includes the recreational hunting for game species allowed on the Camp Edwards properties.*

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

- Protecting rare and endangered species, and,

- Maintaining biodiversity.

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

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

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

- Development and implementation of a plan to monitor hunting harvest of game species.

- Planning for multi-use objectives for recreation and hunting that incorporate public input and recommendations.

- Development of suitable monitoring programs for federal and state-listed species, and regular exchange of information with the Natural Heritage and Endangered Species Program.

8. Air Quality Performance Standards

8.1 All uses and activities will be responsible for compliance with both the State Implementation Plan for Air Quality and the Federal Clean Air Act.

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

9. Noise Management Performance Standards

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

10. Pest Management Performance Standards

COMMENT: *the Massachusetts National Guard has already prepared An Integrated Pest Management Plan. This adds additional standards for performance to protect public health and safety.*

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

10.2 Each user will be held responsible for management of pests that threaten rare and endangered species, or are exotic and invasive species. Invasive plant species that may be considered pest species are those defined by the United States Fish and Wildlife Service and the Massachusetts Natural Heritage and Endangered Species Program of the Division of Fisheries and Wildlife office. Site specific analysis will be performed before implementation of any proposed pest management plans.

COMMENT: *A request was made to combine State and federal review. However, because federal action may be taken separately from state action they are kept separate.*

10.3 Pest vegetation control must be balanced against environmental impact and any proposed pest management activities, including the use of herbicides and mechanical methods, within rare species habitat areas must be approved by the Natural Heritage and Endangered Species Program, or in the case of federally-listed species, by the United States Fish and Wildlife Service.

10.4 Only herbicide formulations approved by the United States Environmental Protection Agency, the Department of Agriculture, the agency managing the user, and the Commonwealth of Massachusetts may be applied.

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

11. Fire Management Performance Standards

COMMENT: *Fires are used to maintain and re-create habitat types that are normally maintained by natural fires (lightning strikes) that reduce the growth of the ground cover. These are called prescribed burns. In addition, certain land management activities are designed to reduce the potential for fires that could cause property damage to others.*

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

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

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

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

12. Stormwater Management Performance Standards

COMMENT: *There are no new stormwater discharges proposed in Camp Edwards because there is no construction proposed by the Massachusetts National Guard. However, the State agencies requested specific standards for management of runoff. Current activities by the Massachusetts National Guard are to correct any existing erosion problems caused by runoff.*

12.1 The standard of performance for stormwater management is set by the State Department of Environmental Protection Guidelines for Stormwater Management, and includes Best Management Practices and standards for control and mitigation of increased stormwater flow rates and improvement of water quality.

12.2 All increases in stormwater runoff will be controlled within the users property.

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

13. Wastewater Performance Standards

COMMENT: *All wastewater systems within the Massachusetts Military Reservation are considered by the State Department of Environmental Protection as part of a single management system, and so fall under a higher level of review standards administered by that department.*

13.1 All wastewater and sewage disposal will be in conformance with the applicable Federal and Massachusetts Department of Environmental Protection agency regulations.

14. Solid Waste Performance Standards

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

COMMENT: *A request was made to prohibit all solid waste handling. However, no matter how small in quantity, some wastes will be generated and will require disposal. An absolute ban on storage (garbage bags) would be unworkable.*

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

15. Hazardous Materials Performance Standards

COMMENT: *Military training involves minimal use of hazardous materials and the generation of little hazardous waste that are otherwise well controlled and regulated. However, given the need to highlight the protection of land and water resources, these standards are proposed to provide the management perspective needed to protect the resources at Camp Edwards.*

A request was made to change this section to prohibit hazardous materials with exceptions. However, this item, which is a different standard of performance than the one suggested, recognizes that some hazardous materials are present and seeks to minimize their use.

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

15.2 Fuel Management

15.2.1 Spill Prevention, Control, and Countermeasure Plan, is in place to reduce potential for a release. Camp Edwards Spill Response Plan is in place to respond to a release if an event should occur. All users will comply with these plans at the Camp Edwards Training Area.

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

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

COMMENT: *The storage of fuels is an existing requirement for existing facilities. Otherwise, the restriction to carrying fuel only in small, five-gallon containers is proposed.*

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

- Are approved for maintenance heating, or, permanent emergency generators and limited to propane or natural gas fuels.

- Conform with the Groundwater Protection Policy and applicable codes.

COMMENT: *A request was made to ban vehicle refueling in the Training Areas. Because the 3600 block is one of the two designated refueling areas and is located in the Cantonment Area, but also considered part of the Camp Edwards field training areas, the absolute ban would not make sense to the trainers. Consequently, the ban included in the General Performance Standards, "Vehicle refueling is prohibited outside designated locations" is the clearest way of presenting this restriction.*

15.3 Non-fuel Hazardous Material Storage

COMMENT: Mu*ch time was spent on trying to develop a definition for the acceptable volume of materials. One suggestion was to use a term that suggests limitation on quantity such as "for personal field use and re-supply". However, because of the different types of training, by different sizes and numbers of units, a broader definition is suggested. More on the types of hazardous materials is included in Chapter II, Training.*

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

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

16. Hazardous Waste Performance Standards

COMMENT: *Hazardous wastes that may be generated by military training could include clean-up wastes such as first aid bandages, grease from field kitchens, emergency response clean-up, rags from weapons maintenance, spills in secondary containment facilities, collected during or at closure of the training exercises.*

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

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

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

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

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

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

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

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

17. Vehicle Performance Standards

COMMENT: *No military vehicles are allowed off the road system except where designated (e.g. bivouacs, engineering sites) and for land maintenance.*

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

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

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

18. General Use and Access Performance Standards

COMMENT: *Most civilian users come under the jurisdiction of Camp Edwards Range Control. Army regulations specify the creation of a civilian use guide for this purpose.*

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

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

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

18.3. Siting and Design Performance Standards

18.3.1 New buildings should not be proposed within the Camp Edwards Training Areas, with the following exceptions:

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

THE CANTONMENT AREA

The Cantonment Area is the district designated for the highest level of activity upon the Massachusetts National Guard properties. This includes both civilian and military activities. The Cantonment Area as mapped by the Community Working Group also includes the area and connecting land for the proposed Barnstable House of Corrections, which is actually part of Camp Edwards Training lands at this time and until the lease and license of the land is modified. Once again, although many other users within the Cantonment Area are identified and included in this report, the Environmental Performance Standards apply only to the Massachusetts National Guard properties and activities within the Cantonment Area.

Although not required by the Secretary's Certificate, Environmental Performance Standards have been proposed here for the Massachusetts National Guard to consider for the Cantonment Area. For the most part, development has already modified the land and natural resources within the Cantonment Area; some changes even to the betterment of habitat for certain grassland bird species. The rationale for applying standards in similar ways to the Camp Edwards Training Areas is that certain natural resources can be found in both areas. However, the existing, surrounding uses and potential use of the Cantonment Area requires a different management focus to achieve a different type of performance. Consequently, the following Environmental Performance Standards vary from the Camp Edwards Training Area Environmental Performance Standards in some important ways based on present and potential land use.

General Cantonment Area Performance Standards

All users meeting applicable thresholds must have a Spill Prevention, Control and Countermeasures Plans, or equivalent, as may be amended and adopted in accordance with section 311 of the Clean Water Act, containing regulatory restrictions for handling potential polluting materials and laying out emergency responses to accidents within all areas of operation.

Remediation activities and development of uses and activities outside the wetland areas and their buffers will be designed to protect, and where possible, restore wetland and surface water resource areas.

Development within the Cantonment Area will include approved erosion and sediment controls both during construction and as needed for long-term maintenance of the property.

All disturbances and revegetation activities will be designed to conserve grassland bird habitat.

Protect and manage identified habitat areas within the Cantonment Area including box turtle and grassland bird habitats in consultation with the Massachusetts Division of Fisheries and Wildlife, Natural Heritage, and Endangered Species Program.

Bird control on the airfield is established pursuant to the Air Force, Mishap Prevention Program, which requires a Bird Aircraft Strike Hazard (BASH) Program. The Bird

Aircraft Strike Hazard Program includes all tenant-flying units. The Bird Aircraft Strike Hazard Program will include defining the nature and extent of wildlife hazards and implementation of the plan. Plan implementation may require environmental controls and changes to bird dispersal techniques and operational procedures. The Bird Aircraft Strike Hazard Program will be coordinated with State and Federal aviation and wildlife agencies.

Storage of pesticides and herbicides will only be allowed in conformance with applicable regulatory programs and standards.

Non-destructive alternative strategies for fire pre-suppression management should be developed for areas of high sensitivity.

New stormwater systems within the Cantonment Area should not discharge into existing stormwater systems unless it has been shown that the existing system can accept the new flows in storm events up to and including a 100-year storm.

All wastewater and sewage generated within the Cantonment Area should be transferred to the Massachusetts Military Reservation Wastewater Treatment Facility when approved by the regulating authority.

All new development should provide areas for storage of recyclables adequate to handle volumes between collections.

A plan for disposal of solid waste will be necessary for those uses not participating with the Upper Cape Solid Waste Transfer Station. This plan will include proposals for disposal, recycling, reduction, and reuse of wastes.

Use and application of hazardous materials shall be limited to activities and uses allowed under existing rules and regulations, and handled in accordance with the applicable procedures.

Handling and storage of hazardous wastes shall be limited to activities and uses allowed under existing rules and regulations, and handled in accordance with the applicable procedures.

Access through the Cantonment Area will be subject to limitations based on the available enforcement assets and designated purpose(s) and uses of the road system.

Specific Resource Performance Standards in the Cantonment

1. Groundwater Resources Performance Standards

1.1. All actions, at any location within the Massachusetts National Guard properties, must seek to preserve and maintain groundwater quality and quantity, and protect the recharge areas to existing and potential water supply wells.

1.8. The goal of the Department of Defense for remediation will be to restore to drinking water quality those groundwater resources that have been degraded below drinking water standards, or to meet those goals agreed upon by users of the properties. The goals shall be met through remediation, restoration, and best management practices, e.g., Installation Restoration Program activities and compliance with applicable rules and regulations.

1.3. Land uses and activities in the Cantonment Area:

- Will conform to all existing and applicable regulations
- Must be able to be implemented without interference with ongoing remediation projects.
- Must allow reasonable access to the water supplies in the Camp Edwards Training Areas, as far as the user controls access.

1.4. The following standards will be used as the basis for protecting groundwater resources in the Cantonment Area:

- Groundwater Protection Policy Plan
- Spill Prevention Control and Countermeasures Plan (or equivalent).
- Remediation plans and restoration activities (e.g., Installation Restoration Plan).
- Military regulations.

2. Wetlands and Surface Water Performance Standards

2.1 New development will be designed to preserve and protect wetland resource areas as defined by applicable local, federal, and state laws and regulations. This will include replacement or replication of all wetland resource buffer areas which are lost after completion of an activity or use.

3. Rare Species Performance Standards

3.1 Management plans for all listed rare species must be prepared in consultation with the Massachusetts Natural Heritage and Endangered Species program office, and United States Fish and Wildlife Service, if applicable.

4. Soil Conservation Performance Standards

4.1 Activities and uses at the Massachusetts National Guard properties must be compatible with the limitations of the underlying soils.

4.2 Erosion-prone sites should be inspected periodically to identify damage and mitigation measures.

5. Vegetation Management Performance Standards

5.1 All planning and management activities will ensure the maintenance of native plant communities.

6. Habitat Management Performance Standards

6.1 Certain portions of the Cantonment Area will be managed as a grassland bird habitat area. A similar habitat program developed for the Camp Edwards Training Areas will be applied to these areas.

7. Wildlife Management Performance Standards

7.1 No actions that impact rare species habitat shall be taken until after consultation with the U.S. Fish and Wildlife Service, if applicable, and the Massachusetts Natural Heritage and Endangered Species Program of the Division of Fisheries and Wildlife.

8. Air Quality Performance Standards

8.1 All uses and activities in the Cantonment Area shall comply with the Federal Clean Air Act.

8.2 Emissions from stationary sources associated with discharge stacks will be reported if required under applicable air quality permits issued by federal and state regulatory agencies.

9. Noise Management Performance Standards

9.1 Noise levels for the Airfield are mapped in accordance with federal guidelines and the Air Installation Compatible Use Zone study results.

9.2 Proposed activities elsewhere within the Cantonment Area should consider applicable federal and state noise guidelines in their design.

10. Pest Management Performance Standards

10.1 Each user will develop and implement an Integrated Pest Management Program to control pest infestations that may include outside contracting of services.

10.2 Only herbicide formulations approved by the United States Environmental Protection Agency, the United States Department of Agriculture, the agency managing the user, and the Commonwealth of Massachusetts may be applied.

11. Stormwater Management Performance Standards

11.1 The standard of performance on stormwater management for all projects at the Massachusetts National Guard properties will be set by the Massachusetts Department of

Environmental Protection Guidelines for Stormwater Management for development projects within wetland resource areas, including Best Management Practices and standards for control and mitigation of increased stormwater flow rates and improvement of water quality.

11.2 All increases in stormwater runoff should be controlled within the Massachusetts Military Reservation when feasible with the exception of the SD-1 storm drainage system associated with the airfield that may discharge off base under the permits granted.

12. Wastewater Performance Standards

12.1 All wastewater and sewage disposal will be in conformance with the Federal and State Department of Environmental Protection regulations.

13. Solid Waste Performance Standards

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

13.2 All users will be responsible for collection and removal of wastes generated by their activities.

14. Hazardous Materials Performance Standards

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

14.2 Fuel Management

14.2.1 Before any use or activity may commence, it may require one or more of the following actions: Spill Prevention Control and Countermeasures plans, spill contingency plans, facility response plans, and Standard Operating Procedures related to fuel.

14.2.2 Procedures will require that any activity or use remove all non-complying underground fuel storage tanks.

14.2.3 All storage tanks (above ground or underground) must be constructed and operated in conformance with regulations including secondary containment, leak detection, and regular inspections.

14.3 Non-fuel Hazardous Material Storage

14.3.1 All outdoor permanent storage of non-fuel hazardous materials which could result in a direct discharge to the soil must be provided with adequate secondary containment (at least 110% capacity of the largest single container).

14.3.2 All indoor storage of non-fuel hazardous materials, which could result in a direct discharge to the soil directly outside the building, must be provided with adequate secondary containment to prevent such discharge.

14.3.3 Users will develop procedures on a case-by-case basis with private contractors, working under their control on the Massachusetts Military Reservation, to ensure adequate provisions are in place to prevent a release of non-fuel hazardous material to the soil and to report and respond immediately to a release should one occur.

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

14.3.5 Transport should reduce to extent feasible the number of trips both for delivery of virgin product and transfer. This should include planning appropriate routes that minimize proximity to sensitive natural resource areas and minimizing internal transfers of material, including transfers from bulk storage tanks to drums, tankers, carboys, or other portable containers or quantities.

15. Hazardous Waste Performance Standards

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

15.2 Accumulations of hazardous waste shall be in covered storage and in accordance with regulations governing accumulation and storage.

15.3 Users of Cantonment Area facilities must implement pollution prevention, and waste minimization procedures (process modifications, material substitution, recycling and best management practices) to minimize waste generation and hazardous materials use.

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

15.5 Remedial activities undertaken under the Installation Restoration Program, Massachusetts Contingency Plan or other governing remediation programs are exempt from additional regulation (e.g., waste generation volume limits).

15.6 Post-remedial uses and activities at previously impacted sites will be allowed in accordance with terms and conditions of any Activity and Use Limitation applied to the site.

15.7 All hazardous wastes will be transported in accordance with United States Department of Transportation regulations governing shipment of these materials.

15.8 Transport should reduce to extent feasible the number of trips for transfer and pick-up of wastes for disposal. This will include planning appropriate routes that minimize proximity to sensitive natural resource areas, and minimizing internal transfers of

material, including from bulk storage tanks to drums, tankers, carboys, or other portable containers or quantities.

16. Traffic Performance Standards

16.1 Each user will be responsible for mitigation of impacts to on-site and adjacent roadways in so far as they are responsible for the roadways within the Massachusetts National Guard properties.

16.2 Transportation management strategies should be employed to manage new traffic and reduce existing impacts. Transportation management strategies will consider the following:

- Roads have been constructed for the purpose of military use.
- Improvements, maintenance, and operations of the roadway systems within each designation shall be made in accordance with the original design of the road in terms of speeds, geometry and construction.
- New uses and operations requiring access onto or across one of the roadways or roadway systems will not derogate from the purpose of those roadways.

17. General Use and Access Performance Standards

17.1 General User Requirements

Requirements that will apply to all users, both public and private, in the Cantonment Area include:

1. All acts that pollute the groundwater supply are prohibited.
2. No litter or refuse of any sort may be thrown or left in or on any property.

17.2. Civilian Use Manual

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

17.3. Siting and Design Performance Standards

- All new buildings, both public and private, should fit harmoniously with the surrounding environment, including terrain, vegetation, and existing buildings.

- The landscape of the site should be preserved to the extent possible. Open space shall be provided around and in association with the building as needed for the potential users.

- The design and maintenance of the site shall follow the standards for Vegetation set forth in these standards.

- Circulation and parking around the building and onto the adjacent roads should be arranged to not detract from the surrounding landscape and buildings. Delivery systems should be coordinated to reduce the potential for conflicts on the adjacent roads, as detailed preciously in this report.

Cultural Resources Management

Cultural Resource Sensitivity Zones were submitted with the Draft Area-wide Environmental Impact Report. The overlays identify resources and regulated areas and add another layer of sensitivity to the use of the land underlying these zones. The Cultural Resource Overlay Zones imply but do not necessarily prove the existence of cultural resources. As a consequence, ground or building disturbing activities within these zones must be cognizant of the potential for disturbing cultural resources and artifacts. For areas managed or owned by the Massachusetts National Guard, guidance on cultural resource management will come from applicable Army and Air Force regulations.

Cultural Resource Sensitivity Areas have been designated according to presently available information on the potential of locations to contain resources of significance to cultural history. All information is subject to change based on more detailed analysis as the process of discovery continues.

General Cultural Resource Area Performance Standards

1. Before completion of any programs or actions impacting cultural resources, consult with appropriate federally-recognized Native American tribes (the Wampanoags) and any other pertinent review authorities.

2. Cultural resource areas will be defined generally by their sensitivity to disturbance or alteration as Low, Medium, or High Sensitivity. These maps may be updated, refined, and amended as appropriate and as approved by the lease and license holders.

3. No use or activity proposed within areas of High or Medium Cultural Sensitivity may proceed unless the Massachusetts Historical Commission (Massachusetts Historical Commission) and appropriate federally-recognized Native American tribes (the Wampanoags) approve proceeding with the use or activity, finds no jurisdiction over the project, or determines that all research, field work, documentation, and consultation required by the Massachusetts Historical Commission and the tribes, and any other pertinent review authorities is completed.

4. For any use or activity proposed in an area of Low Cultural Sensitivity, the proponent of the use or activity will be required to proceed with the knowledge that cultural resources may exist at the proposed location. Should the potential resources be located, the use or activity must cease and the activities impacting the area must be documented for further review by the Massachusetts Historical Commission (State Historic Preservation Officer) and appropriate federally-recognized Native American tribes (the Wampanoags) and any other pertinent review authorities.

General Procedures

COMMENT: *These procedures clarify the requirements of the State's review process for cultural resources.*

1. Cultural resources on the Massachusetts Military Reservation are to be identified, protected, preserved, recovered, and/or cataloged in accordance to the directives provided

by the State and Tribal Historic Preservation Officer, and in accordance with the pertinent state and federal laws and regulations.

2. The primary review authorities for the management and protection of cultural resources are the Massachusetts Historical Commission and appropriate federally-recognized Native American tribes, which will be notified of actions with a filing of a Project Notification Form, in accordance with the appropriate standards.

3. As part of the planning for any project, the proponent will determine which cultural resource regulatory standards apply, verify the status of knowledge about cultural resources in and around the project area, conduct additional studies if necessary to further identify and evaluate cultural resources, and assess the potential of the project to affect significant cultural resources.

4. All proposed uses or activities will avoid or reduce impacts to cultural resources that have been located, identified, evaluated, and documented in accordance with the requirements of the Massachusetts Historical Commission, the appropriate tribes, and any other pertinent review authorities.

5. In the event that the proposed use or activity will not fully avoid impacts to the cultural resources, the project proponent will provide any additional documentation required by the Massachusetts Historical Commission and consult with the Massachusetts Historical Commission and any other pertinent review authorities. Appropriate American Indian tribes, should be periodically consulted to determine their status as petitioners for federal recognition.

LAND AND RESOURCE INFORMATION MAP

Land and natural resource maps have been prepared by the Massachusetts National Guard, Environmental and Readiness Center, Natural Resources Section, and are listed and included in the appendices.

The map shown in Figure I-2, distinguishes the areas defined as the Cantonment Area and the Camp Edwards Training Area. More on the Cantonment Area is included in the chapter on the Cantonment Area Master Plan.

The map here also designates ‘Secured’ areas. The term is used to identify those properties with one or two of the following conditions present:

- The properties/areas are not controlled or used by the Massachusetts National Guard, or,

- The properties/areas are restricted for use by environmental conditions.

List of Secured Areas

The following areas have been designated as Secured Areas:

Secured Area 1: Site S-1, Pave Paws (121 acres) is controlled for national security and safety reasons.

Secured Area 2: The S-2 sites, which include Demo 1 & 2, the Impact Area and specific remediation sites, (2389 acres +) are off-limits to all activities or uses because of the potential hazards from unexploded ordinance, potential hazardous materials exposure, or equipment used for hazardous material assessment and clean-up.

Secured Area 3: The S-3 sites, Accident Potential Zones, are required to protect all activities and uses from the ends of the airfield runways.

Secured Area 4: Capped landfills such as site S-4 (131 acres) have been closed with a synthetic and earthwork cover to prevent rainwater from leaching through the waste deposited in the landfill. The success of the cap depends on maintaining its integrity as long as the waste remains at that location. In addition, gas vents go through this cover and rise up above its surface creating a field of pipes. Consequently, no activities are recommended over the landfill cover.

Secured Area 5: The United States Coast Guard Transmitter Station (site S-5) is included as a Secured area because it performs a function associated with communications, and requires protection against vandalism.

Secured Area 6: Site S-6 is the Ammunition Supply Point, which by its nature suggests significant limitations on access.

Secured Area 7: Site S-7 is the inground disposal site for the Massachusetts Military Reservation wastewater treatment facility.

Special Mitigation or Management Requirements: No additional uses of these areas are proposed under the current plan, except as required by the existing users. In the event that new locations or sites are specified for remedial investigation or clean-up activities, these locations will also be identified as Secured areas.

PART II. ENVIRONMENTAL MANAGEMENT PROGRAMS

Those environmental and land management programs start from the broadest and most comprehensive management plans and move throughout the full hierarchy of users and management down to the specific actions required from each user. The military is an organization that functions by requiring all activities and users to follow prescribed rules and standards. Consequently, the military is well equipped to follow the complete program requirements. The military and the users of the Massachusetts Military Reservation will practice the following principal environmental and land management programs:

Integrated Natural Resources Management Plan In accordance with the Federal Sikes Act, Army Regulation AR 200-3, and Department of Defense Instruction 4715.3, an Integrated Natural Resources Management Plan is required to properly manage and conserve the natural resources at military installations for the purpose of conducting realistic training. The Camp Edwards Integrated Natural Resource Management Plan will serve as a document in which the Environmental Performance Standards, as listed in the Master Plan, will be implemented. The Integrated Natural Resource Management Plan will provide for the installation and its personnel specific natural resources management recommendations and instructions to achieve the Environmental Performance Standards on Camp Edwards. Principal objectives of the program are:

- Maintain, protect and improve environmental quality, aesthetic values, and ecological relationships.
- Protect the property from depreciation.
- Comply with environmental protection and enhancement policies and procedures.
- Protect and improve the natural beauty of the landscape.
- Improve the appearance of installations.
- Prevent damage and destruction of valuable natural resources.
- Protect plants and animals and their habitats, including rare species.
- Manage the lands consistent with the military mission and the conservation of ecosystems and biodiversity.
- Provide support that continues the military missions by protecting the environment.
- Protect environmentally sensitive areas such as aquifer recharge areas, wetlands, and other natural areas.
- Manage training lands for no net loss of training acreage. [ref. Sikes Act and AR 200-3, sec. 1-5]

A summary of the Integrated Natural Resource Management Plan can be found in Appendix E.

Integrated Land Use Management Plan This documented plan is similar to the Integrated Natural Resource Management Plan. The Air National Guard has prepared it for the airfields and associated land areas where natural resources are limited and field training areas do not account for a significant portion of the facility. The Massachusetts Air National Guard has decided to follow the option of developing an Integrated Natural Resource Management Plan as the overall management plan for their properties at the Massachusetts Military Reservation.

Massachusetts Military Reservation Groundwater Protection Policy This adopted policy is an important document in that it has been agreed to and signed under a Memorandum of Agreement by the four major commands of the Massachusetts Military Reservation; Air National Guard, Army National Guard, United States Coast Guard, and United States Air Force PAVE PAWS. The Groundwater Protection Policy is equivalent to a municipal wellhead protection (Zone II) zoning regulation because it was based on the Massachusetts Department of Environmental Protection's recommended wellhead protection regulations. The Massachusetts Department of Environmental Protection requires these regulations to be incorporated in to a town's zoning bylaws before the state will approve a new public water well source to go on line. However, because of the unique conditions of management and control of the Massachusetts Military Reservation commands, the Groundwater Protection Policy goes beyond the Massachusetts Department of Environmental Protection's recommended standard regulation to include specific operating and management actions to further protect the groundwater resources.

A copy of the Groundwater Protection Policy can be found in Appendix G.

Integrated Training Area Management Program. The Integrated Training Area Management Program developed in accordance with Army Regulation 350-4, and Department of the Army Integrated Training Area Management Procedural Manual establishes a systematic framework for decision-making and management of Army training lands. It integrates elements of operational, environmental, master planning, and other programs that identify and assess land use alternatives. The Integrated Training Area Management Program also supports sound natural and cultural resources management practices and stewardship of land assets, while sustaining those assets to support training, testing, and other installation missions. The Integrated Training Area Management Program goals are as follows:

- Achieve optimal sustained use of lands for the execution of realistic training, by providing a sustainable core capability, which balances usage, condition, and level of maintenance.
- Implement a management and decision-making process, which integrates Army training and other mission requirements for land use with sound natural and cultural resources management.
- Advocate proactive conservation and land management practices.
- Align training land management priorities with the Army training and readiness priorities.

The Integrated Training Area Management Program Objectives are to determine the capacity of the land to meet the following requirements:

- Sustain training through diagnostic methods, models, and tools
- Support assignment of the optimum type, frequency, duration, and intensity of training that can be conducted on a given parcel.
- Identify the risks and cost associated with exceeding the capacity of the land.
- Allocate training land uses, including the type, frequency duration and intensity of use, based on the capacity of the land to sustain those uses.
- Support sustained use of land by planning, programming, and executing repair and maintenance projects and by reconfiguring and redesigning training areas to meet recognized requirements.

- Educate users to prevent avoidable damage to land and minimize unavoidable damage resulting from training and other mission activities.
- Establish a defined land condition baseline for natural and cultural resources that will be maintained through Integrated Training Area Management and is relevant to the installation environmental setting and mission.
- Monitor land and natural resources conditions and determine trends in those conditions.
- Stabilize and sustain condition of natural and cultural resources by changing type, frequency, duration, or intensity of use, or by applying adjusted levels of repair and maintenance.
- Increase understanding of Army mission training requirements by educating environmental and natural resources personnel.

An important result of the implementation of this program has been the advancement of a Trainers Guide for Camp Edwards. Prepared by the MMR Environmental and Readiness Office, the guide describes the resources found in each of the training areas within Camp Edwards, and lists the restrictions and maximum use of the training area. As the trainers prepare their yearly training programs, this information will be used to better plan the training events and prepare the soldiers. A copy of this Trainers Guide can be found in Appendix F.

Integrated Cultural Resources Management Plan This is a 5-year plan that integrates with other management plans, such as Integrated Natural Resource Management Plan. Integrated Cultural Resources Management Plan identifies known cultural resources such as historic buildings and other structures, archaeological sites and traditional cultural properties. Integrated Cultural Resources Management Plan also identifies potential conflicts between the installations mission and cultural resources, and identifies compliance action necessary to maintain the availability of mission essential properties and acreage's. A component is ensuring that government to government consultations with Federally recognized Indian tribes are initiated. The Integrated Cultural Resources Management Plan meets stewardship responsibilities by protecting and managing sensitive cultural resources while supporting mission readiness.

Camp Edwards Range Regulations All military areas are covered by regulations regarding the use and activities at those locations. These regulations include listings of allowed activities and listings of responsibilities of the users. The Camp Edwards Range Regulations specify the controls and specifications that apply to all field training areas, including those sites in the Cantonment Area which are used for training. The Range Regulations also apply to those civilians who may use the same areas. The regulations are comprehensive in that they apply to all actions from the initial coordination between the user and the Training Command to the closure of the activity and the confirmation of proper conduct during the activity.

Standard Operating Procedures. All military training activities are judged by conformance to a set of standardized actions set down in the Training Manuals issued to all trainees and leaders. Each activity or action requires compliance with the standardized procedures to ensure completion of the task with a passing grade. The care by which a pilot checks an aircraft before use and a military driver inspects a vehicle before taking it into the field are all specified by the procedures required from military personnel. These

Standard Operating Procedures include actions that protect against accidents which could cause environmental damage.

Environmental Approvals The implementation of the military training and environmental management strategy is contingent on the approval of the environmental agencies under the mandated reviews. This will entail completion of the National Environmental Policy Act process and documentation before initiation.

Environmental Investigations and Remediation The Massachusetts Military Reservation, with external oversight, has been the subject of investigations and remediation efforts aimed at identifying and remediating environmental conditions caused by past practices. Within the Northern training areas, the program involves the Impact Area Groundwater Study. These program activities take precedent over other potentially competing activities.

Groundwater Development for Public Water Supplies The regional Upper Cape Water Supply Cooperative is actively in the process of developing groundwater supplies for public distribution to the base users and the surrounding towns, supported in part by the National Guard Bureau. The activities associated with this program also take precedent over other potentially competing activities.

PART III. MONITORING AND REPORTING

There are many aspects to monitoring and reporting by the Massachusetts National Guard at the Massachusetts Military Reservation. Four of those components are discussed in this section:

- Day-to-day, onsite monitoring and management through Range Control;
- A yearly report to the public as recommended by the Secretary in the October, 1999 Certificate, which could be called the 'State of the Reserve' report;
- A Cantonment Area Project Advisory Board; and,
- A Scientific and Technical Advisory Board.

Each of these components provides an important function. However, only the first - day to day management by Range Control - is presently and fully in operation. To ensure that the proper interaction occurs with those outside the military, and that the activities of the military are 'transparent' to the public, the other elements are considered very important. The following discussion touches on each of these elements.

Range Control

Range Control is given the specific responsibilities to oversee everyday management of the training areas. Similar to other land managers, Range Control, in accordance with military standards, is given additional responsibilities not added to civilian land managers in the oversight and reporting.

Range Control monitors all operations within the training area at Camp Edwards. Range Control operates three shifts in a 24-hour operation when activities are conducted in any part of the training area. Range Control monitors use, coordination, and emergencies:

- Use is tracked for impacts on specific training areas.

- Coordination is to reduce risk of incidents between users.
- Emergency monitoring is to coordinate fire, emergency rescue, and spill clean-up.

The following table includes some of the monitoring activities that Range Control must complete.

Action by Unit, Contractors, Public/Private Organizations	*Responsibilities of Range Control*
Request Training Area	Scheduling of Training Areas
Type of training to be conducted Standard/Non-standard	Approval/Disapproval, provide environmental information and briefing
Report Occupation of a Training Area, must remain in constant communication with Range Control	Record, Monitor activities, and Track usage
Report usage (Number of personnel & Vehicles)	Record usage for Intergraded Training Area Management Program
Report Fires, Accidents, Personal Injuries, Spills, etc.	Record, Notify (Environmental Office, Fire Departments, Emergency Rescue, etc.), Supervision with Environmental Office on clean up, and clearance
Notification of movement	Coordinate with all other users and insure compliance with Camp Edwards Range Regulations
Request Ranges	Scheduling and Safety Briefing
Request range use (live fire)	Approval/Disapproval
Report Number of personnel and rounds fired down range	Record, Monitor, and Track
Request Range Clearance	Inspection and clearance
Required presentation at daily coordination meeting	Coordinate and manage meeting (provide safety, weather, environmental information and other activities being conducted in the Training Area to include non-military activities
Request to Clear a Training Area	Inspection and Clearing of a Training Area

Annual "State of the Reserve" Report

In addition to the intensive management efforts of the Range Control personnel, the Massachusetts National Guard has proposed to issue an annual 'State of the Reserve' Report and make it available for general distribution as a means to provide interested parties with information about conditions and activities that have occurred over the previous year. The following summarizes the proposed content of that report:

TABLE OF CONTENTS

I. TRAINING AREA USAGE

Overall Training Area

- Total number of days the Training Area was used for environmental investigation, remediation, and restoration activities: _____

- Total number of personnel that used the Training Areas for environmental investigation, remediation, and restoration activities: _____

Individual Training Units

- Total number of days that the Training Unit (e.g. B-9) was used: _____
- Total number of soldiers that used the Training Unit (e.g. B-9): _____
- Usage per individual training area: A matrix will be attached detailing total number of days used, total number of soldiers, and total number of vehicles broken down by type (i.e. tracked and wheeled).

NOTE the following is an example of how information will be reported. If a platoon of soldiers (approximately 30 people) used the same training area on 2 different days the information would be reported as follows:
Total number of days the training area was used: 2 days
Total number of soldiers who used the training area: 60
Average usage: 30 soldiers per day

II. RANGE USAGE

NOTE: Only "green ammunition" is permitted on the ranges at Camp Edwards.

- Total number of ranges used: _____
- Total number of people who used the ranges: _____
- Breakdown by range:
    1. Total number of personnel that utilized the ranges at Camp Edwards, including both military and local, state, and federal law enforcement personnel:_____
    2. Total number of rounds fired: _____

III. WATER QUALITY

- Enclosed will be copies of the 102nd Fighter Wing, Water Quality Report as required by the Safe Drinking Water Act.
- The Upper Cape Water Supply Cooperative (3 Million Gallons per Day project) will be required to complete a Water Quality Report that will be included in the annual report.
- Enclosed will also be water quality reports completed on wetlands during the year.

IV. REMEDIATION EFFORTS AND ACTIVITIES

(e.g., Number of Wells Installed, Acres Affected, and Acres Restored)
Installation Restoration Program Summary
Impact Area Groundwater Study Program Summary

V. RESOURCE MANAGEMENT

- Any cooperative activities undertaken with outside agencies benefiting the natural resources of Camp Edwards will be summarized and attached.
- The annual Natural and Cultural Resource Management summary report including but not limited to the following:

Integrated Natural Resource Management Plan Summary:

- Habitat Management
- Restoration Activities
- Rare Species Surveys, Research Activities, and Results
- Wetland Evaluations
- Invasive Species Survey and Management

Integrated Training Area Management Program Summary*:*

- Land Condition Trend Analysis Reports
- Land Rehabilitation and Maintenance
- Training Requirements Integration
- Education And Awareness

Integrated Cultural Resources Management Plan Summary:

- Historic Structures
- Archeological Survey
- Tribal Resources

Hunting (civilians)

- Total number of hunting permits issued: _____
- Harvest Results: Deer: _____, Turkey: _____

Fire Management

- Copy of State open burning permit for prescribed burning along with proposed locations of units to be burned for year of record.
- Total number of acres burned under the permit: _____
- Agencies assisting the Massachusetts National Guard in the prescribed burn(s) include the following participants: *University of Massachusetts, The Nature Conservancy, MA Department of Environmental Management, MA Division of Fisheries and Wildlife, The National Park Service-Cape Cod National Sea Shore, Otis, Bourne, Falmouth, Mashpee, Sandwich and other local Fire Departments.*
- Total number of acres burned as result of non-prescribed fire: _____

This report would be made generally available and would be posted on the web site for the Environmental and Readiness Center.

Cantonment Area Project Advisory Board

Civilian projects such as the County jail, a courthouse, and a parking facility have been previously proposed for the Cantonment Area. The Community Working Group provided an important service during that time in performing reviews of the projects and in making recommendations on the best projects and locations. A proposed Massachusetts Military Reservation Cantonment Area Project Advisory Board could provide a similar public review and consultation process in assisting the Massachusetts National Guard in its own review and decision-making on proposed civilian projects in the Cantonment Area. The Cantonment Area Project Advisory Board would be composed of a wide range of public and private interest groups as well as interested citizens. The following groups could make up the Cantonment Area Project Advisory Board: local environmental groups, local business groups, residents of U.S. Coast Guard housing residents, local school districts, Massachusetts Military Reservation employees, Native American representatives, and technical members.

The following ground rules are guidance to Cantonment Area Project Advisory Board operations:

- The membership of the Cantonment Area Project Advisory Board will be determined by the Massachusetts National Guard and made up of the Massachusetts Air National Guard and Massachusetts Army National Guard, and those direct participants who are willing to devote the necessary time and effort to the Board. The Cantonment Advisory Board will be co-chaired by a Massachusetts National Guard representative, and a community co-chair elected by the members of the Cantonment Advisory Board. The Massachusetts National Guard may limit the number of members to keep the size of the Cantonment Area Project Advisory Board to a manageable size. In the case of limited membership, the members will be selected based on commitment of effort and diversity of member backgrounds.

- The role of the Cantonment Area Project Advisory Board will be advisory and non-binding to the Massachusetts National Guard. The Massachusetts National Guard will actively seek the input of both the board and individual members. Cantonment Area Project Advisory Board decisions will be based on majority vote.

- Meetings minutes may be taken and provided to all members.

- Direct participants who wish to leave the Cantonment Area Project Advisory Board may do so at any time by notifying one of the co-chairs. New members will be accepted to the board as long as the size of the Cantonment Advisory Board is not too large.

- The Massachusetts National Guard may provide a trained facilitator to assist in the conduct of the meetings.

- Commentators and the general public will be kept informed of the actions of the Cantonment Area Project Advisory Board.

- Public meetings may be held. These meetings may be used to inform the attendees, answer questions, and solicit their input.

Scientific and Technical Advisory Board

The Community Working Group had recommended a Science and Technical Advisory Panel to convene to review activities on the Massachusetts Military Reservation and provide a qualified perspective on the studies and statements surrounding the military facilities and activities. The concept envisions an independent, and presumably unpaid, group of individuals with the credentials that allow credible reviews and recommendations to be made to the public. The Massachusetts National Guard fully supports this concept. Army regulations have anticipated this option and allow for the creation of agreements for the purpose of convening similar boards for adding input on activities and studies on the military properties. This Scientific and Technical Advisory Board would provide outside, expert and independent advice on environmental issues confronting the military. The Board could provide the Base commanders with expert advice and recommendations on specific projects and topic issues, and could be a forum for communication for developing confidence and mutual understanding with the environmental community and the public.

The make up and procedures of this advisory board could be as follows:

- The board would be composed of individuals with the education and career experience focused on some aspect of the resource systems found at the Massachusetts Military Reservation.

- The first priority would be to find those individuals with no previous or current connection with employment at the Massachusetts Military Reservation. However, intimate knowledge of the conditions at the Massachusetts Military Reservation would not disqualify otherwise appropriate individuals.

- The board would perform reviews of data and studies prepared by others and could suggest new studies, but would not otherwise be involved in the actual studies.

- The board would make independent advisory opinions on those studies and data that it receives and feels qualified to make pronouncements on. It may also recommend other reviews and reviewers.

- The board will not be required to accept any testimony other than from the technicians and scientists preparing the studies it is reviewing, but the board may request input from any other source that it feels is necessary and appropriate for the review. The board may also engage in separate dialog with others, as it deems necessary, to obtain all relevant information.

- The final reports of the board will be made as independent public documents. Reasonable publication costs will be borne by the Massachusetts National Guard.

- The board will provide the Massachusetts Military Reservation commanders with policy and procedural recommendations; advice on identification and resolution of environmental issues; explore and advise the commanders on the development of concepts to solve challenges and problems in an environmentally sustainable manner, and to review and recommend actions associated with environmental projects.

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II. MILITARY TRAINING AND ALTERNATIVES IN THE CAMP EDWARDS TRAINING AREAS

Necessary Military Training Activities: Sustainable Mission Essential Training

Introduction

The Secretary requested an alternatives analysis that would potentially look for further modifications in the Army military training program at Camp Edwards. This was directed towards the content of the Community Working Group's Master Plan Final Report, which specified that military training activities in the Camp Edwards Training Areas must be necessary and compatible with the resource conditions. The Secretary has suggested that the test of compatibility could occur as a continuing process, but, at this time, only the 'necessary training' should be analyzed and considered.

It was requested that the analyses look at off base training and determine whether a different balance of training at the Massachusetts Military Reservation as compared to other locations was a reasonable alternative. As discussed, all options for using other training sites are already being used. However, all training must be scheduled and organized in accordance with the requirements of the Army training standards, and the availability of those sites for the specific training tasks required of the Massachusetts units.

The concept of training believed to be required for this determination of alternatives is Sustainable, Mission Essential Training, where;

- Sustainable means that no training activities will be allowed that cannot be supported by the environment. The Brundtland Commission (1987) suggested that this mean the activity meets the needs of the present, does so "without compromising the ability of future generations to meet their own needs".

- Mission Essential Training are the required exercises necessary for each soldier to be prepared for their particular mission.

The proponent intends to implement the environmental management programs in accordance with the Environmental Performance Standards to ensure the sustainability of the activities, and the proponent intends to continue its training program to ensure ready and prepared units. However, we must start with a discussion of the basic reasons for military training and how those requirements translate into the necessary tasks that each soldier and unit must learn. Consequently, the following discussion starts with the broader training issues and requirements, which lead up to the required training at Camp Edwards.

PART 1. MAJOR ISSUES FOR MILITARY TRAINING

Before discussing the alternatives, the basis for determining the military training programs are listed to provide a sense of the structure that leads to these training activities and those state National Guard readiness requirements that subsequently lead to the training needed to take place at Camp Edwards. Some major concepts impacting the scope and nature of military training have to be considered in this analysis:

- Recent national policies calling for assistance in world actions are challenging the Army National Guard to train for a high level of readiness. The training activities which the Army National Guard and other military units take part in at Camp Edwards are *part of a national system ensuring the country's soldiers are prepared for their individual mission within a collective force*.

- Because of increased resource competition, training expenditures must be maximized. Because available land for military training is limited, scheduling conflicts and environmental concerns, and the available space must be matched first with the needs of the collective forces and secondly with the needs of the units. Units must work up through a series of training scenarios into ever-larger areas with greater coordination between different units – the concept of Collective Training. *Camp Edwards is an important, but interim step in the validation of fully trained soldiers and units towards collective forces.*

- While training, *the commanders*, *soldiers and their trainers must always be responsible for protecting the environment they train in and the natural resource management structure must be in place to improve those natural environments* regardless of where the training activity is located. The command structure of the Department of Defense is committed to this requirement. The Army mandates that environmental awareness is part of the commander's training program.

- In a highly unusual action, *the Army National Guard has ceased performing significant components of the previously allowed training activities at Camp Edwards*; the most significant of which was the elimination of live artillery and mortar fire into the Impact Area. In a follow up action, the Army National Guard also initiated investigations and remediation plans for the resources affected by the past artillery and mortar fire.

- Simulation in itself, is an excellent, cost effective training "tool," however, simulation can never replace the requirement for our soldiers to train collectively on the ground to meet the required standard. Realism in training can not be simulated

- Army regulations specify that the training lands at Camp Edwards must be managed in an environmentally sound way that maintains, protects, and improves environmental quality, and ensures *no net loss of training capabilities*. The Army standards focus on

what environmental programs are needed to maintain the land resources used for training.

Training Requirements

Training prepares soldiers, leaders and units to fight and win in combat – the Army's basic mission. Major aspects of the training mission are as follows:

- Soldiers must be proficient in their special function. This is the first focus of training the individual.
- Each soldier must act as part of the whole combat group and know his/her role in the total organization of military forces. This is the second focus of training;and is called Collective Training; it requires working together, combining skills, and providing leadership
- Manuals are prepared for each step of training and evaluation of the trainee. Specific steps are listed for each training activity and the soldier is graded on the ability to follow all of the steps.
- For National Guard soldiers, the tasks must be learned at Basic training and then during annual and weekend training periods.
- The Army recognizes its soldiers do not have the time or resources to be proficient in all tasks.
- Training requirements each unit must complete before becoming combat-ready are called the Mission Essential Tasks.
- The end result is to have combat-ready troops.

The term Mission Essential Tasks stems from the concept that each unit has a different but related mission, and must perform certain tasks essential to forming a collective force. Those tasks that each unit must learn and become proficient at are the Mission Essential

Task List. Each unit is given its list and must follow a training program to become proficient and ready to perform those tasks in concert with other units (the Collective Training concept).

Another term used in training program development is the Army Training and Evaluation Program. This is the measuring tool to determine whether units are prepared to participate in the Collective Training activities at even-higher levels; i.e., moving from Local Training Areas up to the Combat Training Centers.

The concept is one of readiness but also of efficiency in training expenditures. Units that do not match up to the evaluation standards are not provided opportunities to go to the larger training areas and centers. In addition, not meeting the Army Training Evaluation Program standards is cause to consider whether federal funding will be reduced, and the force structure should be changed.

Training Lands

There are two general aspects to military training generally that need to be expressed to understand their importance and the hierarchy of all training areas to understand how Camp Edwards fits into the military training structure as a key resource for ensuring prepared and ready soldiers.

Availability

Military training lands are special areas committed for the specified purpose of training soldiers. Consequently, they are an unusual and unique type of land use. In fact, the uniqueness underlines their limited availability. “The most difficult problem faced by Army training planners and training complex managers is the lack of adequate land area to conduct realistic training…” (source: Army Training Circular 25-1). Available land for training has not increased significantly since World War II, while new weapons systems and maneuver requirements have increased the need for additional training lands.

Training Land Types

Training lands are categorized in accordance with their capabilities for realistic, collective maneuver, and weapons training. There are three basic types of areas:

Armories and Local Training Areas. Armories are used much like classrooms in basic soldier skills training. Local Training Areas are normally located near the armories. They allow individual and basic soldier skills training and limited collective training exercises with small units, with minimal impact on resources for travel to and from the location. However, over familiarization with the local training land detracts from the needed training experience. Armories and their nearby Local Training Areas can be found throughout the State.

Major Training Areas. Major Training Areas have enough area to allow collective and combined arms training, and can support a wide number of unit types and exercises. The unit sizes can be platoon through to brigade. These facilities allow training that cannot be accommodated at the Local Training Areas. The greater potential for training experience allows greater resources to be spent on travel. Small arms weapons firing and qualification takes place at these areas. Examples of Major Training Areas are Devens Reserve Forces Training Area and Camp Edwards.

Combat Training Centers There are four Combat Training Centers: National Training Center at Fort Irwin, California; Hohensfeld Training Area in Germany; Joint Readiness Training Center at Fort Polk, Louisiana; and Fort Leavenworth in Kansas. These are large areas for complex training scenarios. As an example, the Hohensfeld maneuver training area is 39,000 acres in size, while Fort Irwin is over 100,000 acres.

The graphics on the next pages, Figure II-1 and II-2 illustrate the intensity of use and the level of soldier preparedness as they move through the stages of training, and the evolution of Camp Edwards over time. However, in all cases, the greater the preparedness, the more significant and expansive the training experience.

Figure II-1 Training Area Options

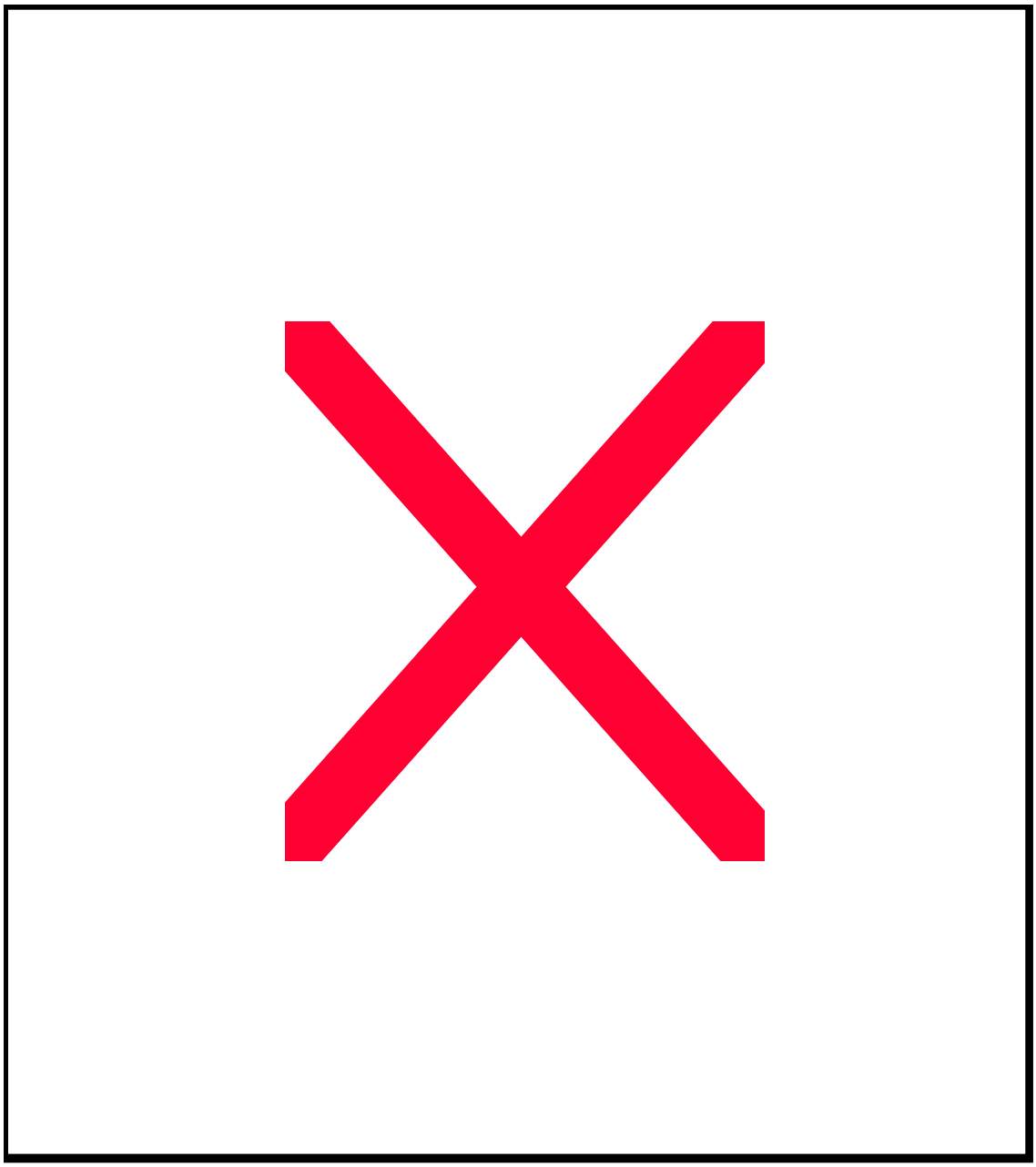
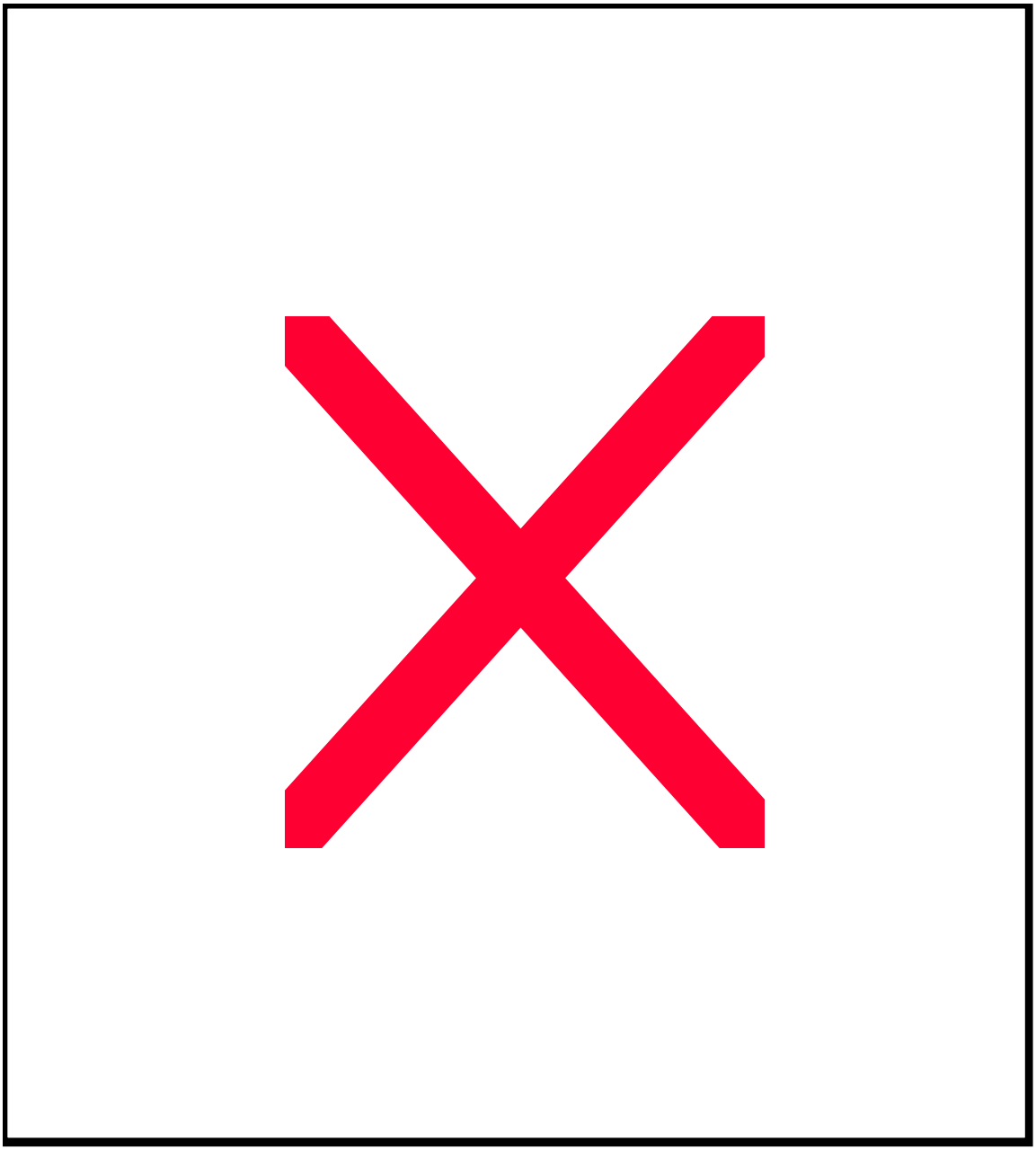


Figure II-2: Training Area Options



Notes on Travel Distance and Time

The resources and time available to travel to training locations is of high importance when considering training programs and use of training money for Reserve and National Guard soldiers. These units are not stationed at a particular location until deployment and mobilization. Consequently, maintaining readiness means considering the costs associated with travel both in terms of available money and of training time.

National Guard units are typically dispersed over an area of approximately 150 to 300 miles in radius. For these soldiers, the average travel distance to a Local Training Area is 40 miles and to a Major Training Area is 150 miles. As noted in the Draft Area-wide Environmental Impact Report, Fort Dix is located 324 miles away from the Massachusetts Military Reservation in New Jersey, and Fort Drum is located 410 miles away in upstate New York. Consequently, these significantly exceed the average travel distance and so are significantly more costly options for training.

Camp Edwards is approximately 145 miles from Springfield. This puts three-quarters of the state within a reasonable distance to the training areas. This also provides reasonable access to other New England states: Connecticut, Rhode Island and New Hampshire. As also noted this places National Guardsmen in the western part of the state closer to Fort Dix and Fort Drum. As a consequence, these areas are used by those soldiers more frequently than those closer to Camp Edwards.

Training Task, Land and Scheduling Requirements

The Army specifies certain areas and schedules for each training unit type and task. This includes the area requirements to distribute the soldiers and equipment, the number of repetitions at the task needed to become proficient, and the number of days required for each repetition.

Examples of the way the requirements are structured are as follows:

- A Field Artillery Battery, which tows howitzers to gun positions and fires them, is listed as having the Mission Essential Tasks task of 'Providing Fire Support.' Nine units, or howitzer crews, are recommended for participating in the task. The task must be performed four different times over a period of eight days which allows two days per training task. An area of 3 kilometers by 16 kilometers is recommended where the training area allows it. The Army Training and Evaluation Program standard for proficiency culminates in a collective live fire exercise as listed in Army Training and Evaluation Program 06-115-MTP bulletin as a means to grade each repetition.

- A Light Infantry Rifle Company has a longer list of required training tasks including different maneuvers: Movement to Contact, Defense, Attack, Raid, Ambush, Reconnaissance, and Security. The number of units involved is 27, while the recommended areas required for each task varies from 4-kilometer square to larger areas

of up to 7 by 10 kilometers. Each task must be repeated four times and requires that two days be set aside for completion. The Army Training and Evaluation Program standard, listed in the Army's manual No. 7-10-MTP, describes the standards for grading the attempts which culminate in a collective live fire exercise.

In addition, safety and operational standards require that training activities occur under specific criteria and physical constraints. Army Range Safety regulations (Pamphlet 385-63) define standards to reduce hazards to predetermined levels. Range Safety Officers must review and comment on all risk assessments regarding policies, operations, and training activities. They must also maintain records and approve, control, and monitor all personnel accessing the installation. Unit commanders must ensure compliance with training manuals, field manuals, range regulations, and applicable Standard Operating Procedures.

Based on these standards, training areas are scheduled to meet the requirements specified for each unit and training task. As a result, the coordination of units for collective training at certain locations and specified times is a complex task.

PART 2. STATUS OF CAMP EDWARDS

Camp Edwards is considered one of the Major Training Areas in terms of the capacity of its training areas, but of lesser importance on account of the limitations placed on any live artillery and mortar fire. As a result of these limitations, the Camp Edwards facility cannot be used for meeting all of the basic Army mission tasks, which are important parts of a commander's total training strategy, and is not as large as the National Combat Training Centers.

List of Military Training Activities at Camp Edwards

As described in the Draft Area-wide Environmental Impact Report, training activities can be grouped generally into three categories:

- Weapons Systems
- Maneuvering
- Support

Weapons Systems: Small Arms Training

The weapons used in combat by a soldier are primarily small arms consisting of rifles, pistols, and machine guns. Field artillery units provide support for infantry operations at the battalion level. Small arms training is designed to train a soldier to be "qualified" in the use and maintenance of his/her assigned weapon. Infantry troops are required to qualify on their assigned weapon annually. All other soldiers must qualify on their assigned weapon biannually. Qualification must take place on a range designated for this purpose. Small arms training at the Massachusetts Military Reservation presently takes place on up to 15

different ranges surrounding the Impact Area in the northern portion of the installation. Only plastic, frangible, or "green" ammunition is allowed on these ranges.

Photo: Sierra Range

Weapons Systems: Training Simulators

Simulations provide realistic, hands-on, performance-oriented training environments. Existing simulators include the Fire Support Combined Arms Tactical Trainer, the Engagement Skills Trainer, and the Fire Arms Training System. These are all computer-based virtual reality training devices that enhance training. They include small arms and field artillery simulators and simulations.

Photo: Artillery Simulator

Maneuvering

The majority of maneuver training exercises take place dismounted (on foot) and typically involve the movement of company-size units of foot soldiers moving through vegetation, firing blank ammunition, and probably using the Multiple Integrated Laser Engagement Systems. Maneuvering training also involves the coordinated movement of increasingly larger groups of individuals with planned objectives to show the effectiveness and success of the training activity. Light infantry companies are not usually assigned vehicles.

However, vehicles are used to transport the soldiers or equipment over the established road network, using the road shoulders, ranges and bivouacs for parking.

Photo: Soldiers preparing MILES

Maneuvering also entails movement of field artillery and driver training. These training tasks require the use of different vehicles and towed equipment types as well as different roads and road conditions to enable the drivers to become fully confident in the use of their vehicle.

Support Units

As the name implies, Support Units provide the support to other operations and units. These include truck companies, intelligence, aviation, vehicle maintenance, supply, chemical defense, and military police. These units must also train collectively to ensure their ability to supply and support the other types of units.

Description of Maneuver and Support Unit Training Activities

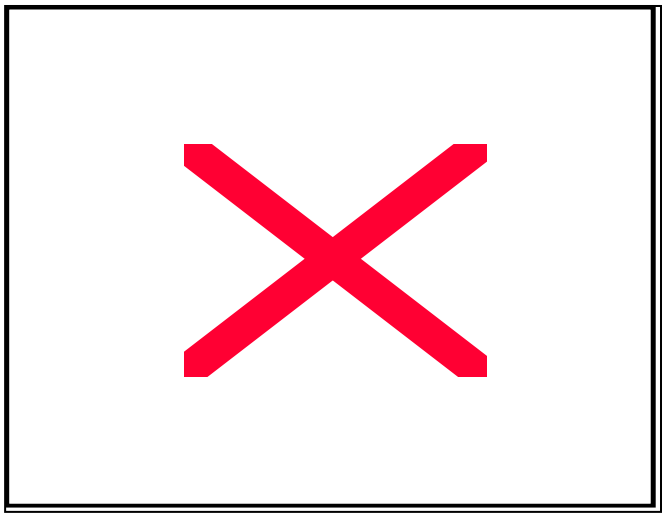
These latter two general groups of training activities are of most interest to this process as they largely involve the field training areas in Camp Edwards. Note that the weapons qualification also can utilize the Camp Edwards ranges. The maneuver and support training activities currently being conducted at Camp Edwards include the following previously shown list of activities. Originally listed as twenty-six different activities in the Draft Area-wide Environmental Impact Report, these have been rearranged and grouped according to the military training protocol.

Categories are Mobility, Counter mobility, Survivability, Sustainability, Individual Soldier tasks, and training facilities such as found in the Cantonment Area. Following are the expanded descriptions.

Mobility Also called Maneuver involves training exercises that move large and small groups in a highly coordinated fashion towards a location or an event. They include the following:

Assemble
Tactical convoy
Foot patrols
Tactical formations
Vehicle patrols
Helicopter operations
Obstacle clearing
Mortar firing [banned at Camp Edwards]
Artillery firing [banned at Camp Edwards]

Photo: Helicopter maneuver



The Draft Area-wide Environmental Impact Report describes these types of tasks:

Administrative Assembly Areas: Administrative assembly areas are those locations where troops arriving at the installation at the beginning of a training period reorient their organizational structure from administrative mode (convoy organization) to tactical mode (training organization). Training objectives are identified, mission statements are conveyed, equipment assembled, tactical units are formed, and troops are moved into the field. Administrative assembly areas are restricted to the 3500 and 3600 areas on Turpentine Road and Connery Avenue, respectively. Area B-10 is the only other location designated as an administrative assembly area.

Light Infantry Maneuver: Soldiers on foot conduct exercises such as patrolling, movement to contact, actions at an objective, reaction to an ambush, and defense of a position. These activities can be conducted in all training zones. The use of blank ammunition, Multiple

Integrated Laser Engagement Systems, and coordination with other units are all used to enhance the training experience.

Tactical Assembly Areas: Tactical assembly areas are those locations where tactical units can reassemble in the field to be redeployed for a new mission or to a new training location. Tactical assembly areas are typically much more compact than administrative assembly areas and are located in a number of locations in the maneuver training area. The 'sand table' sketch mapping is a form of communication learned at these sites.

Mechanized Infantry Maneuver (mounted): Soldiers mounted in Armored Personnel Carriers conducting such exercises as movement to a site for an engagement task along designated roads.

Mechanized Infantry Maneuver (dismounted): Soldiers from Armored Personnel Carriers dismount the vehicles to conduct "on foot" light infantry maneuvers.

Infantry Battle Course: Training on this course consists of small groups of foot soldiers advancing on an objective under realistic combat conditions. Ammunition on the course is restricted to blank rounds and the use of the Multiple Integrated Laser Engagement System. As soldiers are further trained, the use of approved green or plastic ammunition may be allowed by Range Control.

Military Police Training: Soldiers conduct military police training activities in traffic/circulation control, convoy organization, and base camp security in all areas. Military police training that takes place in wheeled vehicles is restricted to the established road and trail network.

Air Mobile Operations Training: Aviation (helicopter) units conduct troop insertion and pickup operations training. These operations are conducted only in areas where level terrain and open vegetation permit. These areas can also be used for emergency evacuation of personnel injured during training. *Helicopter Landing Zone*. They are open, level areas designated for helicopters to land and "park" for extended periods. Designated helicopter landing zones are located in training areas BA-3, BA-4, B-9, IBC, and the 3600 area. These areas can also be used for emergency evacuation of personnel injured during training.

Field Artillery Training: No live firing of artillery or mortars is conducted in Camp Edwards or is anticipated in the future. Soldiers conducting field artillery training with towed weapons in the northern training areas are restricted to reconnaissance, site selection, and occupation of position training. Gunnery crews are also field drilled in artillery displacement exercises which simulate situations where part of a gun battery is moved to a new location while remaining gun crews continue to provide fire support for infantry maneuver units. Reconnaissance, site selection, and occupation of position /displacement training is restricted to existing surveyed Gun Positions.

Survivability These are the activities requiring soldiers to maintain a position and prepare for any potential condition or response. They include movement through varied terrain while wearing Gas Mask Confidence/Chemical Protective equipment and maintaining communications with others in separate locations. The list of activities can be summarized as follows:

- Conduct a tactical bivouac
- Place a gun or create a fighting position
- Camouflage the position
- Operate in an Gas Mask Confidence environment

The Draft Area-wide Environmental Impact Report describes these types of tasks:

Bivouac Operations Training: Soldiers in training operations can bivouac (camp) in the training areas to learn how to sustain themselves in a potentially hostile location. Engineers may bring pieces of their equipment to the bivouac site, while infantry only use what they carry in on their back.

Individual Soldier Fighting Position Training: Individual fighting position training (foxholes) can be conducted in all training areas but only when specifically authorized by the Integrated Training Area Management program officer.

Tactical Operations Center Training): Establishment of field headquarters for tactical command and control of units on training maneuvers. Tactical Operations Centers are typically established in the tactical training areas and subject to the rotation schedule established in the Integrated Training Area Management program plans.

Individual Soldiers Tasks soldiers must learn certain techniques that allow them to function with a unit. Refererd to as Common Task Training in the Draft Area-wide Environmental Impact Report, these activities build critical individual skills to help the soldier survive in a hostile or combat environment. These skills include map reading and terrain orientation, camouflage training, ambush defense training, chemical/biological equipment maintenance and first aid. Some of the Individual Soldier Common Task Training activities, such as first aid, do not require the Camp Edwards training areas. But movement through unusual terrain while wearing Gas Mask Confidence protective equipment and maintaining communications with others in separate locations is perfectly suited by the training area. The other training activities include the following:

- Learning weapons, or weapons qualification
- Land navigation
- First aid
- Gas Mask Confidence familiarization, including use of both the protective equipment and the Gas Mask Confidence (riot gas) chamber
- Driving lessons using military vehicles
- Communications
- Leading troops

The Draft Area-wide Environmental Impact Report describes these types of tasks:

Land Navigation Training: Soldiers on foot conduct operations designed to train soldiers in navigating with maps and compasses over unfamiliar terrain to reach a specified objective. Land navigation training is permitted in any training area and on the three established (surveyed) land navigation courses. Many civilian and Reserve Officers Training Corps groups also use these courses.

Individual Chemical Confidence Training: Small groups of soldiers are exposed to riot control gas (tear gas) in a controlled environment while protected by gas masks. Training operation is intended to instill in the soldier confidence in his/her gas protection equipment and verify that it operates correctly. Law enforcement agencies also take part in this type of training and all such activities are restricted to designated enclosed shelters in Training Area A-4.

Driver Training: Training of drivers in the safe operation of wheeled vehicles is conducted in all training areas on the established road and trail network. Training of drivers in the safe operation of tracked vehicles is conducted on established trails in the maneuver training areas.

Counter Mobility and Sustainability are two of the training categories that are requirements for Engineers and Support Units' training. Counter mobility is the act of stopping the opposing forces from moving towards a designated objective. Sustainability refers to the actions necessary to support and sustain troops.

Counter Mobility

- Ambush
- Defend a position/area
- Place an obstacle
- Demolitions [banned at Camp Edwards]

Sustainability / Sustainment Engineering

- Supply forward operations
- Command and control
- Maintenance of equipment
- Maintenance of roads
- Maintenance of fire breaks
- Erosion control
- Medical aid
- Water supply
- Refueling

The Draft Area-wide Environmental Impact Report describes these types of tasks:

Engineer Training: Engineer units using construction equipment, conduct various types of offensive and defensive engineering training such as mobility, counter-mobility, and survivability exercises. *Mobility* training is conducted on the roads and trails of the maneuver area to practice removing obstacles and creating paths through simulated minefields. *Countermobility* training is also conducted on the roads and trails to practice installing defensive obstacles to limit the mobility of an opponent. The engineer training Area BA-1 (the gravel pit) and the sand pit near the power lines in Area B-11 are used for the construction of more complex obstacles and tank ditches. *Survivability* training, which is the digging of gun emplacements and vehicle protective positions, is also conducted in previously disturbed sections of Area BA-1.

Sustainment Engineering Projects: Engineer units or soldiers perform maintenance or rehabilitation work such as environmental repairs, road and trail maintenance, erosion control and fire break maintenance. Sustainment engineering projects with the necessary equipment are conducted in all areas of Camp Edwards. Many of the Integrated Training Area Management program rehabilitation and maintenance projects are conducted under these exercises.

Unit Training Equipment Site: The Unit Training Equipment facility allows National Guard units to preposition tactical vehicles and equipment that will be utilized during training exercises in Camp Edwards. Vehicles are stored on paved surfaces and above-operator-level maintenance is performed at the Unit Training Equipment facility. Guard units pick up their vehicles and equipment at the beginning of the training period and return them to the facility at the end of the exercises.

Water Storage and Distribution Training: Soldiers conduct field training with water storage and distribution equipment. Water storage and distribution training is conducted in training areas BA-1, BA-2, BA-3, BA-4 and BA-6.

POL Disbursing Area: The refueling of vehicles and the disbursement of all other petroleum products and lubricants is restricted to concrete pads in the 3600 area and the established fuel point near the existing Unit Training Equipment Site facility.

Combat Service Support: Combat Service Support operations are functions such as food service, rearming, refueling, emergency and operator-level maintenance, medical treatment and casualty evacuation which support combat troops in the field. Vehicle refueling operations are prohibited in all service support areas except at concrete pads in the 3600 area and the established post fuel point near the existing Unit Training Equipment Site facility. Generator refueling operations are restricted to service support areas only.

Target Acquisition Battery Radar: Specialty radar units conduct training exercises that track the trajectory of incoming artillery rounds to determine the location of the opposing

force gun battery. Coordinates of the target battery are transmitted fire control centers to direct counterfire missions.

Air Traffic Control/Radar: Air traffic control units and any support unit with radar capability conduct field training exercises with their equipment controlling and tracking army aviation.

Meteorological Section Training: Artillery support training operation where atmospheric conditions are studied to ascertain the weather impact (wind speed, air pressure) on the trajectory of artillery rounds. A typical action is the release and tracking of a weather balloon.

Chemical Unit Training / Reconnaissance and Decontamination: The soldiers must train in the donning and removal of protective clothing and gas masks, and in performing all the other tasks normally performed with or without the equipment.

This general list of training activities was used to coordinate the location of areas with activities. There are more specific lists of training within these activities. As an example, the Military Police Mission Essential Task List tasks include tasks such as Area Security, Battlefield Circulation Control, and Enemy Prisoner of War Operations. The list of tasks for the Massachusetts National Guard Units is included in the Appendices.

Restricted Training Activities

As noted above, several of the listed activities cannot take place at Camp Edwards. The management of military training activities at Camp Edwards is accomplished through a series of programs, restrictions, regulations, and operating procedures. The training tasks which have been significantly restricted are of the greatest importance as a result of their impact on the military training mission. These impact the training mission requirements but also reduce the potential resource impact and maintenance requirements.

The field training activities under restrictions or prohibitions are as follows:

- No live weapon fire outside of established ranges. All small arms weapons fire only blank ammunition in areas outside of the ranges and use the Multiple Integrated Laser Engagement System training simulators, as appropriate.

- The only ammunition allowed will be plastic, frangible or “green”.

- Banned military training activities are as follows:
    - Artillery live fire
    - Mortar live fire
    - Demolition live fire training
    - Artillery bag burning
    - Digging, deforestation, or vegetative clearing without Massachusetts National Guard Natural Resource Office confirmation

- Chemical Training outside Gas Mask Confidence bunkers
- Field latrines
- Vehicle refueling outside designated locations
- Field maintenance above operator level

Training Opportunities by Unit at Camp Edwards

Regardless of the restrictions, there are still significant training activities that occur at Camp Edwards. The types of units training at Camp Edwards, even under the capacity constraints that result from the restrictions include: Infantry, Military Police, Quartermaster, Transportation, Engineers, Chemical and Field Artillery units. After applying the restrictions on training as listed above, the training options available at Camp Edwards are as follows:

- Infantry units can conduct all missions except live missile and mortar fire. The limitation on using pyrotechnics restricts full training at all Mission Essential Task List Tasks. Specific types of collective training are available at the Infantry Battle Course that can also handle squad and platoon level fire and maneuver exercises.

- Infantry units can use the Engagement Skills Trainer to train in a variety of taped scenarios using M9 pistols, M16A2 rifles, M60 machine gun, M249 Squad Automatic weapons (SAW's), M203 Grenade Launcher, M2 .50 cal machine gun, and an M252 81mm mortar trainer.

- Combat Engineers can perform 80 percent of their Mission Essential Task List Tasks. The restriction on demolition operations impact tasks involving Breaching operations (MTP tasks 05-2-0114, 05-24-0201, and 05-4-0202).

- Chemical Company can perform all of the tasks on the Mission Essential Task List except for Conduct of Smoke operations, which involves the use of fog oil and smoke pots (the same as typically used for municipal fire department training).

- Quartermaster can perform all of the Mission Essential Task List Tasks.

- Military Police can perform all of their Mission Essential Task List Tasks with the exception of the use of pyrotechnics.

- Field Artillery units can conduct all missions except live fire. Most mission activities involve Reconnaissance, Select, and Occupy Position, which is the movement and set up of the artillery and equipment for coordinated firing with other units.

- Field Artillery can also train as a team using the GUARDFIST II, Forward Observer Trainer, Howitzer Crew trainers (M109 SP Howitzer), and the Collective Training Control Subsystem, which is used for Fire Direction.

- Engineer Units can perform all mission tasks for combat and construction except demolition operations.

- The Combat Support and Service Support units can perform most Mission Essential Task List tasks. Actual water purification training is conducted outside of Camp Edwards.

- The small arms ranges are available in accordance with the 'green' ammunition that is available. This allows M-16 series rifles and M249 Squad Automatic weapons to be used. Plastic ammunition is used with the .50 cal machine guns.

- Aviation training is available for pilots to perform Air Assault Operations and supporting actions for other units.

Supporting facilities at Camp Edwards that can provide a full range of training options include the following:

- Multiple Integrated Laser Engagement System (Multiple Integrated Laser Engagement System) which can be used in simulations for units practicing against each other.

- The Gas Mask Confidence chamber to allow soldiers to gain confidence in their protective equipment.

- Training courses include the Rappel Tower, Leadership Reaction Course, Obstacle Course, Physical Fitness Trainer, and three Land Navigation courses.

- Driver Training is restricted to the existing roads, but those roads provide a variety of conditions, improved and unimproved, in Camp Edwards.

- Railroad train-loading operations in the Cantonment Area for longer movements by rail.

- Military Operations in Urban Terrain type operations within certain existing buildings also in the Cantonment area.

The tasks listed above are summaries and therefore not fully inclusive of the entire Mission Essential Task List tasks listed for Massachusetts units. That listing of the Massachusetts units and their Mission Essential Task List Tasks are included later in this Chapter.

Camp Edwards Training Acreage

The following table lists the uses and total area of the lands within the Massachusetts Military Reservation, outside the Cantonment area.

Table II. 1: Acreage for Field Training

User	*Acreage*
TOTAL AREA	**14,398**
United States Air Force Pave Paws	127
Town of Bourne	9
United States Coast Guard	562
Commonwealth Electric Company	7
Wastewater treatment beds	28
Army National Guard	**13,665**

Detail of Army National Guard lands	
Impact area	2,210
Firing range safety fans	2,806
Power lines	35
Land for three new water supply wells	284
Roads	247
Wetlands	247
Secure areas (off limits)	721
Remaining field training area	**7,115**

Photo: 2,200 acre Impact Area

Actual Use of Camp Edwards

As reported in the Draft Area-wide Environmental Impact Report, Camp Edwards sees variations through the year on the number of soldiers and units, and the number of civilians using the facilities and training areas. The numbers of individuals using the Camp Edwards training areas are kept in records of the Range Control officer who is responsible for overseeing use of the training areas located in the northern portion of Camp Edwards. The numbers of users, listed on a monthly basis by category of user, are shown on records extending back to the last quarter of 1993 as provided by Range Control. Over this last year however, a better reporting system has been developed. The system allows a database of users, locations, activities and equipment used at each location. This data not only provides a better accumulation of training data, it also is an invaluable tool for the Environmental Manager in implementation of the Integrated Training Area Management Program. This provides the information to help make decisions on rotations of areas, need for rehabilitation, and areas to focus on for further study.

Seasonal Use

The data for the last year from the new system is summarized for users by month in *Table II. 2: Monthly Use.*

Table: Monthly Use

Year	Month	No. of Users	
1999	September	3,466	
	October	3,715	
	November	1,733	
	December	84	
2000	January	54	
	February	495	
	March	395	
	April	1,341	
	May	1,659	
	June	3,297	
	July	833	
	August	1,734	
	September	835	[partial month]
	Total	19,641	

Accordingly, the type of users varies with the season, where the two week Annual Training (AT) occurs within the summer months, the Inactive Duty Training (IDT weekend) occurs most frequently in the spring and fall as shown in the next table.

Table II. 3: Comparison of IDT and AT Events at Camp Edwards

	Inactive Duty IDT		Annual Training	
	Units	Areas	Units	Areas
Jan	1	3		
Feb	7	21		
March	9	20		
April	13	49		
May	16	32		
June	4	8	10	21
July	2	2	2	43
August	4	20	2	11
September	9	20		

Notes to Table *Comparison of IDT and AT Events at Camp Edwards*
Units = number of different units training at Camp Edwards
Areas = number of different areas of Camp Edwards used during the training
IDT = Inactive Duty (weekend) Training
AT = Annual Training

Some discrepancies are assumed from the relative newness of the reporting methodology. However, the following additional analysis is now possible with the information generated in these reporting forms.

Training Area Detail

The following table, Use of Field Training Area, lists the field training areas along with the activities that occurred in each one of those areas. The determination of usage impact is made by the Camp Edwards Environmental Office and Range Control in accordance with the Integrated Training Area Management program standards and an on-the-ground understanding of the conditions at the site.

Table II. 4: Use of Field Training Areas

Field Training Areas

	No. of Users	No. of Units	Days of Use	Months of Use	Activities
AA	1613	21	41	12	Preparation, Convoy and Driver Training
BA-2	18	2	1	3	Maneuver, Boy Scouts
3600	8	2	4	4	Refueling, Helicopter Extraction
BA-3	646	50	25	11	Maneuver, Engineering
A-1	184	8	13	9	Bivouac, Land Navigation
A-2	365	15	31	9	Maneuver, Bivouac, Land Navigation
BA-1	594	12	21	9	Maneuver, Bivouac
A-3	115	7	15	6	Maneuver, Battle Drill, Bivouac
A-4	84	9	21	7	Maneuver, Battle Drill, Bivouac
NBC	495	14	10	7	Chemical Confidence
A-5	336	14	43	10	Maneuver, Battle Drill, Bivouac, Land Navigation
BA-4	810	18	61	12	Maneuver, Battle Drill, Bivouac, Land Navigation, Boy Scouts
A-6	503	12	39	10	Maneuver, Battle Drill, Bivouac, Land Navigation
B-7	490	8	31	8	Maneuver, Battle Drill
B-8	805	9	35	11	Maneuver, Battle Drill, Bivouac
B-9	833	17	54	12	Maneuver, Battle Drill, Bivouac, Pilot Survival
B-10	228	11	36	8	Maneuver, Battle Drill, Land Navigation
B-11	497	11	32	11	Maneuver, Battle Drill, Bivouac, Land Navigation, Engineering
B-12	410	4	23	5	Maneuver, Battle Drill, Bivouac, Land Navigation
C-13	470	4	19	5	Maneuver, Battle Drill
C-14	506	9	27	8	Maneuver, Battle Drill, Bivouac
C-15	565	10	37	7	Maneuver, Battle Drill, Bivouac
C-16	150	9	30	7	Maneuver, Battle Drill, Bivouac
BA-6	215	4	12	6	Maneuver, Bivouac
Totals	9327	259	620		

Note: See Figure II-2 map for location of alphanumeric training area designation.

Table II. 5: Use of Field Training Areas, continued

Land Navigation Courses

	No. of Users	No. of Units	Days of Use	Months of Use
Totals	3117	36	78	12

Gun Positions

	No. of Users	No. of Units	Days of Use	Months of Use
GP-2	53	3	13	7
GP-5	45	2	5	5
GP-6	200	9	19	8
GP-7	152	4	11	7
GP-8	190	4	14	7
GP-9	236	11	29	11
GP-10	283	10	23	6
GP-11	212	7	15	8
GP-12	63	3	8	5
GP-14	116	4	9	9
GP-16	116	4	9	9
GP-17	30	2	12	4
GP-18	35	2	12	4
GP-20	N/A	2	13	2
GP-24	N/A	2	2	6
Totals	1731	69	194	

Mortar Positions

	No. of Users	No. of Units	Days of Use	Months of Use
MP-1	N/A	1	4	2
MP-2	N/A	2	9	5
MP-3	N/A	1	1	1
MP-4	N/A	1	8	1
Totals		5	22	

Table II-5: Use of Field Training Areas, continued

Observation Points

	No. of Users	No. of Units	Days of Use	Months of Use
OP-1	20	1	2	1
OP-2	20	1	2	1
OP-5	10	1	3	1
OP-6	10	1	3	1
OP-7	10	11	3	1
OP-10	54	2	3	2
Totals	124	17	16	

Cantonment Area

	No. of Users	No. of Units	Days of Use	Months of Use	Notes
1100 Area	430	7	11	4	Civilian
Urban Training	178	4	7	1	
Physical Train	1136	20	17	9	
Motorcycle	1169	1	87	8	Civilian
Leadership Reaction	1696	62	65	10	Civilian and Military
Obstacle Course	592	12	23	8	Civilian and Military
Rappel Tower	1272	27	38	9	Civilian and Military
Classrooms	40	2	2	1	Civilian and Military
Totals	6513	29	250		

Simulators

	No. of Users	No. of Units	Days of Use	Months of Use	Notes
Howitzer Field Artillery	192	7	13	4	
	1119	18	39	12	
Small Arms	867	32	28	12	Civilian and Military
Totals	2178	57	80		

PART 3. NECESSARY TRAINING: DEFINED

Current military training in the Camp Edwards Training Areas includes all of the activities allowed under restrictions by legal requirement or policy decision of the Massachusetts National Guard. A more complete list of training requirements has been developed for this Final Area-wide Environmental Impact Report.

Training activities are defined as *necessary* for completion at Camp Edwards when the training activities meet the following criteria:

- Those tasks listed for each unit participating as Mission Essential Task List (essential for their role in combat) tasks.

- Those tasks which require collective training; i.e., require coordination with other units or require a large number of soldiers to properly complete the task.

- Those tasks cannot be scheduled at another training location because of the following constraints:
  - Scheduling and availability of an appropriate time slot at other military facilities
  - Travel costs
  - Time availability for soldiers
  - Level of preparedness of the unit (e.g., Mission training plan and army training evaluation Program rating)

- Camp Edwards provides the type and range of terrain and cover type needed to provide this particular training experience.

- Camp Edwards provides the infrastructure or improvements such as simulators and simulations, pop-up targets, surveyed gun positions and navigation courses, obstacle courses, rappel tower, etc., necessary for certain training activities.

Sustainable Training: Necessary Environmental Management

Under Federal law and Army regulation, no military training lands are to be used unless an environmental management plan is also established. Consequently, another necessary training component is the military's environmental management programs which allow the continuation of the training activities without loss or impact to the natural values and conditions of the land. The land within Camp Edwards is managed under the environmental management programs, including the Integrated Natural Resources Management Plan, Integrated Training Area Management program, Groundwater Protection Policy, Range Regulations, and Standard Operating Procedures. This entails the following actions:

- Training areas located and sized to allow for rotation of land areas impacted by the particular training activities.

- Land use restrictions in accordance with the Groundwater Protection Policy (Zone II protection areas).
- Seasonal and other time limitations placed on certain areas to protect biological production.
- Continued inventories for resources and trends.
- Maintenance activities and land rehabilitation projects.
- Access for public and civilian use.

For environmental management at the facility, the Natural Resources Officer for Camp Edwards has set the following near term goals:

- As the Impact Area is reduced in size, the area will be managed for natural resources, accessed from the existing roads.
- The old Unit Training Equipment Site site, when replaced, will be able to provide some additional upland grass habitat.
- For any new facilities, the natural resources considerations will include the uniqueness of the habitat, whether or not the area is used by state-listed species, and the degree of existing disturbance.
- No change in the engineering training sites is to be recommended at this time.

Necessary Training: Massachusetts Units

As with other military units, the different Massachusetts Army National Guard Units also have a list of Mission Essential Tasks with associated Army Training Evaluation Program standards assigned to maintain their readiness. Those tasks are listed in the chart in the Appendices.

Training and Location Options

A summary of the locations for military training as compared to the general list of tasks above follows on the next page as Table II-4, Training Program Requirements and Locations. The purpose of this table is to summarize the importance of Camp Edwards against the other regional and out-of-state options for military training lands. The graphic shows the banned activities, but also denotes the importance of each training area in the universe of training options.

	CAMP EDWARDS 15,000 AC.	5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX

Table II 6: Training Program Requirements and Locations

MASSACHUSETTS ARMY NATIONAL GUARD TRAINING MATRIX

Interpretation of Common Task training by all soldiers of the MNG,
followed by Battalion & Company Units showing their Mission Essential Task List

Locations in which the training activities may take placed

Section 1, Skill Level I Common Task		CAMP EDWARDS 15,000 AC.	5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
	REPORT INFORMATION OF POTENTIAL INTELLIGENCE VALUE	P	S	S	P	P	P	P
COMMUNICATE								
	PERFORM VOICE COMMUNICATIONS	P	P	S	L	P	P	P
NAVIGATE				S	S	P	P	P
	IDENTIFY TOPOGRAPHIC SYMBOLS ON A MILITARY MAP	P	P	S	S	P	P	P
	IDENTIFY TERRAIN FEATURES ON A MAP	P	P	S	S	P	P	P
	DETERMINE THE GRID COORDINATES OF A POINT ON A MILITARY MAP	P	P	S	S	P	P	P
	DETERMINE A MAGNETIC AZIMUTH USING A LENSATIC COMPASS	P	P	S	S	P	P	P
	DETERMINE A LOCATION ON THE GROUND BY TERRAIN ASSOCIATION	P	P	S	S	P	P	P
	MEASURE DISTANCE ON A MAP	P	P	S	S	P	P	P
	ORIENT A MAP TO THE GROUND BY MAP TERRAIN ASSOCIATION	P	P	S	S	P	P	P
	DETERMINE DIRECTION WITHOUT A COMPASS	P	P	S				

		CAMP EDWARDS 15,000 AC.	CAMP EDWARDS 5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
SHOOT, M16A1 or M16A2 Rifle								
	ZERO AN M16A1 RIFLE	P	S			P	P	P
	ENGAGE TARGETS WITH AN M16A1 OR M16A2 RIFLE	P	S			P	P	P
	MAINTAIN AN M16A1 OR M16A2 RIFLE	P	S	P		P	P	P
	PERFORM A FUNCTION CHECK ON AN M16A1 OR M16A2 RIFLE	P	S	P		P	P	P
	LOAD AN M16A1 OR M16A2 RIFLE	P	S			P	P	P
	UNLOAD AN M16A1 OR M16A2 RIFLE	P	S			P	P	P
	CORRECT MALFUNCTIONS OF AN M16A1 OR M16A2 RIFLE	P	S			P	P	P
	ZERO AN M16A2 RIFLE	P	S			P	P	P
SHOOT, M60 Machine Gun								
	LAY AN M60 MACHINE GUN USING FIELD EXPEDIENTS	P	S	L	L	P	P	P
	PREPARE A RANGE CARD FOR AN M60 MACHINE GUN	P		S	S	P	P	P
	MAINTAIN AN M60 MACHINE GUN	P	S	P		P	P	P
	PERFORM A FUNCTION CHECK ON AN M60 MACHINE GUN	P	S	L		P	P	P
	LOAD AN M60 MACHINE GUN	P	S			P	P	P
	UNLOAD AN M60 MACHINE GUN	P	S			P	P	P
	CORRECT MALFUNCTIONS OF AN M60 MACHINE GUN	P	S			P	P	P
	ENGAGE TARGETS WITH AN M60 MACHINE GUN	P	S			P	P	P
SHOOT, Hand Grenades								
	PERFORM SAFETY CHECKS ON HAND GRENADES					P	P	P
	EMPLOY HAND GRENADES					P	P	P
SHOOT, Land Mines								
	EMPLOY AN M18A1 CLAYMORE MINE					P	P	P
	RECOVER AN M18A1 CLAYMORE MINE					P	P	P

		CAMP EDWARDS 15,000 AC.	CAMP EDWARDS 5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
SURVIVE, Techniques								
	PERFORM INDIVIDUAL CAMOUFLAGE	P	S	S	P	P	P	P
	LOCATE MINES BY PROBING	P	S	S	P	P	P	P
	MOVE UNDER DIRECT FIRE	P	S			P	P	P
	MOVE OVER, THROUGH, OR AROUND OBSTACLES (EXCEPT MINEFIELDS)	P	P			P	P	P
	REACT TO INDIRECT FIRE WHILE DISMOUNTED	P				P	P	P
	REACT TO FLARES *[DEPENDENT ON APPROVAL OF PYROTECHNICS]	L			S	P	P	P
	SELECT TEMPORARY FIGHTING POSITIONS	P			S	P	P	P
	CONSTRUCT INDIVIDUAL FIGHTING POSITIONS	P	P	P	P	P	P	P
	CHALLENGE PERSONS ENTERING YOUR AREA	P	P	P	P	P	P	P
	PERFORM SURVEILLANCE WITHOUT THE AID OF ELECTRONIC DEVICES	P	P	P	P	P	P	P
	PRACTICE NOISE, LIGHT, AND LITTER DISCIPLINE	P	P	P	P	P	P	P
	CLEAR A FIELD OF FIRE	L		L	L	L	L	L
	IDENTIFY UNEXPLODED ORDNANCE (UXO) HAZARDS	L	P	P	P	P	P	P
	PERFORM VEHICLE PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)	P	P	P	P	P	P	P
	DRIVE VEHICLE IN A CONVOY	L	P	P	P	P	P	P
	DRIVE VEHICLE WITH OR WITHOUT TRAILER/SEMITRAILER IN BLACKOUT CONDITIONS	P	S			P	P	P
	IMPLEMENT DEFENSIVE PROCEDURES WHEN UNDER ENEMY ATTACK OR AMBUSH IN A TRUCK CONVOY	P	L		L	P	P	P
SURVIVE, Protect Against NBC Attack								
	PROTECT YOURSELF FROM CHEMICAL AND BIOLOGICAL INJURY/ CONTAMINATION USING YOUR M17-SERIES PROTECTIVE MASK WITH HOOD	P	P	P	P	P	P	P

	CAMP EDWARDS 15,000 AC.	CAMP EDWARDS 5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
MAINTAIN YOUR M17-SERIES PROTECTIVE MASK WITH HOOD	P	P	P	P	P	P	P
PROTECT YOURSELF FROM NBC INJURY/CONTAMINATION WHEN DRINKING FROM YOUR CANTEEN WHILE WEARING YOUR PROTECTIVE MASK	P	P	P	P	P	P	P
DECONTAMINATE YOUR SKIN AND PERSONAL EQUIPMENT USING AN M258A1 DECONTAMINATION KIT	P	P	P	P	P	P	P
PROTECT YOURSELF FROM CHEMICAL AND BIOLOGICAL INJURY/ CONTAMINATION WHILE ELIMINATING BODYWASTE WHEN WEARING MOPP4	P	P	P	P	P	P	P
MAINTAIN YOUR M24 OR M25-SERIES PROTECTIVE MASK WITH HOOD	P	P	P	P	P	P	P
PROTECT YOURSELF FROM CHEMICAL AND BIOLOGICAL INJURY/CONTAMINATION USING YOUR M24 OR M25-SERIES PROTECTIVE MASK WITH HOOD	P	P	P	P	P	P	P
IDENTIFY CHEMICAL AGENTS USING M8 DETECTOR PAPER	P	P	P	P	P	P	P
PROTECT YOURSELF FROM NBC INJURY/CONTAMINATION WITH MISSION-ORIENTED PROTECTIVE POSTURE (MOPP) GEAR	P	P	P	P	P	P	P
REACT TO A NUCLEAR HAZARD	P	P	P	P	P	P	P
REACT TO CHEMICAL OR BIOLOGICAL HAZARD/ATTACK	P	P	P	P	P	P	P
DETECT CHEMICAL AGENTS USING M9 DETECTOR PAPER	P	P	P	P	P	P	P
PROTECT YOURSELF FROM NBC INJURY/CONTAMINATION WHEN CHANGING MISSION-ORIENTED PROTECTIVE POSTURE (MOPP) GEAR	P	P	P	P	P	P	P
REPLACE CANISTER ON YOUR M40-SERIES PROTECTIVE MASK	P	P	P	P	P	P	P
PROTECT YOURSELF FROM CHEMICAL AND BIOLOGICAL INJURY/ CONTAMINATION USING YOUR M40-SERIES PROTECTIVE MASK WITH HOOD	P	P	P	P	P	P	P
MAINTAIN YOUR M40-SERIES PROTECTIVE MASK WITH HOOD	P	P	P	P	P	P	P

		CAMP EDWARDS 15,000 AC.	CAMP EDWARDS 5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
	PROTECT YOURSELF FROM CHEMICAL AND BIOLOGICAL INJURY/ CONTAMINATION USING YOUR M42 PROTECTIVE MASK WITH HOOD	P	P	P	P	P	P	P
	DECONTAMINATE YOUR SKIN USING THE M291 SKIN DECONTAMINATING KIT (SDK)	P	P	P	P	P	P	P
	DECONTAMINATE YOUR INDIVIDUAL EQUIPMENT USING THE M295 INDIVIDUAL EQUIPMENT DECONTAMINATION KIT (IEDK)	P	P	P	P	P	P	P
	PROTECT YOURSELF AND OTHERS FROM CHEMICAL AND BIOLOGICAL INJURY/CONTAMINATION BY USING (ENTERING OR EXITING) A COLLECTIVE PROTECTION SHELTER	P	P	P	P	P	P	P
SURVIVE, Give First Aid								
	EVALUATE A CASUALTY	P	P	P	P	P	P	P
	CLEAR AN OBJECT FROM THE THROAT OF A CONSCIOUS CASUALTY	P	P	P	P	P	P	P
	PREVENT SHOCK	P	P	P	P	P	P	P
	GIVE FIRST AID FOR BURNS	P	P	P	P	P	P	P
	GIVE FIRST AID FOR HEAT INJURIES	P	P	P	P	P	P	P
	GIVE FIRST AID FOR FROSTBITE	P	P	P	P	P	P	P
	PUT ON A FIELD OR PRESSURE DRESSING	P	P	P	P	P	P	P
	PUT ON A TOURNIQUET	P	P	P	P	P	P	P
	APPLY A DRESSING TO AN OPEN ABDOMINAL WOUND	P	P	P	P	P	P	P
	APPLY A DRESSING TO AN OPEN CHEST WOUND	P	P	P	P	P	P	P
	ADMINISTER NERVE AGENT ANTIDOTE TO SELF (SELF-AID)	P	P	P	P	P	P	P
	ADMINISTER FIRST AID TO A NERVE AGENT CASUALTY (BUDDY-AID)	P	P	P	P	P	P	P
	APPLY A DRESSING TO AN OPEN HEAD WOUND	P	P	P	P	P	P	P
	SPLINT A SUSPECTED FRACTURE	P	P	P	P	P	P	P
	TRANSPORT A CASUALTY USING A ONE-MAN CARRY	P	P	P	P	P	P	P
	TRANSPORT A CASUALTY USING A TWO-MAN CARRY OR AN IMPROVISED LITTER	P	P	P	P	P	P	P

		CAMP EDWARDS 15,000 AC.	CAMP EDWARDS 5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
	PERFORM MOUTH-TO-MOUTH RESUSCITATION	P	P	P	P	P	P	P
CUSTOMS AND LAWS OF WAR								
	CONDUCT COMBAT OPERATIONS ACCORDING TO THE LAW OF WAR	P	P	P	P	P	P	P
HANDLE REMAINS								
	PERFORM MORTUARY AFFAIRS OPERATIONS	P	P	P	P	P	P	P
Section 2, Skill Level II Common Task								
COMMUNICATE								
	USE AN AUTOMATED SIGNAL OPERATION INSTRUCTION (SOI)	P	P	P	P	P	P	P
	REPORT CASUALTIES	P	P	P	P	P	P	P
NAVIGATE								
	SELECT A MOVEMENT ROUTE USING A MAP	P	P	P	P	P	P	P
	DETERMINE THE ELEVATION OF A POINT ON THE GROUND USING A MAP	P	P	P	P	P	P	P
	NAVIGATE FROM ONE POINT ON THE GROUND TO ANOTHER POINT WHILE DISMOUNTED	P	P	P	P	P	P	P
	CONVERT AZIMUTHS	P	P	P	P	P	P	P
	ORIENT A MAP USING A LENSATIC COMPASS	P	P	P	P	P	P	P
	LOCATE AN UNKNOWN POINT ON A MAP AND ON THE GROUND BY INTERSECTION	P	P	P	P	P	P	P
	LOCATE AN UNKNOWN POINT ON A MAP AND ON THE GROUND BY RESECTION	P	P	P	P	P	P	P
	USE A MAP OVERLAY	P	P	P	P	P	P	P
	DETERMINE AZIMUTH USING A PROTRACTOR	P	P	P	P	P	P	P
	COMPUTE BACK AZIMUTH	P	P	P	P	P	P	P
SURVIVE,								

		CAMP EDWARDS 15,000 AC.	CAMP EDWARDS 5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
Techniques								
	NEUTRALIZE BOOBY TRAPS	S	S	NA	L	L	P	P
	LOCATE A TARGET BY GRID COORDINATES	S	S	NA	L	L	P	P
	ADJUST INDIRECT FIRE	S	S	NA	L	L	P	P
	SUPERVISE CONSTRUCTION OF A FIGHTING POSITION	P	S	NA	L	P	P	P
	REQUEST MEDICAL EVACUATION	P	P	P	P	P	P	P
	RECOGNIZE MILITARY EXPLOSIVE ORDNANCE BY TYPE	P	P	P	P	P	P	P
	TAKE IMMEDIATE ACTION BASED ON CONFIRMATION OF AN EXPLOSIVE HAZARD	P	P	P	P	P	P	P
	REPORT EXPLOSIVE HAZARD	P	P	P	P	P	P	P
	HANDLE ENEMY PERSONNEL AND EQUIPMENT	P	P	P	P	P	P	P
	VISUALLY IDENTIFY THREAT AIRCRAFT	P	P	P	P	P	P	P
	ASSESS POTENTIAL FOR ACCIDENTS	P	P	P	P	P	P	P
SURVIVE, Protect Against NBC Attack								
	USE M256 OR M256A1 CHEMICAL AGENT DETECTOR KIT	P	P	P	P	P	P	P
	PREPARE AND SUBMIT NBC 4 REPORTS	P	P	P	P	P	P	P
	SUPERVISE THE FITTING OF PROTECTIVE MASKS	P	P	P	P	P	P	P
	USE AND PERFORM OPERATOR MAINTENANCE ON THE IM174-SERIES RADIACMETER	P	P	P	P	P	P	P
	USE AND PERFORM OPERATOR MAINTENANCE ON THE IM93 OR IM147 DOSIMETER AND PP1578-SERIES CHARGER	P	P	P	P	P	P	P
	USE AND MAINTAIN THE AN/VDR-2 RADIAC SET	P	P	P	P	P	P	P

		CAMP EDWARDS 15,000 AC.	CAMP EDWARDS 5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
Section 3, Skill Level III Tasks								
SEE								
	ESTABLISH AN OBSERVATION POST	P	P	L	P	P	P	P
	INSPECT PERSONNEL/EQUIPMENT	P	P	P	P	P	P	P
COMMUNICATE								
	TRANSMIT A VOICE UNITED STATES MESSAGE TEXT FORMAT (USMTF) MESSAGE	P	P	P	P	P	P	P
	RECEIVE A VOICE UNITED STATES MESSAGE TEXT FORMAT (USMTF) MESSAGE	P	P	P	P	P	P	P
	WRITE A UNITED STATES MESSAGE TEXT FORMAT (USMTF) MESSAGE	P	P	P	P	P	P	P
	READ A UNITED STATES MESSAGE TEXT FORMAT (USMTF) MESSAGE	P	P	P	P	P	P	P
NAVIGATE								
	ANALYZE TERRAIN	P	L	NA	L	P	P	P
SURVIVE, Techniques								
	CONDUCT A BREACH OF A MINEFIELD	P	S	NA	L	P	P	P
	DIRECT CONSTRUCTION OF NON-EXPLOSIVE ANTIVEHICULAR OBSTACLES	P	L	NA	L	P	L	P
	CONDUCT A DEFENSE BY A SQUAD	P	L	NA	L	P	P	P
DEFENSE								
	CONSOLIDATE A SQUAD FOLLOWING ENEMY CONTACT WHILE IN THE	P	P	NA	L	L	P	P
	REORGANIZE A SQUAD FOLLOWING ENEMY CONTACT WHILE IN THE DEFENSE	P	L	NA	L	P	P	P
	SUPERVISE PREVENTIVE MAINTENANCE CHECKS AND SERVICES	S	P	P	P	P	P	P
	DIRECT VEHICLE AND EQUIPMENT RECOVERY OPERATIONS	S	P	P	P	P	P	P
	PROTECT CLASSIFIED INFORMATION AND MATERIAL	P	P	P	P	P	P	P

		CAMP EDWARDS 15,000 AC.	5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
	DIRECT UNIT AIR DEFENSE	S	P	P	P	P	P	P
	PERFORM DUTIES AS SERIAL/MARCH UNIT COMMANDER	S	P	P	P	P	P	P
	DIRECT CONVOY DEFENSE OPERATIONS	S	P	P	P	P	P	P
	CONTROL MISSION SAFETY HAZARDS	P	P	P	P	P	P	P
SURVIVE, Protect Against NBC Attack								
	CONDUCT UNMASKING PROCEDURES	P	P	P	P	P	P	P
	SUPERVISE THE CROSSING OF A CONTAMINATED AREA	P	P	P	P	P	P	P
	PREPARE AND SUBMIT NBC 1 REPORTS	P	P	P	P	P	P	P
	SUPERVISE RADIATION MONITORING	P	P	P	P	P	P	P
	IMPLEMENT MISSION-ORIENTED PROTECTIVE POSTURE	P	P	P	P	P	P	P
	LEAD MOPP GEAR EXCHANGE	P	P	P	P	P	P	P
	SUPERVISE EMPLOYMENT OF NUCLEAR, BIOLOGICAL, OR CHEMICAL MARKERS	P	P	P	P	P	P	P
	SUPERVISE POSITIONING OF THE CHEMICAL AGENT ALARM	P	P	P	P	P	P	P
	SUPERVISE HASTY DECONTAMINATION	P	P	P	P	P	P	P
Section 4, Skill Level IV Tasks								
SEE								
	CONDUCT AN AREA RECONNAISSANCE BY A PLATOON	P	L	L	L	P	P	P
COMMUNICATE								
	PREPARE AN ORAL OPERATION ORDER	P	P	P	P	P	P	P
	PREPARE A BATTALION SITUATION REPORT (SITREP)	P	P	P	P	P	P	P
NAVIGATE								
	PREPARE A ROUTE RECONNAISSANCE OVERLAY	P	P	P	P	P	P	P
	PREPARE A STRIP MAP	P	P	P	P	P	P	P

		CAMP EDWARDS 15,000 AC.	CAMP EDWARDS 5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
SHOOT								
	PREPARE A PLATOON SECTOR SKETCH	P	P	P	P	P	P	P
SURVIVE, Techniques								
	CONDUCT A BREACH OF A MINEFIELD	P	S	NA	L	P	P	P
	DIRECT CONSTRUCTION OF NON-EXPLOSIVE ANTIVEHICULAR OBSTACLES	P	L	NA	L	P	L	P
	CONDUCT A DEFENSE BY A SQUAD	P	L	NA	L	P	P	P
	CONSOLIDATE A SQUAD FOLLOWING ENEMY CONTACT WHILE IN THE DEFENSE	P	P	NA	L	L	P	P
	REORGANIZE A SQUAD FOLLOWING ENEMY CONTACT WHILE IN THE DEFENSE	P	L	NA	L	P	P	P
	SUPERVISE PREVENTIVE MAINTENANCE CHECKS AND SERVICES	S	P	P	P	P	P	P
	DIRECT VEHICLE AND EQUIPMENT RECOVERY OPERATIONS	S	P	P	P	P	P	P
	PROTECT CLASSIFIED INFORMATION AND MATERIAL	P	P	P	P	P	P	P
	DIRECT UNIT AIR DEFENSE	S	P	P	P	P	P	P
	PERFORM DUTIES AS SERIAL/MARCH UNIT COMMANDER	S	P	P	P	P	P	P
	DIRECT CONVOY DEFENSE OPERATIONS	S	P	P	P	P	P	P
	CONTROL MISSION SAFETY HAZARDS	P	P	P	P	P	P	P
SURVIVE, Protect Against NBC Attack								
	SUPERVISE UNIT PREPARATION FOR NBC ATTACK	L	L	NA	NA	L	P	P
	CONTROL UNIT RADIATION EXPOSURE	L	L	NA	NA	L	P	P
	COLLECTIVE TASKS							
COLLECTIVE TASKS **MNG TO&E Units**								
26 IN BRIGADES (HHC)								
	ESTABLISH A COMMAND POST	P	S	NA	L	S	P	P
	COMMAND & CONTROL OF THE BRIGADE	P	S	NA	L	S	P	P
	PERFORM S-1 THRU S-4 OPERATIONS	P	S	NA	L	S	P	P

		CAMP EDWARDS 15,000 AC.	5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
	EXECUTE READINESS SOP	P	S	NA	L	S	P	P
	PROTECT THE FORCE	P	S	NA	L	S	P	P
	MAINTAIN COMMUNICATION	P	S	NA	L	S	P	P
	PERFORM MAINTENANCE OPERATIONS	P	S	NA	L	S	P	P
1st BN 104 IN (L)								
	ATTACK	P	NA	NA	L	S	P	P
	EXECUTE DEFENSE	P	NA	NA	L	S	P	P
	PERFORM MOVEMENT TO CONTACT	P	NA	NA	L	S	P	P
	ESTABLIUSH LODGEMENT/AIRFIELDS	P	NA	NA	L	S	P	P
	PERFORM CSS OPERATIONS	P	NA	NA	L	S	P	P
	DEPLOY THE BATTALION (BN)	P	NA	NA	L	S	P	P
1st BN 181st IN BN (L)								
	DEPLOY THE FORCE	P	NA	NA	L	S/L	P	P
	ASSUALT	P	NA	NA	L	S/L	P	P
	DEFEND	P	NA	NA	L	S/L	P	P
	PERFORM CSS OPERATIONS	P	NA	NA	L	S/L	P	P
	FORCE PROTECTION	P	NA	NA	L	S/L	P	P
OCCUPY ASSEMBLY	EXECUTE READINESS SOP	P	NA	NA	L	S/L	P	P
1st BN 182nd IN BN (M) HQS								
	ATTACK/COUNTER ATTACK BY FIRE	P	NA	NA	L	S/L	P	P
	CONDUCT TACTICAL MOVEMENT	P	NA	NA	L	S/L	P	P
		P	NA	NA	L	S/L	P	P
	CLEAR A BUILT UP AREA	NA	P	NA	S	NA	P	?
	CONSOLIDATE (BATTALION)	P	NA	NA	L	S/L	P	P
	CONDUCT DEPLOYMENT ALERT ACTIVITIES	N/A	P	P	N/A	S/L	P	P
101st EN BN								
	PROVIDE UNIT COMMAND & CONTROL	P	L	NA	L	P	P	P
	CONDUCT MOBILIZATION/DEPLOY/DEMOBILIZATION OPERATIONS	P	L	NA	L	P	P	P
	SECURE & DEFEND UNIT POSITION	P	L	NA	L	L	P	P
	CONDUCT MOBILITY OPERATIONS	P	L	NA	L	S	P	P

		CAMP EDWARDS 15,000 AC.	CAMP EDWARDS 5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
	CONDUCT COUNTERMOBILITY OPERATIONS	P	L	NA	L	S	P	P
	CONDUCT SURVIVABILITY OPERATIONS	P	L	NA	L	S	P	P
	CONDUCT ENGINEER RECON OPERATIONS	P	L	NA	L	P	P	P
	CONDUCT CSS OPERATIONS	P	L	NA	L	P	P	P
181st EN BN								
	PREPARE PERSONNEL FOR DEPLOYMENT	P	P	P	P	P	P	P
	MOBILIZE THE FORCE, PHASE I	P	L	NA	L	P	P	P
	CONTROL COMBAT OPERATIONS	P	L	NA	L	P	P	P
	CONTROL COMBINED ARMS BREACHING	P	L	NA	L	P	P	P
	CONDUCT ENGINEER INTELLIGENCE COLLECTION	P	L	NA	L	P	P	P
	PREPARE AN OBSTACLE PLAN	P	P	P	P	P	P	P
	OPERATE COMBAT TRAINS	P	L	NA	L	P	P	P
	OPERATE ADMINISTRATION & LOGISTICAL OPERATIONS CENTER, FIELD TRAINS	P	L	NA	L	P	P	P
379th EN Co								
	CONDUCT COMMAND AND CONTROL	P	L	NA	L	S	P	P
	CONDUCT MOBILIZATION/DEPLOYMENT/REMOBILIZATION & DEMOBILIZATION OPERATIONS	P	L	NA	L	S	P	P
	SECURE & DEFEND THE COMPANY IN A FIELD ENVIRONMENT	P	L	NA	L	S	P	P
	CONDUCT COMBATT SERVICE SUPPORT	P	L	NA	L	S	P	P
	PERFORM UNIT LEVEL MAINTENANCE	P	L	NA	L	S	P	P
	ONDUCT LIMITED MANEUVER, MOBILITY, COUNTERMOBILITY AND SURVIVABILTY	P	P	NA	L	S	P	P
	PROVIDE MOBILITY SUPPORT	P	P	NA	L	S	P	P
	PROVIDE SURVIVABILITY SUPPORT	P	P	NA	L	S	P	P
	PROVIDE SUSTAINMENT ENGINEERING OPERATIONS	P	P	NA	L	S	P	P
180th EN DET								
	PROVIDE UNIT MOBILITY OPERATIONS	P	S	NA	L	L	P	P
	PROVIDE SUSTAINMENT ENGINEERING OPERATIONS	P	P	NA	L	L	P	P
	PREPARE PERSONNEL FOR DEPLOYMENT	P	P	P	L	L	P	P
	CONDUCT REDEPLOYMENT OPERATION	P	P	NA	L	L	P	P
	PROVIDE MOBILITY/SURVIVABILITY SUPPORT	P	P	NA	L	L	P	P
	PROVIDE UNIT SURVIVABILITY OPERATIO0NS	P	S	NA	L	L	P	P
1 - 101st FA BN								
	MOVE	P	NA	NA	NA	L	P	P
	DELIVER FIELD ARTILLERY FIRES	NA	NA	NA	NA	NA	P	P

		CAMP EDWARDS 15,000 AC.	CAMP EDWARDS 5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
	ACQUIRE TARGETS	NA	NA	NA	NA	L	P	P
	COMMUNICATIONS OPERATIONS	P	S	NA	NA	L	P	P
	MAINTAIN & RESUPPLY	P	S	NA	NA	L	P	P
	PERFORM SURVIVABILITY OPERATIONS	P	NA	NA	NA	L	P	P
	COORDINATE FIRE SUPPORT OPERATIONS	L	L	NA	NA	L	P	P
	MOBILIZE AND REDEPLOY THE BN	P	P	NA	NA	P	P	P
	SURVIVE	P	L	NA	NA	L	P	P
1 - 102nd FA BN								
	MOVE	P	S	NA	NA	S	P	P
	COORDINATE FIRE SUPPORT OPERATIONS	P	NA	NA	NA	L	P	P
	ACQUIRE TARGETS	P	S	NA	NA	L	P	P
	DELIVER FIELD ARTILLERY FIRES	NA	NA	NA	NA	NA	P	P
	COMMUNICATIONS OPERATIONS	P	P	NA	NA	S	P	P
	MAINTAIN & RESUPPLY	P	L	NA	NA	P	P	P
	MOBILIZE THE BN	P	L	NA	NA	S	P	P
42nd DIVARTY								
	COORDINATE FIRE SUPPORT OPERATIONS	P	S	NA	L	L	P	P
	COMMUNICATIONS OPERATIONS	P	S	NA	L	L	P	P
	MOVE	P	S	NA	L	L	P	P
	SURVIVE	P	S	NA	L	L	P	P
	DEPLOY THE FORCE	P	S	NA	NA	L	P	P
211 MP BN HQ								
	PERFORM UNIT LEVEL MAINTENANCE	P	P	P	P	P	P	P
	COORDINATE AREA SECURITY OPERATIONS	P	P	P	P	P	P	P
	PROVIDE UNIT SUPPLY SUPPORT	P	P	P	P	P	P	P
	SECURE AND DEFEND UNIT POSITION	P	P	NA	P	S	P	P
	PERFORM STAFF ADMINISTRATION & PERSONNEL FUNCTIONS	P	P	P	P	S	P	P
	PROVIDE MAINTENANCE SUPPORT	L	P	P	P	S	P	P
	COORDINATE MANEUVER AND MOBILITY SUPPORT	P	P	P	P	S	P	P
	COORDINATE INTERNMENT AND RERSETTLEMENT OPERATIONS	P	P	P	P	S	P	P
	COORDINATE LAW & ORDER OPERATIONS	P	P	P	P	S	P	P
	CONDUCT A CONVOY	P	S/L	NA	P	S	P	P
	PERFORM INTELLIGENCE OPERATIONS	P	P	P	P	S	P	P
	OCCUPY THE SITE	P	P	NA	P	S	P	P
	COORDINATE AREA SECURITY OPERATIONS	P	P	P	P	S	P	P

		CAMP EDWARDS 15,000 AC.	CAMP EDWARDS 5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
	PERFORM STAFF LOGISTIC OPERATIONS	P	P	P	P	S	P	P
747 MP CO								
	MOBILIZE & DEPLOY THE FORCE	P	P	NA	L	P	P	P
	COORDINATE CIRCULATION CONTROL OPERATIONS	P	P	NA	L	P	P	P
	COORDINATE AND MONITOR CONVOY SECURITY	P	P	NA	L	P	P	P
	MONITOR MP RESPONSE TO BASE/BASE CLUSTER DEFENSE	P	P	NA	L	P	P	P
	COORDINATE & MONITER SPECIAL REACTION TEAMS	P	P	NA	L	P	P	P
	FORCE PROTECTION	P	P	NA	L	P	P	P
772 MP CO								
	MOBILIZE THE FORCE	P	P	NA	L	P	P	P
	DEPLOY THE FORCE	P	L	NA	L	P	P	P
	CONDUCT OPERATIONS	P	L	NA	L	P	P	P
	REDEPLOYMENT	P	L	NA	L	P	P	P
	CONDUCT BATTLEFIELD CIRCULATION & CONTROL OPERATIONS	P	L	NA	L	P	P	P
	CONDUCT AREA SECURITY OPERATIONS	P	L	NA	L	P	P	P
	CONDUCT EPW OPERATIONS	P	L	NA	L	P	P	P
	PERFORM UNIT ADMINISTRATION LOGISTICS SUPPORT	P	L	NA	L	P	P	P
	FORCE PROTECTION	P	L	NA	L	P	P	P
972 MP CO								
	MOBILIZE THE FORCE	P	P	NA	L	P	P	P
	DEPLOY THE FORCE	P	L	NA	L	P	P	P
	CONDUCT OPERATIONS	P	L	NA	L	P	P	P
	REDEPLOYMENT	P	L	NA	L	P	P	P
	CONDUCT BATTLEFIELD CIRCULATION & CONTROL OPERATIONS	P	L	NA	L	P	P	P
	CONDUCT AREA SECURITY OPERATIONS	P	L	NA	L	P	P	P
	CONDUCT EPW OPERATIONS	P	L	NA	L	P	P	P
	PERFORM UNIT ADMINISTRATION LOGISTICS SUPPORT	P	P	NA	L	P	P	P
	FORCE PROTECTION	P	L	NA	L	P	P	P
42nd MP CO								
	CONDUCT MANUEVER & MOBILITY SUPPORT OPERATIONS	P	L	NA	L	P	P	P
	POLICE INTELLIGENCE OPERATIONS	P	L	NA	L	P	P	P
	U.S. MILITARY PRISONERS OPERATIONS	P	L	NA	L	P	P	P
	CONDUCT INTERNMENT & RESETTLEMENT OPERATIONS	P	L	NA	L	P	P	P
	PROVIDE AREA SECURITY	P	L	NA	L	P	P	P
1058th								

		CAMP EDWARDS 15,000 AC.	CAMP EDWARDS 5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
TRANSPORTATION CO								
	RELOCATE COMPANY TO NEW OPERATION	P	L	NA	L	P	P	P
	ESTABLISH COMPANY AREA OF OPERATIONS	P	L	NA	L	P	P	P
	CONDUCT TRANSPORTATION SUPPORT	P	L	NA	L	P	P	P
	DEFEND COMPANY ASSIGNED AREA	P	L	NA	L	P	P	P
1164th TRUCK CO								
	RELOCATE COMPANY TO NEW OPERATION SITE	P	L	NA	L	P	P	P
	DEFEND COMPANY ASSIGNED AREA	P	L	NA	L	P	P	P
	CONDUCT TRANSPORTATION SUPPORT	P	L	NA	L	P	P	P
	ESTABLISH COMPANY AREA OF OPERATIONS	P	L	NA	L	P	P	P
	PROVIDE MOTOR TRANSPORTATION SUPPORT	P	L	NA	L	P	P	P
1166th TRUCK CO								
	EXECUTE READINESS SOP	P	L	NA	L	P	S	P
	RELOCATE COMPANY TO NEW OPERATION SITE	P	L	NA	L	P	S	P
	DEFEND COMPANY ASSIGNED AREA	P	L	NA	L	P	S	P
	CONDUCT TRANSPORTATION SUPPORT	P	L	NA	L	P	S	P
	ESTABLISH COMPANY AREA OF OPERATIONS	P	L	NA	L	P	S	P
	PROVIDE MOTOR TRANSPORTATION SUPPORT	P	L	NA	L	P	S	P
125th QUARTERMASTER CO								
	PLAN BN OPERATIONS	P	S	NA	L	S	S	P
	DIRECT RELOCATION OF BN ELEMENTS	P	S	NA	L	S	S	P
	DIRECT WATER SUPPORT+B441 OPERATIONS	L	NA	NA	L	S	S	P
	DIRECT DEFENSE OF ASSIGNED AREA	P	L	NA	L	S	S	P
	PROVIDE ADMINISTRATIVE SERVICE SUPPORT	P	P	NA	L	S	S	P
	MOVE BN HQ TO NEW SITE	P	P	NA	L	S	S	P
	ESTABLISH BN HQ AREA	P	L	NA	L	S	S	P
	PROVIDE SUSTAINMENT OPERATIONS	P	L	NA	L	S	S	P
	DEFEND COMPANY ASSIGNED AREA	P	L	NA	L	S	S	P
321st QUARTERMA								

		CAMP EDWARDS 15,000 AC.	CAMP EDWARDS 5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
STER TEAM								
	PLAN TEAM OPERATIONS	P	P	P	L	S	S	P
	MOVE TEAM TO NEW OPERATIONS SITE	P	S	NA	L	S	S	P
	ESTABLISH TEAM AO	P	S	NA	L	S	S	P
	DEDEND ASSIGNED AREAS	P	L	NA	L	S	S	P
	CONDUCT WATER SUPPLY, PURIFICATION & DISTRIBUTION	P	L	NA	L	L	S	P
704th QUARTERMASTER DET								
	PLAN DET OPERATIONS	P	S	P	L	S	S	P
	PERFORM QUARTERING PARTY OPERATIONS	P	S	NA	L	S	S	P
	MOVE TEAM TO NEW OPERATIONS SITE	P	S	NA	L	S	S	P
	ESTABLISH TEAM AO	P	S	NA	L	S	S	P
	DEDEND ASSIGNED AREAS	P	S	NA	L	S	S	P
	CONDUCT WATER SUPPLY, PURIFICATION & DISTRIBUTION	P	L	NA	L	L	S	P
220 (WTR DIST) HOSE TEAM								
	DEFEND COMPANY ASSIGNED AREA	P	S	NA	L	S	S	P
	PLAN COMPANY OPERATIONS	P	S	P	L	S	S	P
	MOVE COMPANY TO NEW LOCATION	P	S	NA	L	S	S	P
	ESTABLISH COMPANY AREA OF OPERATIONS	P	S	NA	L	S	S	P
	CONDUCT WATER SUPPLY & DISTRIBUTION OPERATIONS	P	L	NA	L	L	S	P
HHD 101 QUARTERMASTER BN								
	PLAN BN OPERATIONS	P	S	P	L	S	S	P
	DIRECT RELOCATION OF BN ELEMENTS	P	S	NA	L	S	S	P
	DIRECT WATER SUPPORT OPERATIONS	P	S	NA	L	S	S	P
	DIRECT DEFENSE OF ASSIGNED AREA	P	S	NA	L	S	S	P
	BATTLE STAFF METL	P	S	NA	L	S	S	P
	MOVE BN HQ TO NEW SITE	P	S	NA	L	S	S	P
	ESTABLISH BN HQ AREA	P	S	NA	L	S	S	P
	PROVIDE SUSTAINMENT OPERATIONS TO BN HQ	P	S	NA	L	S	S	P
HHC 3/126 AVN (LUH)								
	TRANSITION TO WAR	P	S	NA	L	S	S	P
	MOVE TO AND OCCUPY AO	P	S	NA	L	S	S	P
	CONDUCT AIR MOVEMENT OPERATIONS	P	S	NA	L	S	S	P

		CAMP EDWARDS 15,000 AC.	CAMP EDWARDS 5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
	SUSTAIN THE COMPANY IN THE FIELD ENVIRONMENT	P	S	NA	L	S	S	P
	MAINTAIN COMMAND AND CONTROL	P	S	NA	L	S	S	P
	CONDUCT FORCE PROTECTION OPERATIONS	P	S	NA	L	S	S	P
CO E 126 AVN BN AIR TRAFFIC SERVICE (ATS)								
	PROVIDE ATS @ LANDING AND PICKUP ZONES	P	S	NA	NA	S	P	P
	PROVIDE ENROUTE AIR TRAFFIC SERVICE	P	S	NA	NA	S	P	P
	PROVIDE ATS @ DROP ZONES	P	S	NA	NA	S	P	P
	PROVIDE PROVIDE A/C LIAISON	P	S	NA	NA	S	P	P
	PROVIDE TERMINAL AIR TRAFFIC COMMAND	P	S	NA	NA	S	P	P
D CO 1st BN LIGHT UTILITY HELICOPTER (LUH)								
	TRANSITION TO WAR	P	P	NA	NA	S	P	P
	MOVE TO AND OCCUPY AO	P	P	NA	NA	S	P	P
	CONDUCT AIR MOVEMENT OPERATIONS	P	P	NA	NA	S	P	P
	CONDUCT AIRIAL RESUPPLY	P	P	NA	NA	S	P	P
	SUSTAIN THE COMPANY IN THE FIELD ENVIRONMENT	P	L	NA	NA	S	P	P
	PROVIDE COMMAND AND CONTROL OF THE COMPANY	P	P	NA	NA	S	P	P
	CONDUCT FORCE PROTECTION OPERATIONS	P	P	NA	NA	S	P	P
F CO 126 AVIATION (EAC)								
	PERFORM AVIATION MAINTENANCE SUPPORT TO CORP/THEATER	L	P	NA	NA	S	P	P
	MOBILIZE AND DEPLOY	P	P	NA	NA	S	P	P
	PROVIDE FORCE PROTECTION	P	P	NA	NA	S	P	P
	ESTABLISH AREAS OF OPERATIONS	P	P	NA	NA	S	P	P
	CONDUCT MOVEMENT OPERATIONS	P	P	NA	NA	S	P	P
726th MAINTENANCE BN								
	PROVIDE MAINTENANCE SUPPORT FOR	NA	P	P	NA	S	P	P

		CAMP EDWARDS 15,000 AC.	CAMP EDWARDS 5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
	CORP/THEATER COORDINATE GS MAINTENANCE OPERATIONS	L	P	P	P	S	P	P
721st GS MAINTENANCE CO								
	MOBILIZE AND DEPLOY THE FORCE	P	P	P	NA	S	P	P
	ESTABLISH COMPANY AREA OF OPERATIONS	P	P	P	NA	S	P	P
	RELOCATE AND ESTABLISH COMPANY TO NEW AREA OF OPERATIONS	P	P	P	NA	S	P	P
	CONDUCT GS MAINTENANCE OPERATIONS	L	P	P	NA	S	P	P
	DEFEND COMPANY ASSIGNED AREA	P	P	L	NA	S	P	P
101st MAINTENANCE CO								
	CONDUCT GS MAINTENANCE OPERATIONS	P	P	P	P	S	P	P
	PERFORM MAINTENANCE CONTROL FUNCTIONS	NA	P	P	NA	S	P	P
	PROVIDE GS REPAIR PARTS SUPPLY SUPPORT	NA	P	P	NA	S	P	P
	PROVIDE ALLIED TRADE & LIFT SERVICES	NA	P	P	NA	S	P	P
	PROVIDE COMSEC SUPPLY SUPPORT	NA	P	P	NA	S	P	P
	CONDUCT BACK-UP DS MAINTENANCE SUPPORT	NA	P	P	NA	S	P	P
	PROVIDE PERSONNEL AND ADMINISTRATION SUPPORT	NA	P	P	NA	S	P	P
	PROVIDE COMPANY SUPPLY SUPPORT	NA	P	P	NA	S	P	P
	PROVIDE FOOD SERVICE SUPPORT	NA	P	P	NA	S	P	P
	PERFORM COMPANY LEVEL MAINTENANCE	NA	P	P	NA	S	P	P
	RICK MANAGEMENT PROCEEDURES	NA	P	P	NA	S	P	P
	SUPERVISE GS PLATOON OPERATIONS	L	P	P	NA	S	P	P
110th MAINTENANCE CO (DS)								
	RELOCATE COMPANY TO NEW OPERATION SITE	S	P	NA	L	S	P	P
	ESTABLISH COMPANY AREA OF OPERATIONS	S	P	NA	L	S	P	P
	CONDUCT DIRECT SUPPORT MAINTENANCE & REPAIR PARTS SUPPLY SUPPORT	L	P	NA	L	S	P	P
	DEFEND COMPANY ASSIGNED AREA	P	P	NA	L	S	P	P
	MOBILIZE AND DEPLOY	P	P	NA	L	S	P	P
	PROVIDE FORCE PROTECTION	P	P	NA	L	S	P	P

		CAMP EDWARDS 15,000 AC.	5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
272nd CHEMICAL CO								
	MAINTAIN TROOP MORALE AND COMBAT CAPABILITY	P	S	NA	L	L	P	P
	PROVIDE COMMAND AND CONTROL OF THE COMPANY	P	S	NA	L	L	P	P
	PROVIDE NBC DECONTAMINATION *UTES	L	L	NA	L	L	P	P
	PROVIDE NBC RECONNAISSANCE	P	L	NA	L	L	P	P
	PROVIDE SMOKE OPERATIONS	NA	NA	NA	NA	L	P	P
	PROVIDE UNIT LEVEL CSS	L	L	NA	L	L	P	P
	PERFORM TACTICAL ROAD MARCH	P	S	NA	L	L	P	P
DET 1, 86th MEDICAL COMPANY (AVIATION TRANSPORT)								
	PERFORM AVIATION MAINTENANCE SUPPORT TO CORP/THEATER	NA	P	P	NA	S	P	P
	MOBILIZE AND DEPLOY	P	P	P	L	S	P	P
	PROVIDE FORCE PROTECTION	P	P	L	L	S	P	P
	ESTABLISH AREAS OF OPERATIONS	P	P	L	L	S	P	P
	CONDUCT MOVEMENT OPERATIONS	P	P	L	L	S	P	P
	MEDICAL TASKS	P	P	L	L	S	P	P
HHD 726th FIN BN								
	PERFORM COMMAND AND CONTROL OPERATIONS	P	S	L	L	S	P	P
	MOBILIZE AND DEPLOY THE FORCE	P	S	L	L	S	P	P
	COMBAT SERVICE SUPPORT	P	S	L	L	S	P	P
	PROVIDE PERSONNEL AND ADMINISTRATION SUPPORT	P	S	P	L	S	P	P
	DIRECT DEFENSE OF ASSIGNED AREA	P	S	NA	L	S	P	P
	PROVIDE SUSTAINMENT OPERATIONS	P	S	NA	L	S	P	P
	PROVIDE COMBAT SERVICE SUPPORT	P	S	NA	L	S	P	P
	TRANSITION TO FINANCE OPERATIONS	P	S	NA	L	S	P	P
	PERFORM INTERNAL CONTROL OPERATIONS	P	S	NA	L	S	P	P
747th FIN BN								
	PROVIDE COMMAND AND CONTROL	P	S	L	L	S	P	P
	MANEUVER	P	S	NA	L	S	P	P

		CAMP EDWARDS 15,000 AC.	CAMP EDWARDS 5,000 AC.	LOCAL ARMORY	LOCAL TRAINING AREAS	FORT DEVENS	FORT DRUM	FORT DIX
	PROVIDE MOBILITY AND SURVIVABILITY	P	S	NA	L	S	P	P
	PROVIDE COMBAT SERVICE SUPPORT	P	S	NA	L	S	P	P
101st FIN DET								
	PROVIDE COMMAND AND CONTROL	P	S	L	L	S	P	P
	MANEUVER	P	S	NA	L	S	P	P
	PROVIDE MOBILITY AND SURVIVABILITY	P	S	NA	L	S	P	P
	PROVIDE COMBAT SERVICE SUPPORT	P	S	NA	L	S	P	P
685th FIN DET								
	PROVIDE COMMAND AND CONTROL	P	S	L	L	S	P	P
	MANEUVER	P	S	NA	L	S	P	P
	PROVIDE MOBILITY AND SURVIVABILITY	P	S	NA	L	S	P	P
	PROVIDE COMBAT SERVICE SUPPORT	P	S	NA	L	S	P	P
	FORCE PROTECTION	P	S	NA	L	S	P	P
215th ARMY BAND								
	REACT TO OPFOR	P	P	NA	L	S	P	P
	PROVIDE MARCHING BAND COMMITMENTS	NA	P	P	L	S	P	P
	PREPARE FOR BAND PERFORMANCE	L	P	P	L	S	P	P
	PREPARE AND OCCUPY A PERIMETER	P	P	NA	L	S	P	P
	DEFEND BAND ASSIGNED AREA	S	P	NA	L	S	P	P

PART 4. ANALYSIS OF ALTERNATIVE TRAINING SCENARIOS

The last sections included described the military training activities that are listed as necessary for readiness by the United States Department of Defense and described the training activities that are occurring at Camp Edwards to meet those readiness requirements. That discussion meets the need to determine 'necessary' training activities at Camp Edwards.

There is an additional requirement in the Massachusetts Environmental Policy Act Certificate to discuss alternatives to these training programs. In the Certificate, the Secretary requests consideration of restrictions or modifications to the military training programs within Camp Edwards. The Certificate specifically asked the proponent to clarify the impacts and feasibility of the following:

- Relocating Annual (two-week) Training to other facilities
- Relocating training activities from the northern acreage into the Cantonment Area
- Adding a wider range of simulations and simulators to replace field training
- Limiting bivouacs solely to the Cantonment Area
- Limiting vehicle to use existing roads only
- Reducing and ending off-road tracked vehicle use

This directs the discussion to what could be considered 'compatible' military training. The Secretary's Certificate suggests that this aspect, compatibility would be assigned later. However, compatibility is key to the determination of what constitutes a reasonable alternative.

Discussion: Alternatives and Compatibility

The reason for considering alternatives in environmental documentation is to determine if some alternative to the proposed action will have a different impact on the environment. If an alternative is discovered that has less environmental impact *and meets the needs and objectives supporting the proposed action* than that alternative can become a preferred alternative. The idea is that the proponent will complete the necessary action, but perform the action in the preferred way, resulting in acceptable environmental impacts. It is therefore suggested that compatibility and necessity are not wholly separable; they are closely related tests of preference.

One question to answer is what the parameters should be for the test of compatibility. A reduction of some impacts is easily realized with a reduction in most activities - less human activity in an area will mean less impact to the established conditions. However, compatibility is not determined solely by minimizing the level of impact. If so, this would pre-determine that no activity is the most acceptable state. Compatibility, however, is a more astute but difficult test that recognizes design, management, and mitigation and that may allow for compensation of the impacts, thereby allowing many and even intensive activities. This is the reason the Zone II wellhead protection regulations of the state list

options for land use; they are all considered compatible with water supply protection over the recharge areas for wellheads.

Consequently, before discussing each of the alternatives, this section starts with a review and update of the analysis of the impact of military training that was first included in the Draft Area-wide Environmental Impact Report. The reason for this review is to re-confirm and expand on certain concepts dealing with the issue of compatibility of the military training activities with environmental resources at the Massachusetts Military Reservation. A key aspect of this discussion is the Impact Area Groundwater Study Program, which has provided important information on the impacts of past training activities. It is believed that the results of this study can better define the concerns regarding the remaining training activities.

Review: Impact of Military Training

In the Draft Area-wide Environmental Impact Report (see Chapter VIII, Alternatives Assessment in that document) a lengthy discussion was included on qualitative and quantitative assessments, risk characterization, and comparative analyses to fully explore the implications of each of the alternatives presented in that document. This section summarizes that analysis and focuses it on the military field training activities, using updated information on discoveries of impact from past military training as developed through the Impact Area Groundwater Study. A summary oif the Impact Area Groundwater Study is included in Appendix J. A summary listing of potential impacts from the specific training activities is included in the Table II-7.

The first part of this assessment compared the alternatives against each of the environmental resource categories. Because of the relatively low impact, however, in some cases, impacts are not associated with typical activities, but are associated with the risk of an unintended outcome on account of an accident and the subsequent release of materials used in the activity. The vehicles used in the activities and the fuel they carry are a concern for military training. Consequently, information on accident incidences and responses regarding Army training is included.

Groundwater Resources

A large portion of the historical environmental impacts on water resources at the Massachusetts Military Reservation occurred prior to the 1980s, before the establishment of statutes and regulations requiring compliance with the preservation of the environment in general. In addition, requirements for developing water resources at the Massachusetts Military Reservation were not in place prior to the 1980s. At that time, the occurrence of groundwater contamination was not well understood, and the development of the Upper Cape Cod water resources located on the Massachusetts Military Reservation was not proposed to provide water to the nearby developing communities.

Since that time, measures have been put into place and daily standard operating procedures of the military modified so that the occurrence of further releases to the environment is eliminated, and past releases mitigated. For Camp Edwards, the concentration of this effort is in the Impact Area Groundwater Study Program. This study is focused on the impacts of the previous mortar and artillery training which has left sufficient amounts of explosive compounds to recur in the groundwater under the Impact Area and require remediation.

The findings of the Impact Area Groundwater Study were summarized in a memo from the United States Environmental Protection Agency and distributed to the Community Working Group at a meeting in June of 1999. That memo included several findings and a discussion of the potential connection to the past military training activities. In response, the Community Working Group requested a comparison of those results with the list of current/modified training activities. That comparison is shown in Table II-7, following.

Table II. 7: Use of Potentially Polluting Materials in Military Training Activities

TRAINING ACTIVITIES/ MANEUVER	**MATERIALS USED/ POTENTIALLY DISCHARGED DURING ACTIVITY**						
	Explosives See Note 1.	**Propellants** See Note 2.	**Metals** See Note 3.	**Herbicides/ Pesticides**	**VOC's** See Note 4.	**SVOC's** See Note 5.	**Automotive fluids** See Note 6.
Light Infantry	None	Yes Within blank ammunition see Note 7.	None	None	None	None	None
Mechanized Infantry	None	Yes Within blank ammunition	None	None	None	None	Yes Within vehicles See Note 8.
Driver Training	None	None	None	None	None	None	Yes See above
Military Police Training	None	Yes Within blank ammunition	None	None	None	None	Yes See above
Water Storage/ Distribution	None	None	None	None	None	None	Yes See above
Tactical Operations Center	None	None	None	None	None	None	Yes See above
Specialty Training/ ATC	None	None	None	None	None	None	Yes See above
Infantry Battle Course	None	Yes Within blank and live/green ammunition see Note 9.	None	None	None	None	Yes See above
Combat Service Support	None	None	None	None	None	None	Yes See above
Common Task Training	None	None	None	None	None	None	Yes See above
Administrative Assembly Areas	None	None	None	None	None	None	Yes See above
Tactical Assembly Areas	None	None	None	None	None	None	Yes See above
Helicopter Landing Zones	None	None	None	None	None	None	Yes Within heli gas tank 10.
Field Artillery Training	None	None	None	None	None	None	Yes Within vehicles
POL Distributing Area	None	None	None	None	None	None	Yes See above. Also within fueling tanks.
Land Navigation	None	None	None	None	None	None	Yes See above
Meteorological Section	None	None	None	None	None	None	Yes See above
Individual Chemical Confidence Training	None	None	None	None	None	None	Yes See above
Air Mobile Operations	None	None	None	None	None	None	Yes See above
Specialty Training/ TAB	None	None	None	None	None	None	Yes See above
Engineer Training	None	None	None	None	None	None	Yes See above
Sustainment Engineering Projects	None	None	None	None	None	None	Yes Within vehicles
Individual Soldier Fighting Position	None	Yes Within blank ammunition	None	None	None	None	Yes Within vehicles
Bivouac Operations Training	None	None	None	None	None	None	Yes Within vehicles
Weapons Training	None	Yes Within blank and live/green ammunition	Yes In live/green ammunition See note 11.	None	None	None	Yes Within vehicles
Past Training Activities [Now banned by Massachusetts National Guard]	Yes In explosive rounds, bag burning	Yes In mortar and artillery , and within blank and live ammunition	Yes In mortar and artillery , and within blank and live ammunition	None	None	None	Yes Within vehicles

Notes to Table:

Materials above were identified by the United States United States Environmental Protection Agency as potential pollutants studied in the Impact Area Groundwater Study in the June 16, 1999 memo distributed to the Community Working Group. In addition, the Fuel category has been added based on comments to the Massachusetts National Guard. The concern is identified as releases that would exceed health advisories.

1. Explosives category includes among other compounds: RDX, HMX, and TNT
2. Propellants category includes among other compounds: 2,4-DNT and nitroglycerin. These materials are found in certain explosive charges prior to firing of shell. Amounts of the materials proposed to be used are significantly reduced because of Massachusetts National Guard ban on mortar and artillery fire.
3. Metals category includes among others: sodium, zinc, lead, molybdenum, antimony and thallium. Some of these may be naturally occurring metals; others may be found as trace elements in other compounds.
4. VOC's category are volatile organic compounds: toluene, chloroform, acetone, benzene, TCE and xylene. None of these have been found above Health Advisories or Maximum Contaminant Limits.
5. SVOC's category are semi-volatile organic compounds and were not identified in United States Environmental Protection Agency memo of June 16, 1999.
6. Automotive fluids category include the following: JP-8 fuel, petroleum, oil, and lubricants. Fluids within vehicles are at very low risk for release to the environment. See Air Quality section in Draft Area-wide Environmental Impact Report for discussion of engine air emissions.
7. Blank ammunition and green ammunition fired with propellants (see section on emissions study in Draft Area-wide Environmental Impact Report)
8. See Tables II-6, -7 and -8 for vehicle lists and volumes of engine fluids.
9. Live ammunition is only used by military and civilian law enforcement on ranges for small arms training. All spent shells and unused ammunition is returned to supply. [Civilian hunting has not been under consideration.]
10. Helicopter volumes, emissions, and use described in Section VIII of the Draft Area-wide Environmental Impact Report.
11. Green ammunition does not include the metals listed in the United States Environmental Protection Agency memo.

Wetlands and Surface Water Resources

The military training activities will not result in any direct impacts to surface water bodies on the Massachusetts National Guard properties. Field training exercises by may indirectly impact wetlands in the following ways:

- Compaction of soils that may increase surface water runoff into wetlands
- Soil erosion and sedimentation
- Vehicle traffic in areas causing increased mortality or otherwise disturbing wetland-dependent fauna which utilize adjacent upland areas (for example, amphibians or reptiles) or that forage and/or nest in wetland habitats (for example, great blue heron, osprey).
- Noise that may interfere with the courtship, nesting, and/or feeding activities of avifauna associated with wetlands.

The first two issues are managed by understanding limitations of the soil conditions; the latter two are managed by knowledge of the habits of those sensitive fauna.

Hazardous Materials and Hazardous Waste

The National Guard already has implemented source reduction, recycling, and product substitution programs, which reduce the potential for impacts. Based on the Massachusetts Military Reservation Groundwater Protection Policy, with its curtailment of field refueling and volume limitations on hazardous material transported into the Camp Edwards Training Areas, the impact from field training will be negligible. Further, the requirements for tenants to implement emergency response and spill contingency planning if they store, use, or produce *any* hazardous material in *any* volume assures that if an accident occurs a planned, controlled, and immediate response will be made.

Habitat and Vegetation

Potential impacts to forest habitat from military training include potential degradation or loss of existing vegetative cover and potential fragmentation of presently contiguous forested areas. Where driver training and mechanized infantry maneuvers are limited to established road and trails, no significant impact is anticipated. However, certain infantry maneuvers and bivouac training may result in the temporary loss of groundcover and understory vegetation. This could impact cover, nesting, and feeding habitat for small mammals, birds, and herptiles.

Although species diversity within continuous, unbroken woodlands on Camp Edwards is relatively low, certain species require undisturbed forest interior habitats for breeding (for example, ovenbird, wood thrush, and American redstart) and tend to avoid areas in close proximity to human activities. Even temporary occupation of undisturbed woodland

habitat during the breeding season may be sufficient to impact the breeding success of obligate forest interior species.

Studies by the Army National Guard's Environmental Office have found that avifauna associated with bivouacs in Camp Edwards differ from control sites located in similar habitat. Neotropical migrant birds, such as the ovenbird and the common yellowthroat, were significantly less abundant in the bivouacs, while species more common in suburban settings (for example, American robin) were significantly more abundant.

Increased foot traffic associated with maneuver training in undisturbed areas can cause compaction of forest soils, resulting in potential increases in surface runoff. In addition, if the foot traffic is significant, it could cause the loss of rooted vegetation and its capacity to stabilize soils leading to the erosion of forest soils, particularly on moderate to steep terrain. Sedimentation impacts due to soil erosion may also result in the elimination of vegetation or alteration of species composition, with consequent impacts to habitat values.

Re-use of areas before sufficient vegetation recovery has occurred may result in the permanent alteration of the vegetative cover, and in turn, habitat characteristics and value. This loss of necessary cover and foraging habitat in linear strips of altered forest may create barriers that restrict the movement of small mammals.

Scrub oak barren: Scrub oak barren habitat is a special forest area limited primarily to the Impact Area. Suspension of the former mortar and artillery live fire exercises may result in the conversion of scrub oak habitat to forest over the long-term. In turn, this succession of scrub oak habitat to pitch pine-dominated forest may adversely affect some wildlife that utilize standing dead timber (for example, cavity nesting birds) created by wildfires. The periodic use of prescription burns may be necessary to maintain the scrub oak barrens habitat within the Impact Area. However, if remediation projects result in clear cutting of the area and soil disturbance, more significant restoration efforts may be necessary.

Grasslands: Current military training activities will have limited impact on the existing grassland ecology or the grasslands wildlife habitat value on the Massachusetts Military Reservation; particularly to grassland-dependent birds.

Wildlife Resources

The current military operations on Camp Edwards have been directly and indirectly responsible for the perpetuation of viable habitat for certain rare species, particularly those that thrive in early succession habitats. The location and status of rare species on Camp Edwards are monitored on a continuing basis under the Integrated Training Area Management program program. Management plans for each primary habitat type (such as grassland, scrub oak barrens, pine forest) are being developed and implemented to maintain habitat characteristics that support the documented assemblage of rare species. Wildlife resource impacts stem from the following activities:

- Although not part of the current training program, the loss of scrub oak barrens habitat within the Impact Area from succession or remediation will alter the distribution and abundance of several macrolepidopteran species including the pine barrens Itame and pine barrens Zale.

- Eastern box turtle mortality occurs from traffic on all the Massachusetts Military Reservation's roads, but its rate is not expected to increase significantly because military training activities and intensity of use are unchanged.

Otherwise, wildlife resources are protected by the following avoidance techniques:

- Mechanized maneuver training does not adversely affect other rare macrolepidopteran species by habitat degradation, because it is confined to established trails and roads.

- Military training does not significantly impact rare grassland birds within grassland habitat because no training exercises are scheduled in these areas during the breeding season (May 1 to July 31).

- Continued airfield use does not significantly impact rare grassland birds because grassland and edge habitats are managed in accordance with recommended guidelines.

- Field training exercises are limited to established sites to avoid impacting undisturbed areas, particularly where rare species have been documented.

Solid Waste

Current military training and maneuver have very limited impact on the total tonnage of waste generated within the Massachusetts Military Reservation. As noted previously, all of the Massachusetts Military Reservation users add about 5.5% of the total waste stream moved through the Upper Cape Regional Transfer Station, equivalent to less than 10 tons per day. The majority of this waste stream comes from the Cantonment area activities and users and not the field training activities.

Utility Infrastructure

Military training activities have a limited direct impact on utility systems. Wastewater generated in the field is managed with portable toilets. The users privately contract these portable toilets. The maintenance schedule varies with use and season. Two or more toilets are placed at each bivouac area being used and one is placed at each range being used. The maintenance and disposal volumes for the portable toilets are lower than might be expected because some of the military units will arrive by convoy in commercial bus with on-board toilets thereby removing that waste stream with the commercial bus.

Transportation

During the summer months, the 15-day AT training sessions serve about 2,500 reservists per month, or about 1,250 for each 15-day session. Base personnel estimate that about 90 percent arrive by bus or convoy, with the remaining ten percent arriving by private automobile. Even those personnel in the advance parties who arrive by private car, carpool with fellow reservists as their schedules coincide and they often have to travel fairly long distances.

The reservists arrive on Friday and/or Saturday but all units leave Camp Edwards on Friday afternoons. While this Friday afternoon departing traffic has less impact on the roadway system since it flows in the opposite direction of the heavy Cape-bound flow, Saturday arrivals coincide with the typical Friday afternoon and Saturday morning summertime peak of vacationers.

The units that train at Camp Edwards do not normally carry their heavy equipment over the off-base roads. The units instead typically obtain the vehicles at the Unit Training Equipment Site (Unit Training Equipment Site) where all large equipment is kept. The reservists check out the equipment when they arrive and check it in when they leave so the public roads are not cluttered by longer convoys or numerous trailers. This pattern is advantageous both in terms of costs and traffic volume reduction.

Air Quality

The military training activities in the Camp Edwards Training Areas will have a negligible effect on air quality as a result of the significantly low volumes of vehicle traffic and absence of other significant sources of emissions,.

Noise

All Massachusetts National Guard facilities are considered within the Air Installation Compatible Use Zone study for the Otis Air National Guard Base. The Air Installation Compatible Use Zone study sets out appropriate guidelines which suggest restrictions for adjacent uses that may be affected by the ambient noise levels associated with the operation of an airfield. The information generated for the military training activities (without artillery and mortar fire) does not show a significant impact on noise levels. However, to further reduce noise levels, Camp Edwards has adopted a policy to significantly reduce the use of firing ranges closest to Greenway Road.

Cultural Resources

The entire Massachusetts Military Reservation property has been assessed for the potential to contain archeological resources. An Integrated Cultural Resources Management Plan is also being developed in consultation with the state and Federal historic preservation officials. Current military training and maneuver activities can potentially impact archaeological resources based primarily on two factors:

- The archaeological sensitivity of the location in which the activity is occurring
- The necessity of ground disturbance of the activities.

Exercises that are primarily conducted within a classroom setting or for which ground disturbances are not a likely aspect, including Individual Chemical Confidence Training, Meteorological Section Training, Land Navigation Training, will not potentially impact archaeological resources. Other exercises that are conducted within portions of Massachusetts National Guard properties and considered to have low archaeological sensitivity, including Air Mobile Operations and Simulations, will also have low to no impact on archaeological resources.

Exercises primarily focused on strategic, deployment, and support training may impact archaeological resources if they occur in areas considered to have high or moderate archaeological sensitivity and involve soil disturbance activities, such as the excavation of foxholes, earthen defense works, or vegetation/tree removal. These exercises could include Light Infantry Maneuvers and Tactical Operations Centers.

Strategic, support, or deployment exercises, including Mechanized Infantry Maneuvers, Driver Training, Military Police Training, and Field Artillery Training can potentially impact archaeological resources but only if they occur off road in areas considered to have high or moderate archaeological sensitivity or involve soil disturbance.

Some military training exercises are likely to impact archaeological resources if they occur in areas considered to have high or moderate archaeological sensitivity and involve ground disturbance activities such as the installation of defense obstacles and the excavation of foxholes. These exercises include Individual Soldier Training, Bivouac Operations Training, Engineer Training, and Sustainment Engineering Projects.

Risk Characterization

As identified in the table on hazardous materials in training activities, the greatest risk to the habitats and water resources (including groundwater) during training activities may be posed by the accidental release of hydrocarbons in oils and fuel from the vehicles and equipment used in the field training. The following provides a more detailed description of the vehicles used in training, maintenance, and management of Camp Edwards.

Vehicle Use and Number

The numbers and types of vehicles determine the vehicle impact and potential accident rates. The following descriptions of some of the typical ground vehicles used during training activities were included in the Draft Area-wide Environmental Impact Report. A complete listing of Army training vehicles is included in the tables that follow. Additional information in this Final Area-wide Environmental Impact Report includes the vehicles that have been brought onto Camp Edwards in convoys by units from other locations.

Table II. 8: List of MARNG Ground Training Vehicles Tracked Vehicles

Name of Piece	Number of Pieces	Fuel Tank Capacity Note 1.	Oil Capacity Note 2	Gas Mileage Note 3.	Miles traveled Note 4.	Yearly usage Note 5.
Personnel Carrier M113A2	98	95	18/16	3	50	250
Carrier, Command Post M577A2	29	120	18/16	3	50	110
Carrier, Mortar M106A2	9	95	18/16	3	50	0
Carrier, Mortar M1064	4	95	18/16	3	50	16
Combat Vehicle ITV M901A1	28	95	18/16	3	50	35
Carrier, Fire Support M981	7	95	18/16	3	50	10
Carrier, Cargo M548A1	32 (7 excess)	100	18/16	3	50	150
Bridge Tank M48A5	7	385	17/17	1	22	15
Recovery Vehicle M88A1	8	400	16.5/17	.75	20	25
Recovery Vehicle M578	5	260	7/12	1.5	20	8
Howitzer M109A5	28	135	7/14	1.5	20	100

Notes: 1. Volumes in gallons unless otherwise specified
2. Engine/Transmission
3. Miles per gallon
4. Miles traveled per weekend training session
5. Yearly Usage = Number of pieces times number of days out
Source: Unit Training Equipment Site facility

Table II. 9: Wheeled Vehicles

Name of Piece	Number of Pieces	Fuel Tank Capacity	Oil Capacity	Gas Mileage	Miles traveled	Yearly Usage
Truck, CGO Tactical M1008	3	20	7	30	100	3
Truck, CGO M1008A1	3	20	7	30	100	1
Truck, UTL CGO M998	10	25	7	30	100	100
Truck UTL CGO M997	1	25	7	30	100	8
Truck, UTL Tactical M1009	2	20	7	30	100	5
Truck, 2.5 ton M35A2	1	50	22	18	50	9
Engineer Truck Tractor M916A1	1	100	41	18	50	Not used
Eng. Truck 2.5 ton M49A2	1	50	22	18	50	0
Eng. Truck CGO 6X6 M54A2	2	70	24	18	50	1
Eng. Dump 5 ton M51A2	2	110	24	18	50	2
Eng. Truck Tractor M52A2	2	110	24	18	50	see note 6.
Eng. Truck M818	1	155	24	18	50	2
Eng. Dozer M4506	1	42	9	18	50	36 (FE) see note 7
Eng. Dozer 550-G	1	42	9	18	50	36 (FE)
Eng. Dozer D7FWW	1	100	29	18	50	24(FE)
Eng. Dozer D8K85B	1	120	40	18	50	24(FE)
Eng. Grader 130-G	2	75	5.5	18	50	24(FE)
Eng. Loader Scoop MW24C	3	60	20	5	NA	Daily (FE)
Eng. Loader Scoop H100-C	1	70	40	5	NA	Daily (FE)
Eng. Loader Scoop M950C	1	50	40	5	NA	Daily (FE)

Notes to Table:
1. Volumes in gallons unless otherwise specified
2. Engine/Transmission
3. Miles per gallon
4. Miles traveled per weekend training session
5. Yearly Usage = Number of pieces times number of weekends out
6. Cantonment area only
7. FE = Facilities Engineering

Source: Unit Training Equipment Site facility

Table II. 10: Convoys to Camp Edwards

Name of Piece	FY-98	FY-99
Cargo Truck, M1008	73	54
Utility Truck, M1009	56	52
Utility/CargoTruck, M998	178	179
Utility/CargoTruck, M997	18	12
Utility/CargoTruck, M996	12	13
Truck, 2.5 ton M35A2	165	153
Engineer Truck Tractor M916A1	4	4
Eng. Truck M818	3	2
Eng. Cargo Truck 5/4 M1028	5	6
Utility/CargoTruck M1038	13	10
Eng. Truck 5 ton M923	273	259
Eng. Truck 5 ton M813	8	8
Truck Tractor 5 ton M931	25	19
Wrecker M543	11	12
Cargo Truck HEM M543	33	21
Cargo Truck 1 ¼ ton M1025	284	134
Utility Truck 1 ¼ ton M1026	162	120
Dump Truck M817	11	9

Total number of vehicles: FY-98 = 1334
FY-99 = 1040

Total number of convoys: FY-98 = 54
FY-99 = 43

Average number of vehicles: FY-98 = 25/convoy
FY-99 = 24/convoy

The most common training vehicle used in the convoys is the normal 1.25 ton pick-up truck. The larger 2.5-ton cargo and utility trucks are the next most common. The total

number of additional vehicles from convoys to Camp Edwards is not significant, but it is added to the calculations of accident risk discussed below.

Size of Potential Accidents

Although it would be extremely improbable, the simultaneous release of fuel from all the possible vehicles within the training areas was raised during one of the public meetings. As noted above, nothing close to a total failure has ever occurred within Camp Edwards.

Based on a review of the actual usage figures for the Camp Edwards training areas, volumes of automotive fuel in the field can be estimated for an average day. Accounting for 250 possible training days on Camp Edwards, and the number of days each type of vehicle is used, fuel volumes are not expected to exceed 700 gallons at any one training day. (Calculated as the number of gallons total capacity in each vehicle, times the ratio of days used - # days/250 total training days). This is equivalent to approximately 40 vehicles in the Zone II areas/Camp Edwards Training Areas in Camp Edwards and is considered to be a very low risk to the groundwater supplies under the Camp Edwards Training Areas for the following reasons:

- Over the approximate 14,000 acres of Camp Edwards, the average density of vehicles is equivalent to one vehicle per 350 acres.

- In the event of an accident, the Camp Edwards Environmental Office is prepared and has been able to respond to incidents in all of Camp Edwards.

Emergency Response within Camp Edwards

The Army National Guard has developed the "*Massachusetts Army National Guard Camp Edwards Training Site Spill Prevention, Control, and Countermeasure Plan*" which addresses procedures, methods and equipment for the prevention of releases of oil or hazardous materials as well as cleanup in the event of an accidental release. The plan was updated in May 1999. The Army National Guard also developed an "*Installation Spill Contingency Plan*" in accordance with state and federal regulations governing large quantity generators of hazardous waste. The plan is reviewed at least once every three years, and updated as necessary. Updates may occur more frequently if there is a change in materials, conditions of waste or materials management, or the regulations governing them. Also developed and implemented is a "*Storm Water Pollution Prevention Plan*" which is reviewed annually in accordance with federal regulations. Some elements of each of these plans overlap, as they address prevention or response actions related to spills or run-off from potential environmental contaminants. These plans identify hazardous materials and waste managed at the facility, identify operations or activities that could result in a release, and establish procedures for release prevention as well as emergency response and clean-up. In combination, these management elements ensure a high level of response to accidents.

A review of historical OHM (Other Hazardous Materials) release patterns throughout the Massachusetts National Guard properties indicates that the vast majority of releases associated with fuel or chemicals occurred in the Cantonment Area. The few documented releases that occurred within the training area were the result of activities no longer authorized by the National Guard. The following table lists the accidents that have occurred within Massachusetts Army National Guard properties within the last years of record.

Table II. 11: History of Accidents at Camp Edwards

DESCRIPTION OF SPILL	CORRECTIVE ACTIONS TAKEN	PLAN FOR PREVENTING RECURRENCE
2/11/93 – During building demolition of the Harrison House, a 250-gallon underground storage tank was discovered, upon removal of the United States contaminated soil was discovered.	Underground storage tank was removed along with 5 cubic yards of contaminated soil.	The tank was removed and there were no further operations in that area.
4/18/93 – A 5-ton dump truck broke a fuel line causing a spill of approximately 10 to 30 gallons of diesel fuel on the ground on Gibbs Road.	Contaminated material was immediately recovered and was processed as hazardous waste.	Units are required to perform daily maintenance checks of equipment and vehicles.
5/1/93 – During removal of a building structure at J-2 range, a home heating oil tank was discovered to be leaking. Approx. 30 to 50 gallons of home heating oil were spilled.	Contents of tank was removed, contaminated soil was excavated, removed, and disposed of hazardous waste.	The tank was removed and there were no further maintenance operations in that area.
7/12/93 – During refueling operations, a seal failure on a fuel pump truck occurred spilling approximately 100 gallons onto the ground in the BA-3 training area.	The spill was contained and the contaminated material was immediately recovered and processed as hazardous waste.	Secondary containment is required during refueling operations and no refueling vehicle will be left unattended.
7/22/93 – A hydraulic link on a dump truck broke releasing 3 to 5 gallons onto the ground in the 5200 parking area.	The source was controlled and the spill was contained. The contaminated material was immediately recovered and processed as hazardous waste.	Vehicles that are not empty will be parked on secondary containment pads.

12/9/93 – A fuel line broke on a dump truck and between 30 and 50 gallons of diesel fuel was spilled at the training site at Unit Training Equipment Site.	Most of the spill was contained on pavement. The fuel was contained with speedy dry and placed in a 55-gallon drum. Contaminated soil was removed and disposed of as hazardous waste.	Units are required to perform daily inspections of vehicles before operating vehicles.
9/26/94 – During maintenance operations of a 155 SP Howitzer, a fuel line failed and 20 gallons of diesel fuel spilled onto the ground at Unit Training Equipment Site.	The spill was contained, cleaned up and placed in a 55-gallon drum.	Daily inspections are made of equipment that is scheduled for repair. Prior to operation of vehicles a walk around inspection is performed.
3/2/95 – During maintenance operations, a 155 SP Howitzer was being moved from storage at Unit Training Equipment Site to a garage bay at Unit Training Equipment Site and a fuel line failed and 20 gallons of diesel fuel spilled onto the ground.	The spill was contained, cleaned up and placed in a 55-gallon drum which was disposed of as hazardous waste.	Daily inspections are made of equipment that is scheduled for repair.
4/25/95 – During an inspection of vehicles at Unit Training Equipment Site, an Armored Personnel Carrier was determined to have a failed fuel tank, resulting in a spill of about 50 gallons of diesel fuel.	A contractor was called in to clean up the spill. Approximately 20cy of impacted soil was removed and disposed.	Keep fueled vehicles on pavement. Perform daily inspections for leaks/stains.
7/17/99 – A JD-410 was being used to dig a sump for a generator when its hydraulic seal failed and released 1 gallon of hydraulic oil at the training site.	The spill was contained with plastic and speedy dry and then placed into a 55-gallon drum.	Prior to operation of equipment, units are required to perform inspections.
5/6/99 – During a daily inspection for leaks/stains, between 3 to 5 gallons was found on the ground in the 3500 vehicle storage area.	The spill was on gravel and soil therefor three drums were needed. The spill was cleaned up and placed in three 55-gallon drums.	Maintain the daily inspections for leaks, spills. Keep as many vehicles on pavement as possible.

No accidents occurred in the year 2000 season.

Source: Massachusetts National Guard Natural Resources Office, 1999 and 2000

Alternative: Relocating Annual (two-week) Training

As discussed previously, there are a number of reasons for training to occur at Camp Edwards. The Army specifies certain areas and schedules for each training unit type and task. This includes the area requirements to distribute the soldiers and equipment, the number of repetitions at the task needed to become proficient and the number of days required for each repetition. Based on these standards, training areas are scheduled to meet the requirements specified for each unit and their required tasks.

Other locations are used for two-week training activities. However, Camp Edwards is still needed under the following circumstances:

- Camp Edwards is part of a commander's total training strategy.
- The training requires collective training, i.e, requires either coordination with other units or a number of soldiers and units to properly complete the task.
- When those training periods cannot be scheduled at another training location because of the following constraints:
    - Scheduling and availability of an appropriate time slot at other military facilities
    - Travel costs
    - Time availability for soldiers
    - Level of preparedness of the unit (i.e., Army training evaluation program rating)
- When Camp Edwards provides the type and range of terrain and cover type needed to provide the particular training experience or when Camp Edwards provides the infrastructure or improvements such as simulators and simulations, pop-up targets, surveyed gun positions and navigation courses, obstacle courses, rappel tower, etc., necessary for combining certain training activities to intensify the training experience within the time available.
- The training is part of the rotational strategy. Units return to Camp Edwards every third year after training collectively with their related units at the larger training areas such as Ft. Drum.

As also noted previously, while new weapons systems and maneuver requirements have increased the need for additional training lands, the total land area available for military training in the nation has not increased significantly since World War II. This puts a demand on the remaining available training areas.

However, the annual training requirements for the Massachusetts National Guard are not all satisfied at Camp Edwards. As shown in the Appendices, of the 83 Annual Training duties taken by Massachusetts Army National Guard Units, only 26 took place at Camp

Edwards; *less than one-third of the annual training events*. As a related note of the 200 Inactive Duty (weekend) training events taken by Massachusetts Guard at the end of last year, only 34 were at Camp Edwards and 23 were at Devens. As a result, the National Guard finds that it has already made significant efforts to control over use of Camp Edwards.

Table II. 12: Training Locations for Mass. Units

Annual [AT]
- 26 units at Camp Edwards
- 57 units at other areas

Weekend [IDT]
- 34 units at Camp Edwards
- 166 units at other areas

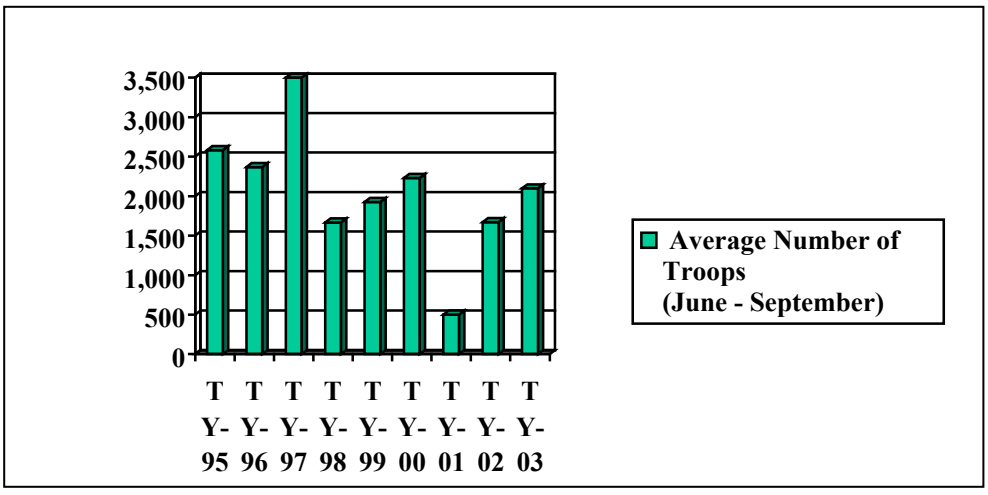
Note: Results from FY 2000

During this period, distribution of annual training occurred at the following locations:

- Ft Drum, NY
- Ft Polk, LA
- Ft Knox, KY
- Ft Indiantown Gap, PA
- Regional Training Center, LA
- Ft Dix, NJ
- Ft McCoy, WI
- Cp. Edwards *
- Cp. Dodge, IA
- National Training Center, CA
- Ft A.P. Hill

However, as previously discussed, training is performed in cycles as allowed by the preparation of the soldiers and the training activities required of them. To highlight the historic and projected cyclical nature of training activities, the following chart was prepared.

Chart: Utilization, past and projected, for Use of Camp Edwards, 1995-2003



Alternative: Relocating training activities to the Cantonment Area

A number of training activities already take place in the Cantonment Area. These include civilian as well as military activities. As noted previously a number of range safety, land area and training task requirements would make it infeasible to use the Cantonment Area for training for almost all field maneuvers. In addition to these, the lack of sufficient vegetative coverage and topographic relief does not allow the Cantonment area to meet the doctrinal requirements for appropriate training experience for most of the field activities. However, as discussed in the Cantonment Area Master Plan section, several improvements could be made to provide some key training opportunities and improve the training experience in the Cantonment area.

The Unit Training Equipment Site facility project is described as follows:

A new Unit Training Equipment Site facility

This project is for a new maintenance and storage space for Army National Guard tactical and engineering vehicles and training equipment assigned to the Massachusetts Military Reservation. Vehicles and equipment stored and maintained at the Massachusetts Military Reservation are allocated to transient personnel rather than requiring the transport of vehicles and equipment from home armories to the Massachusetts Military Reservation. This project would consolidate three existing, older vehicle maintenance facilities into one modernized facility. It would also remove the Unit Training Equipment Site facility near the Greenway neighborhood, but would not expand capabilities beyond the existing facilities.

Siting Requirements: The location for a new Unit Training Equipment Site should support the maintenance and issuance of military equipment to units that train at the Massachusetts Military Reservation. It should also provide sufficient facilities and storage space to adequately and efficiently maintain the vehicles, equipment, and personnel currently assigned to the Massachusetts Military Reservation. The Unit Training Equipment Site should be located close to the training area to minimize fuel consumption, calculated by driving distance and time to and from the training area, and the use of existing paved roads by tracked vehicles (tracked vehicles break down the edges of paved roads). Other criteria include proximity to existing utility services, vehicle washrack, fuel dispensing site, existing parking areas and roads which lead to the training area, and minimizing current or future conflicts with ongoing remediation efforts being conducted under the Installation Restoration Program.

Alternative: More Simulations and Simulators

As discussed in the Draft Area-wide Environmental Impact Report, this alternative has been a previously programmed goal of the Massachusetts Army National Guard. There are a number of simulations and simulators that could greatly expand on the success of the systems already installed at Camp Edwards. The existing facilities include the Fire Support Combined Arms Tactical Trainer and Small Arms Simulators, with the JANUS

system proposed to be installed in fiscal year 2001. Following are descriptions of some of the existing and potential systems, which may be available depending on funding.

Artillery Training Simulators

Infantry Mortar Crew Trainer is a replica of the 60-mm and 81mm crew-served mortar that looks and acts like a real mortar tube. Similar to the Howitzer Crew Trainer, the simulator enables the trainer to monitor the performance of the mortar crew on dry fire missions by recording quadrant elevation, deflection, aiming point, and mission duration.

Guard Unit Armory Device Full-Crew Interactive Simulation Trainer -Field Artillery II is a portable system designed to simulate battlefield scenarios for the training of field artillery forward observers.

Multiple Integrated Laser Engagement System 2000 provides tactical engagement simulation for direct (observed target) fire training in the field. An eye-safe laser transmitter is attached to each individual and vehicle weapon barrel which accurately replicates the range and characteristics of the specific weapon system. Each individual and vehicle in the training exercise also has an attached detection system to record hits and to assess the probability of casualty. Scoring is recorded to allow After Action Review of the exercise.

Engineer Training Simulators

Engineer units need to be able to perform those common tasks and engineer tasks associated with being part of a combined arms team in a dynamic battlefield environment. Safety considerations and training land environmental protection requirements can be very restrict training for some engineer tasks on actual equipment. Simulators provide a means to train for collective tasks and ensure that when the opportunity arises for conducting field training exercises, soldiers will receive the optimum benefit.

Engineer Combined Arms Tactical Trainer allows engineer units to train for tasks associated with command and control, mobility, countermobility, and survivability in a simulated interactive combat environment. Friendly units as well as opposing forces are affected by what engineers do or do not do within the simulated environment. Trainers will be able to create stressful situations normally only found in actual combat environments; i.e., requiring soldiers to make decisions under “fog of war” conditions not usually found in training situations. The trainer will be able to represent a range of terrain, weather, and threats.

Alternative: Limiting Bivouacs to the Cantonment Area

The purpose of a bivouac is to learn *sustainability and survivability*. It is a life support area that becomes the platform for almost all the other training activities. It is part of a complex of training activities including protection of the location, camouflaging the

position, and surviving in the event of a nuclear, biological or chemical (Gas Mask Confidence) attack, where Gas Mask Confidence survivability means being able to function in protective equipment. For most units, and particularly for units such as the Combat Engineers, this takes on a requirement (for Mission Essential Task List and Army Training Evaluation Program standards) to control a large area of land. The recommended land area is anywhere from six to seventy square kilometers depending on the unit type. For an Infantry unit, the training regime requires a more spartan and smaller bivouac. Each unit has its requirements for tentage: a defensive perimeter, linkages as part of the collective training system, ability to move into training actions, and training for the support system. Cover, concealment and camouflage are necessary for all units, and the varied terrain and cover of the Camp Edwards training areas provides the options for these military training standards. All training requires diverse and dispersed sites.

Two land areas with topography and vegetative cover that might be considered appropriate for any field training activities are the 3600 block and the 4200/BA-2 block. These areas lie opposite each other on either side of Connery Avenue. However, most of the 3600 area is cleared for unit assembly and for a helicopter landing zone. The 4200/BA-2 block is used for the Rappel tower and Leadership Training facility, and is further removed from the other field training areas of Camp Edwards. Consequently, these areas do not provide the required training experience.

Land south of the Unit Training Equipment Site facility lies within the designated Cantonment Area and has a full vegetative cover outside of the designated trails and roads. This area does not provide high topographic relief but is connected with the other field training areas within Camp Edwards. The possible use of this area for field training will most likely be dependent on the future of the Unit Training Equipment Site facility that supports the field training.

Otherwise, bivouacs limited to the available sites within the Cantonment Area would not meet the Army Training Standards for learning sustainability and survivability. The land areas controlled by the Mass Army National Guard within the Cantonment Area have limited vegetative cover or topographic relief, and cannot provide the conditions or variety necessary for proper training. Instead, specific locations for bivouacs have been identified within the northern training areas of Camp Edwards. These sites are managed and controlled by the Camp Edwards Range Control and Environmental Office. To allow the natural vegetation to respond and the training activities to be realistic, the management involves rotation of the sites during different training seasons, based on interaction between Range Control and the Environmental Office under the Integrated Training Area Management Program.

Figures showing schematic layouts of typical bivouacs for Engineer Headquarters and Company units follow on the next page. They are shown within actual bivouac areas in Camp Edwards.

FigureII-3 BAlternative: Limiting Vehicle Use to Existing Roads

One of the common comments on the Draft Area-wide Environmental Impact Report was whether off-road vehicle use could be restricted. However, many of the commentors expressed varying opinions on what constitutes off-road travel. A discussion of the road system at Camp Edwards is appropriate to help focus the discussion of "off-road" travel.

Camp Edwards has a number of roads and trails constructed of different materials. The road construction materials range from macadam pavement, to graded gravel, to natural earth. The roads are used for a number of purposes including fire breaks and land maintenance as well as training. Because of the impact of tracks on graded or paved roads, the vehicles equipped with tracks are kept off those roads in favor of tracked vehicle trails. However, no military vehicles of any type are given permission to travel off of the established road and trail system.

Parking areas have been established at all the ranges and activity areas for vehicles providing transport. Typical transport vehicles for single use of these ranges may include military trucks or even commercial buses with on board sanitary facilities. No special restrictions on vehicle access are necessary since all of the ranges are located off of the main paved or graded and gravel roads: Burgoyne, Gibbs and Greenway Roads,.

There has been no reason to add new roads for military training. All new roads or trails that have been constructed in Camp Edwards have been constructed for other purposes such as new well construction, environmental investigations, or remediation projects. In fact, certain roads and trails controlled by Camp Edwards have been closed when conditions have been found by the Natural Resources Office to warrant closure. These conditions are typically soil erosion and wash outs that require re-establishment of natural vegetative cover to prevent the area from experiencing further erosion. The total roadway coverage is as follows:

- Coverage of roads within the Training Areas 1.4%
- Total road coverage within the Massachusetts Military Reservation 2.4%

In comparison with typical residential areas, including those surrounding the Massachusetts Military Reservation, road coverage could be equal to about 10 to 12% of the land coverage. In addition, the existing road system is not substantially different from the historic condition when the area came under State park jurisdiction. In fact, the survey from 1933/34 suggests that there are fewer roads now than at that time. The figures that follow show the existing and historic conditions.

Figure II-3 Bivouac Examples

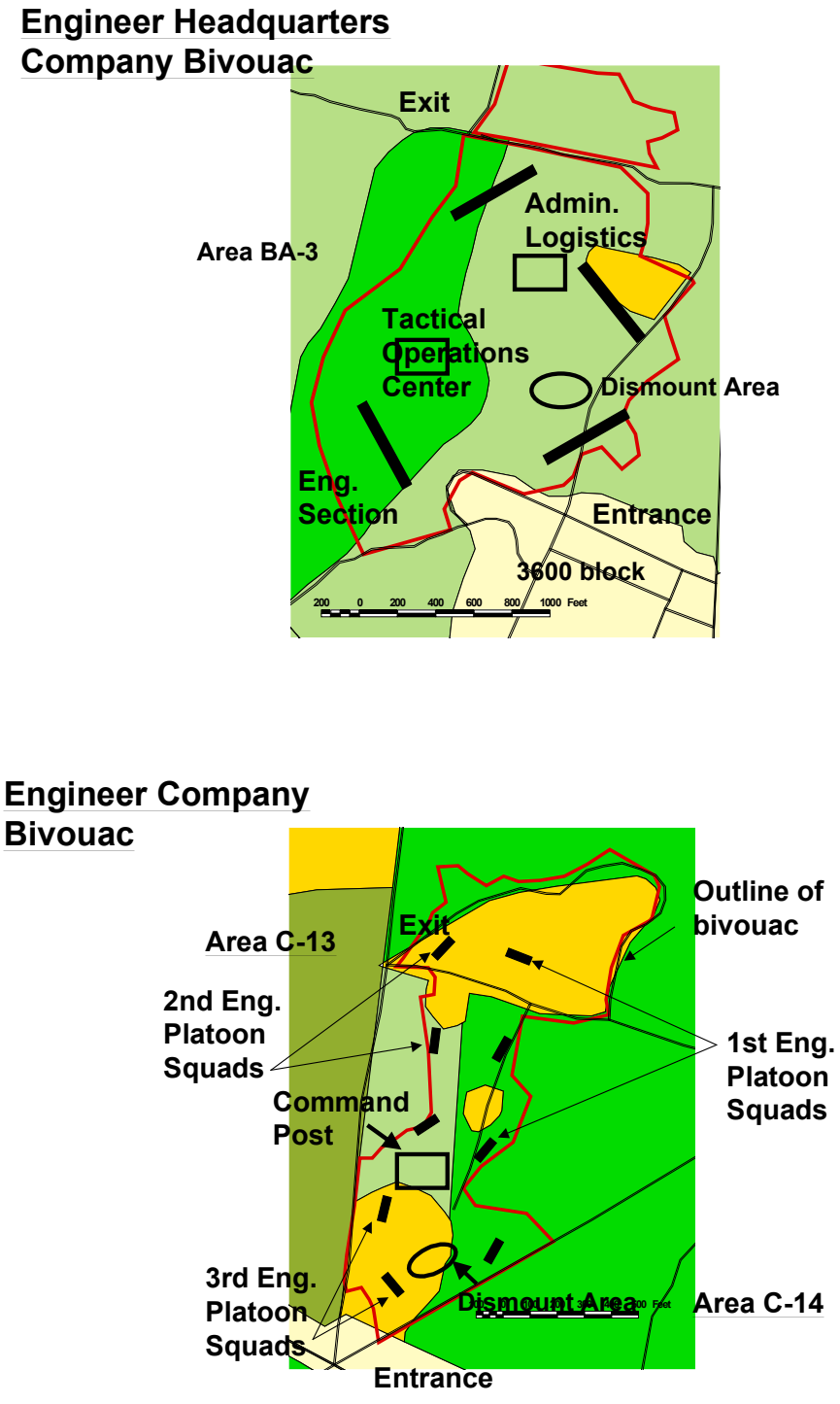
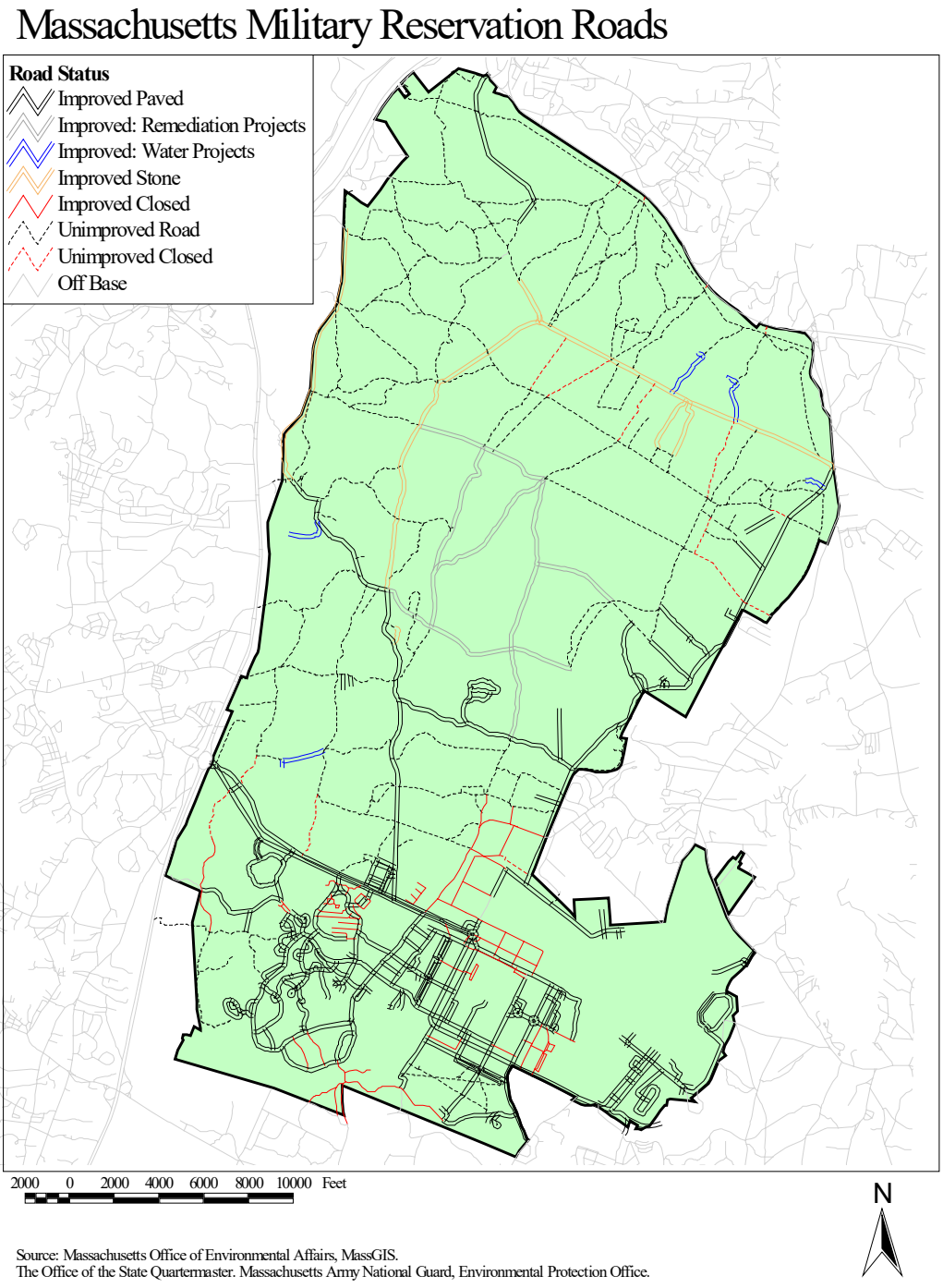
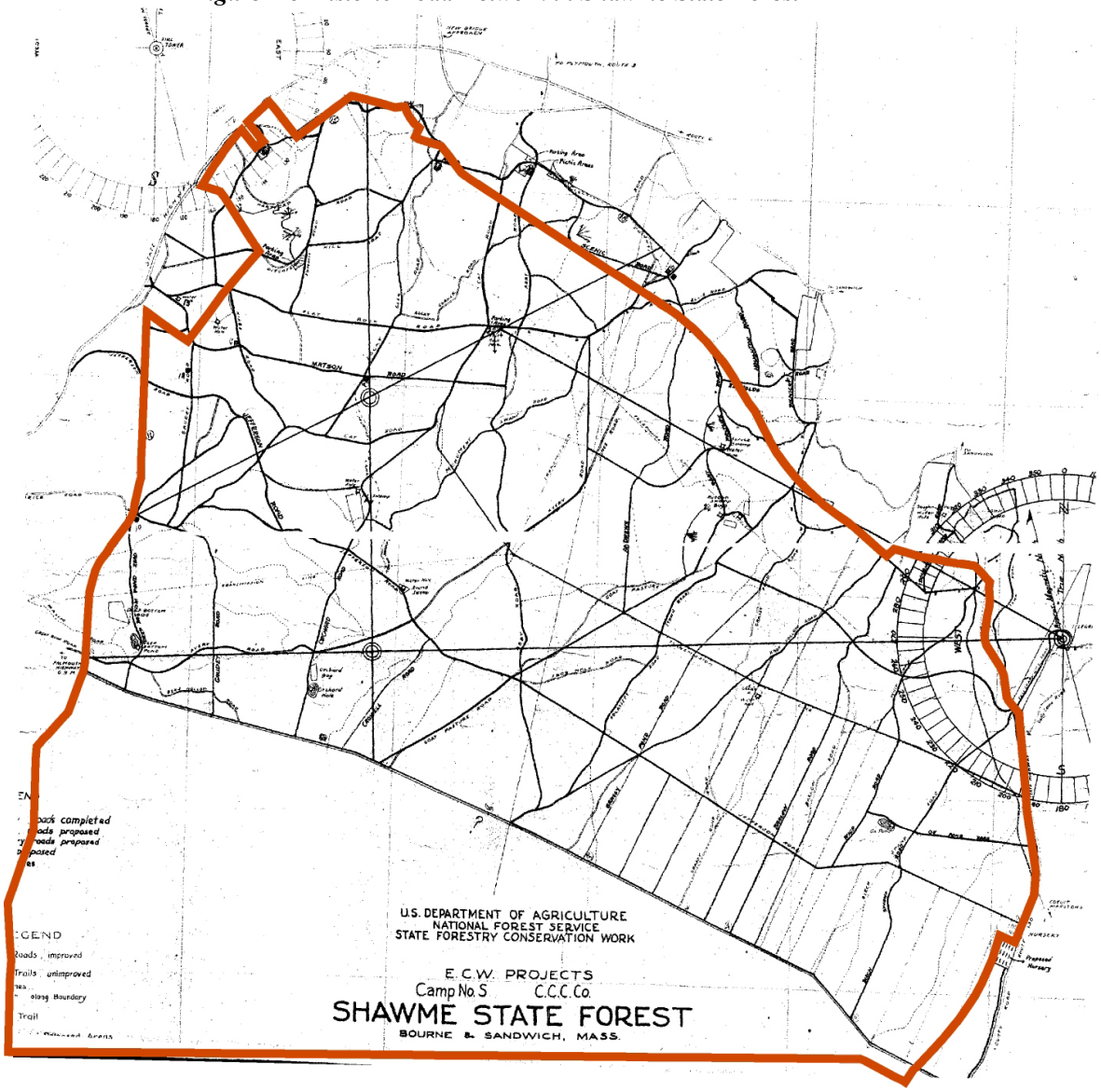


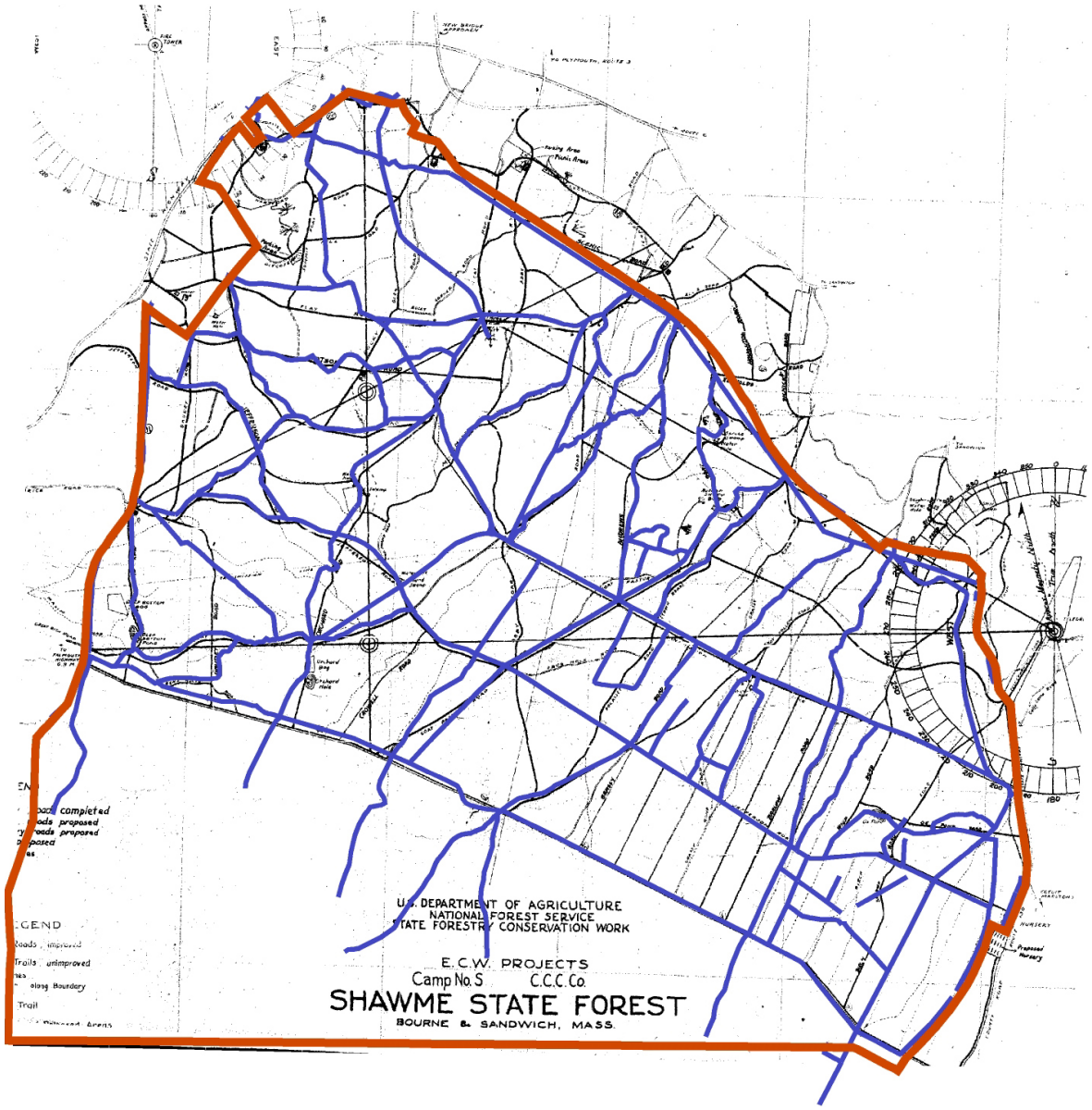
Figure II-4 Massachusetts Military Reservation Roads



FigureII-5 Historic Road Network in Shawme State Forest



FigureII-6 Overlay of Current and Historic Massachusetts Military Reservation Roads



Another part of the concern is whether use of vehicles in the training areas presents an undue risk from discharge of hazardous materials, i.e, gasoline and diesel fuel from the vehicles. There are several reasons to consider this a very limited risk.

- Regulatory standards: Vehicle travel in the entire Zone II, wellhead protection areas in the state is not presently restricted by regulation or management standards.

- There is limited risk of spills or impacts from spills to groundwater resources from military vehicles. This assessment comes from the history of vehicle accidents over all areas of the Massachusetts Military Reservation, and the actions taken under the Emergency Response Plan (Spill Prevention Control and Countermeasures plan) presently established for accidental spills. The history of spills and clean-up actions in Camp Edwards was included in the Draft Area-wide Environmental Impact Report and is included here in the Appendices. No spills have occurred since that time.

- The number of vehicles allowed in the field at any time or over the training periods is significantly less than the typical density of vehicles found in most other Zone II areas.

Alternative: Ending Off-road Tracked Vehicle Use

As discussed above, tracked vehicles use unimproved trails to eliminate maintenance of paved or graded roads. However, all tracked vehicles are currently limited to the existing trail system that is designed specifically for the use of these vehicles. As a consequence, off-road tracked vehicle use is not considered an issue. However, the projected change in force structure may provide a significant reduction in the number and use of tracked vehicles on *every* area of Camp Edwards.

As previously discussed in the Draft Area-wide Environmental Impact Report, the Massachusetts National Guard is looking to become 'lighter and faster' and change the reliance on the heavier equipment. But as also noted previously in this section, the Massachusetts National Guard units are part of the national system of defense and with that comes a responsibility to maintain units in accordance with the national directives. The Massachusetts National Guard has anticipated that a future change in force structure will be made by the National Guard Bureau and the Department of the Army that will allow this change and thereby release the Massachusetts units from training with and maintaining the heavier equipment.

Summary of Alternatives

In the Certificate, the Secretary requests consideration of alternative restrictions on training within Camp Edwards to clarify the impacts and feasibility of the follwing:

- Relocating Annual (two-week) Training – This is already being done in accordance with military training programs.

- Relocating training activities to the Cantonment Area – most field activities cannot be restricted solely to the Cantonment Area. However, some key structural training systems can be sited and improved within the Cantonment Area.

- Adding a wider range of simulations and simulators – The National Guard wants to expand these facilities because they support training. However, simulations and simulators are not yet capable of truly matching a field experience.

- Limiting bivouacs to the Cantonment Area – Bivouacs cannot be limited to the Cantonment Area because of the Army training standards for bivouacs. In addition, the available terrain in the Cantonment Area is not appropriate.

- Limiting Vehicle Use to Existing Roads – Vehicle use is presently limited to existing roads.

- Ending Off-road Tracked Vehicle Use – Again, all vehicle use, including tracked vehicles is presently limited to existing roads.

II. MILITARY TRAINING AND ALTERNATIVES IN THE CAMP EDWARDS TRAINING AREAS

III. MASTER PLAN FOR THE MASSACHUSETTS MILITARY RESERVATION CANTONMENT AREA

Land Use and Options for the Massachusetts National Guard

Introduction

The Cantonment Area of the Massachusetts Military Reservation is a flat, developed area with roads, utilities, buildings and housing on about 5,900 acres. Figure III-1 shows the proposed boundaries of areas for the Camp Edwards Training Areas and the separate Cantonment Area. The designation of these separate areas stems from the suggestion in the Certificate and from other commentors that a different management focus is appropriate for each area. The management focus and purposes are to provide a high level of protection in the northern area for water supply and habitat protection, while providing an allowance for different environmental and development controls in the Cantonment Area recognizing the uses within the Cantonment Area.

As noted previously, there are other users within the Cantonment Area; the U.S. Coast Guard, the Veterans Administration, the U.S. Air Force, and others, who are not subject to this Massachusetts Environmental Impact Review. However, they are identified here to establish a complete plan of land uses in the Cantonment Area.

By federal law, military regulation, and under the current lease and license arrangements, which are partially described in the Environmental Management Section I. of this document and were described in the Draft Area-wide Environmental Impact Report, there is in fact comparable environmental regulation in the southern Cantonment Area. There are several physiographic reasons for this:

- **Natural lands** are found in the Cantonment Area, such as forested land and inland wetlands.
- Zone II **wellhead protection** areas cross over large areas of the Cantonment Area.
- The Air Force Center for Environmental Excellence/Installation Restoration Program **investigation and remediation** efforts include projects in the Cantonment Area.

On top of these natural conditions are also the physical, built conditions which are also regulated including the following:

- **Utility systems**: roads and paved areas of different conditions and types, wastewater collection and treatment facilities, water extraction and distribution facilities, stormwater handling facilities, fuel storage and transfer facilities, and waste disposal operations and facilities, including those for solid and hazardous waste.
- **Buildings** with their systems for maintaining the human environment.

The only significant difference is that the built environment of the Cantonment Area has allowed a greater intensity of use in the area. Otherwise both the Camp Edwards Training Areas and the Cantonment Area are highly controlled. The areas have been set aside as military properties for national and regional security and so must conform to the most recent federal standards. These standards are defined for and have defined the principal uses.

In general, the Cantonment Area is used as an airfield, a cemetery, housing, military barracks, and administrative functions. Currently, the principal users and facilities in the Cantonment Area include the following:

- The Army National Guard, which operates vehicle and airfield maintenance facilities, and training support activities, including simulation facilities, warehousing, transient quarters, training supplies and equipment, administrative facilities, and garrison headquarter facilities.

- The Air National Guard, which operates Otis Air National Guard Base, and manages some of the Massachusetts Military Reservation utility infrastructure and certain land areas.

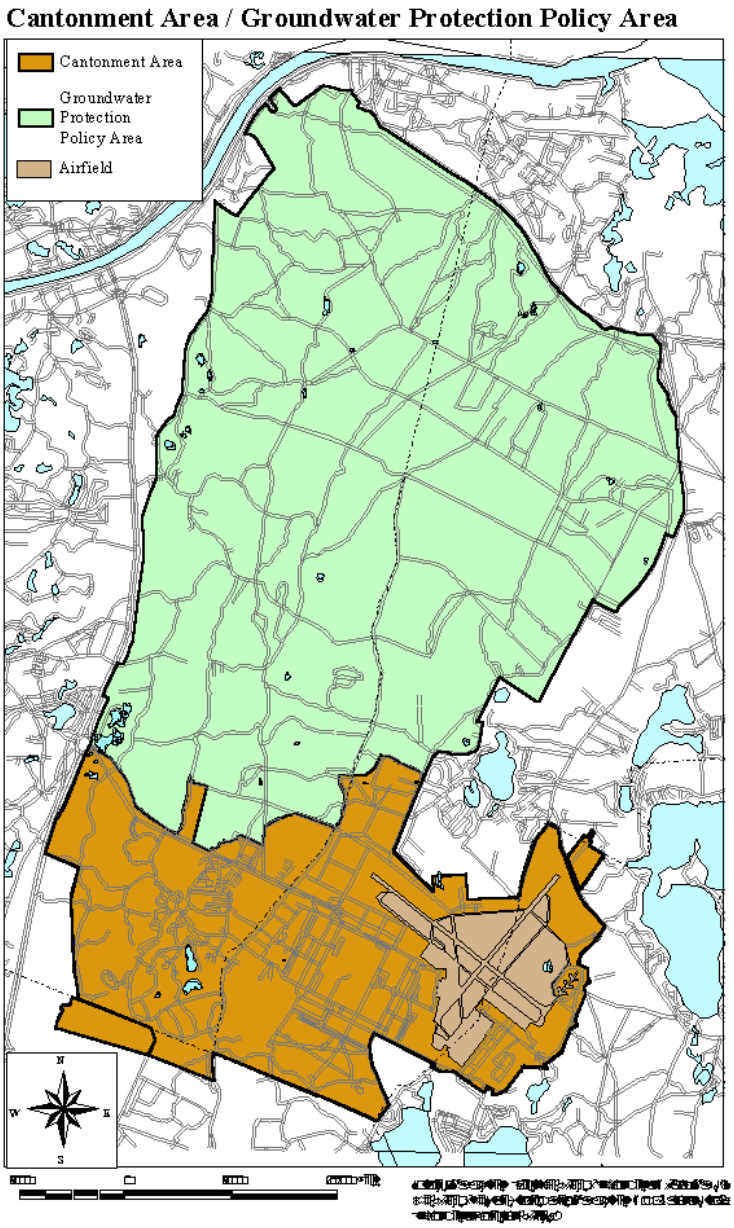
- The Veterans Administration, which operates and maintains the National Cemetery.

- The United States Coast Guard, which maintains Air Station Cape Cod, a housing complex for service dependants, and the associated golf course, commissary, and Post Exchange facilities.

- The State Division of Fisheries and Wildlife, which maintains land on the southern side for wildlife habitat.

- The United States Air Force, which holds a separate parcel of land, south of the Air Base, for the purpose of runway safety.

Figure III-I: Cantonment Area/Groundwater Protection Policy Area



Reservation History

A master plan requires knowledge of not only existing conditions, but also the history that has created those found conditions. In this way, projected land plans arise from a full understanding of the creation and evolution of the property. The following is a short history of the Massachusetts Military Reservation.

As early as 1908 and again in 1913, artillery units and armories of the Massachusetts National Guard were conducting live fire artillery training on Cape Cod. When in 1933, a special board of officers was appointed by the Adjutant General to recommend a new location for a training camp, this board recommended the present site of Camp Edwards. The Massachusetts Military Reservation was formally established in 1935 by a legislative act of the Commonwealth of Massachusetts for the purpose of National Guard and Army Reserve training and was designated Camp Edwards. A grass airstrip was established at the same time and named Otis Field. A portion of the range and maneuver area was acquired from the Shawme-Crowell State Forest and the Cantonment Area and a portion of the range and maneuver area was purchased from private sources. The majority of the land forming Massachusetts Military Reservation came from the purchase of the Coonamessett Sheep Ranch.

After this action, significant development of the Cantonment Area ensued over the next several decades. During the period from1935 to 1940, the Commonwealth of Massachusetts and the federal government constructed 63 buildings and two turfed runways approximately 3,800 ft long for training purposes. In 1940, with the threat of war looming, the United States Army initiated construction of expanded facilities to accommodate a base training population of up to 30,000 troops and a 1,722-bed hospital complex. From 1945 to 1970, the military hospital at Camp Edwards was one of the Army's largest hospital units. During the early1970s the hospital buildings were demolished when Otis Air Force Base was transferred to Massachusetts Air National Guard. Control of the former hospital site has been transferred to the Veterans Administration.

In1948, the United States Air Force obtained control of Otis Field for an air defense mission and assignment of a fighter interceptor unit. At this time, one runway was extended to 8,000 ft. to allow the landing of larger and heavier aircraft. In 1953, the United States Air Force established Otis Air Force Base, and selected facilities were transferred from the Department of the Army to the Department of the Air Force. This action also involved the acquisition and operational control of utility systems, communications facilities, supply facilities, fire protection, and the hospital that were previously operated by the United States Army at Camp Edwards.

In 1958, the United States Air Force negotiated a 99-year lease with the Commonwealth of Massachusetts for approximately 21,500 acres, which included Otis Field and Camp Edwards. Subsequently, Runway 14/32 (NW-SE runway) was extended from 7,000 ft to 9,500 ft. In addition, a new control tower, fire station, aviation support facilities, and a 1,993-unit family housing area were constructed. The United States Air Force granted the United States Army a permit in 1976 to use approximately 14,000 acres located primarily north of the airfield. Camp

Edwards, with its mission to support Army Reserve training, consisted primarily of the range and maneuver training areas and World War II-era buildings in the cantonment area.

In 1962, the 26th Air Defense Missile Squadron was activated and the Boeing Michigan Aeronautical Research Center (Boeing Michigan Aeronautical Research Center) antiaircraft missile facility was located at Otis Air Force Base. The Boeing Michigan Aeronautical Research Center facility, operated under Strategic Air Command control by Boeing Corporation, was deactivated in 1972. It is now slated for demolition.

Since 1968, Otis Air Force Base has hosted a number of additional units. The 102nd Fighter-Interceptor Wing of Massachusetts Air National Guard relocated from Logan International Airport in 1968. Also in 1970, the United States Coast Guard relocated to Otis Air Force Base and commissioned the United States Coast Guard, Air Station Cape Cod. In December 1973, the 102nd Fighter-Interceptor Wing became the airfield manager and the United States Army began withdrawal of its Camp Edwards garrison. Massachusetts Army National Guard assumed operational control of Camp Edwards in 1975 to provide Inactive Duty Training and Annual Training for National Guard and Army Reserve units. Otis Field was officially designated Otis Air National Guard Base on October 1, 1980.

Land Ownership

The Commonwealth of Massachusetts owns the majority of the Massachusetts Military Reservation in fee. However, the Cantonment Area also includes certain parcels that have been acquired or are owned by the federal government.

- In 1975, the 749-acre parcel south of Connery Avenue was deleted from the Air Force lease and its ownership deeded to the Veterans Administration for use as a national cemetery.

- The Air Force acquired approximately 1,100 acres of land at the end of the Air Base runway formerly within Mashpee.

- Another parcel has been deeded by the Commonwealth to the Town of Bourne (in the Coast Guard housing area) for its on-base public schools.

- The Commonwealth of Massachusetts owns other separate parcels in the Cantonment Area outright.

Federal Leases, State Licenses

The land owned by the Commonwealth of Massachusetts has been leased to the United States government and licensed back to the State for use by the Massachusetts National Guard. The United States Coast Guard is one of the federal agencies with a lease from the State. A parcel south of the National Cemetery has also been leased directly to the United States Air Force.

- The Air National Guard lease and licenses cover all of the area of Otis Air National Guard Base, the Connery Avenue right-of-way, and the industrial area south of the golf course. The area totals approximately 3,443 acres.

- The United States Coast Guard lease covers four parcels identified as the Massachusetts Military Reservation Golf Course, housing and support areas, Air Station Cape Cod and the Transmitter Station (which is outside the Cantonment Area). The Coast Guard parcels total approximately 1,511 acres, with 949 acres in the Cantonment Area.

- The United States Army Base and the Army National Guard license cover about 647 acres of the Cantonment Area split between the Unit Training Equipment Site, the airfield parcel, and the field training support areas. The Unit Training Equipment Site is contiguous with the field training areas in the north, but has been included within the Cantonment Area designation on account of its uses: automotive storage and maintenance. The Grasslands Management area covers about 188 acres of the total.

The Air Force lease/license on Otis Air National Guard Base, the United States Army lease/license, and the United States Coast Guard leases on the Cantonment Area all expire on September 30, 2026. The federal leaseholders may terminate their leases on all or any part of the Massachusetts Military Reservation at will, with 30 days notice. The conditions of the leases do not give the Commonwealth the right to terminate or modify the leases. All permanent improvements made to the leased land and funded by the National Guard will become the property of the federal military agencies upon termination of the leases. Their ultimate disposal then falls under the excess property regulations of the agencies. Either party with 30 days notice can terminate the licenses (not leases).

In conducting its federal military activities at the Massachusetts Military Reservation, the 102nd Fighter Wing is required by federal law to follow federal Department of Defense and Department of the Air Force guidance and regulations, as well as applicable state law and regulation. In conducting federal military land use planning, the 102nd Fighter Wing's actions and activities are governed by U.S. Air Force guidance, including Air Force Instruction 32-7062, Air Force Comprehensive Planning. In addition, the Air Force publishes a number of planning bulletins, instructions, regulations, manuals, pamphlets, handbooks and guidance documents regarding land use planning.

Likewise, the Army National Guard is also subject to the matching guidance, documents and regulations that the Department of Defense and the Department of the Army issue for all Army military facilities.

Under this guidance, land use planning sets forth an ongoing, iterative, participatory process addressing the full range of issues affecting or affected by the installation's use and development. Through this planning process, goals and objectives are defined, issues are identified, information is gathered, alternative solutions are developed and a sound comprehensive planning and decision-making process is employed. Comprehensive planning creates a systematic method for decision-makers regarding the development of military facilities. It incorporates programs such as operational, environmental, and urban planning to identify and assess development alternatives and ensure compliance with applicable federal, state and local laws and regulations.

Figure III-2: Ownership and Leaseholds.

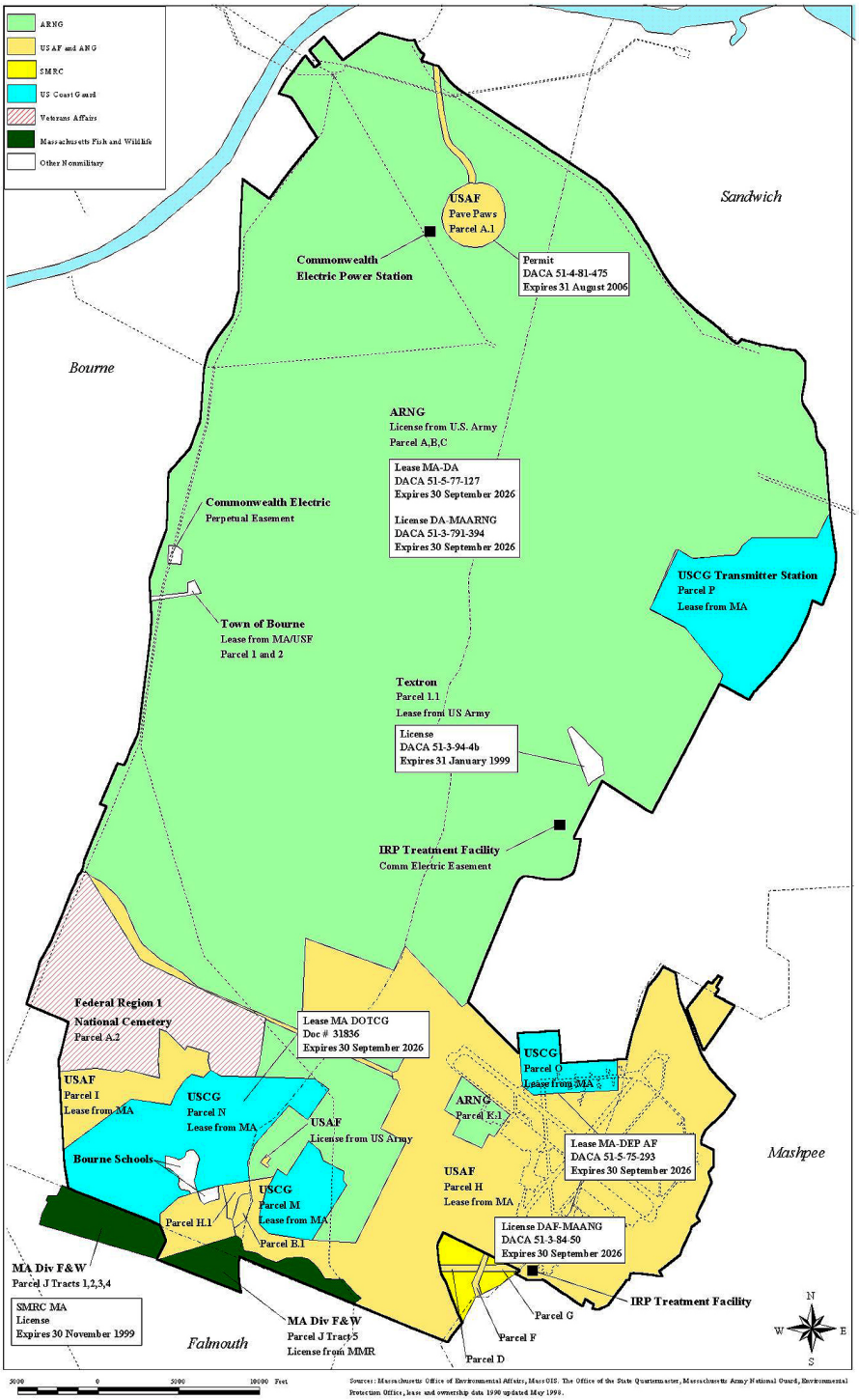


Table III-1: Cantonment Area Land Uses

Cantonment Land Use		*Acres*	*Percent*
Air National Guard Airfield/Airfield Operations	2,113	35%	
Airfield Clear Zones		143	3%
Air National Guard Combat Comm.		282	5%
Air National Guard Infrastructure Area		154	3%
Air National Guard land use total		**2,692**	**45%**
US Coast Guard Housing / Recreation Area		936	16%
US Coast Guard land use total	**936**	**16%**	
Army National Guard Maintenance Facility		236	4%
Army National Guard Training Support Facilities		445	7%
Army National Guard Aviation Facility		16	< 1%
Army National Guard land use total		**697**	**12%**
Veterans Administration National Cemetery		749	13%
Bourne School System		35	1%
Crane Wildlife Management Area (Mass. DF&W)		134	2%
Non-airfield grassland management zone	662	11%	
Other land use total		**1,580**	**27%**
Total Cantonment Land Area		**5,905 acres**	

Note: Property boundaries for indicated users are shown in approximate configuration on

Existing Conditions: Description of Lessors and Tenants

This subsection identifies the occupants of the Cantonment Area, their mission and installation activities. The properties are shown on Figure III-2. These are the Existing Conditions that define the land use patterns within the Cantonment Area.

United States Coast Guard

United States Coast Guard activities on the Massachusetts Military Reservation include Air Station Cape Cod, the Coast Guard Transmitter Site, National Regional Fisheries Training Center, and five other units performing missions that include drug interdiction and marine environmental protection. Air Station Cape Cod provides medium-range search and recovery support for the 1st Coast Guard District and Atlantic Area, and provides housing, medical, and support activities for military personnel and their families in all military services stationed in southeastern Massachusetts. The support facilities include food and goods store, gas station, theatre, and other facilities that provide a quality of life for on base residents.

Air Force Center for Environmental Excellence Installation Restoration Program

The Air Force Center for Environmental Excellence manages the Installation Restoration Program, which is the Air Force's program for cleaning up historic pollution of the groundwater beneath the Massachusetts Military Reservation. This includes facilities for administration and technical support, as well as the remediation projects themselves.

Federal Aviation Administration, North Atlantic Region

The Federal Aviation Administration provides federal management for airfields and airports. This includes regulation of the design of airports as well as air space management. The Federal Aviation Administration operates its Cape Approach Control for Cape Cod and the Islands from its facility (Building 130) at Otis Air National Guard Base. Cape Approach Control provides local air space management for all aircraft within a 60-mile radius of the airfield.

United States Department of Agriculture

The United States Department of Agriculture Otis Methods Development Center is a division of the Animal and Plant Health Inspection Service with Headquarters in Washington, D.C. The Center provides quarantine functions, and national research support for plant protection programs as well as the development of environmentally sound control methods for the gypsy moth, alfalfa weevil, Colorado potato beetle, and other insect pests. The United States Department of Agriculture operates out of former military buildings within the Cantonment Area.

United States Department of Veterans Affairs (National Cemetery of Massachusetts)

The Veterans Affairs has owned and operated the 749-acre National Cemetery south of Connery Avenue since 1980. Veteran's Affairs maintains the cemetery, and conducts ceremonies, special events and up to 2,000 burials each year. Internment is available to eligible veterans and dependents. The parcel is not otherwise connected with the use and operation of the Massachusetts Military Reservation. An on-site well provides the necessary water service. However, water and sewer services are available on the southern side of the parcel from lines extending through the adjacent housing area.

Massachusetts Army National Guard

The Massachusetts Army National Guard currently conducts a variety of training and operational activities in the Cantonment Area. Stationed at Camp Edwards is the Camp Edwards Headquarters detachment, the Regional Training Institute, 3rd Battalion 126th Aviation unit that operates the airfield facilities, the 721st Maintenance Company, and the Unit Training Equipment Site Maintenance unit. The Army National Guard Cantonment Area properties are used as follows (see Figure III-4 for locations and configurations):

- 1000 Area – This area includes buildings used for administrative, classroom, and storage facilities.
- 1100 Area – Troop and civic recreation field and storage facilities. This is the area where the Cape Cod Sports Club holds its regularly scheduled rallies.
- 1200 Area – This area includes buildings used for administrative, classroom, storage, and dining facilities.
- 1300 Area – This area includes buildings used for administrative, medical, and maintenance facilities. Some training also occurs in this area.
- 1500 Area – This area is set aside for preserving the native grasslands. The area is managed for grasslands bird habitat by keeping the area mowed and restricting all use during the nesting season of the Upland Piping Plover, which is the state-listed bird species
- 1700 Area – This area is for administrative facilities and the physical fitness course.
- 1800 Area – This is an area used for open land training and facilities.

- 2800 Area – Aviation, maintenance, administrative facilities, and Impact Area Groundwater Study office. This area includes the helicopter (aviation) hangar and across the street, the Facilities Engineering building within which the Environmental Programs Office is located. Some vehicle maintenance for Facilities Engineering takes place here. The Army National Guard Impact Area Groundwater Study Office conducts environmental studies to determine the effect of historic range training operations on the groundwater beneath the Impact Area. This office is located in the hangar building. The hangar building is located on a parcel, which is not part of the Army lease or license.

- 3100 Area – This is a separate parcel for administrative and storage facilities associated with the helicopter and airfield activities.

- 3300 Area – This is a field recreation area adjacent to the Massachusetts Military Reservation Golf Course.

- 3400 Area – This area has been assigned for direct training support. This area includes warehouse buildings, administrative facilities, and the Simulation Center. Previously abandoned buildings 3421, 3422, and 3423 are used as a limited Military Operations Urban Terrain facility. This is a trainer to learn peacekeeping techniques in a village setting; i.e., within existing, closely spaced buildings. However, because of its location closely adjacent to other actively used facilities, the buildings can not be used to provide the range of training necessary for full proficiency required by Army regulation.

- 3500 Area – This is a recreation, support facility, and vehicle storage area. Some of the vehicles include the field training vehicles such as the towed howitzers. This location is near the 3600 block, (see below) which is used for initial assembly, thereby reducing vehicle travel within the Cantonment Area for vehicles requisitioned from this site.

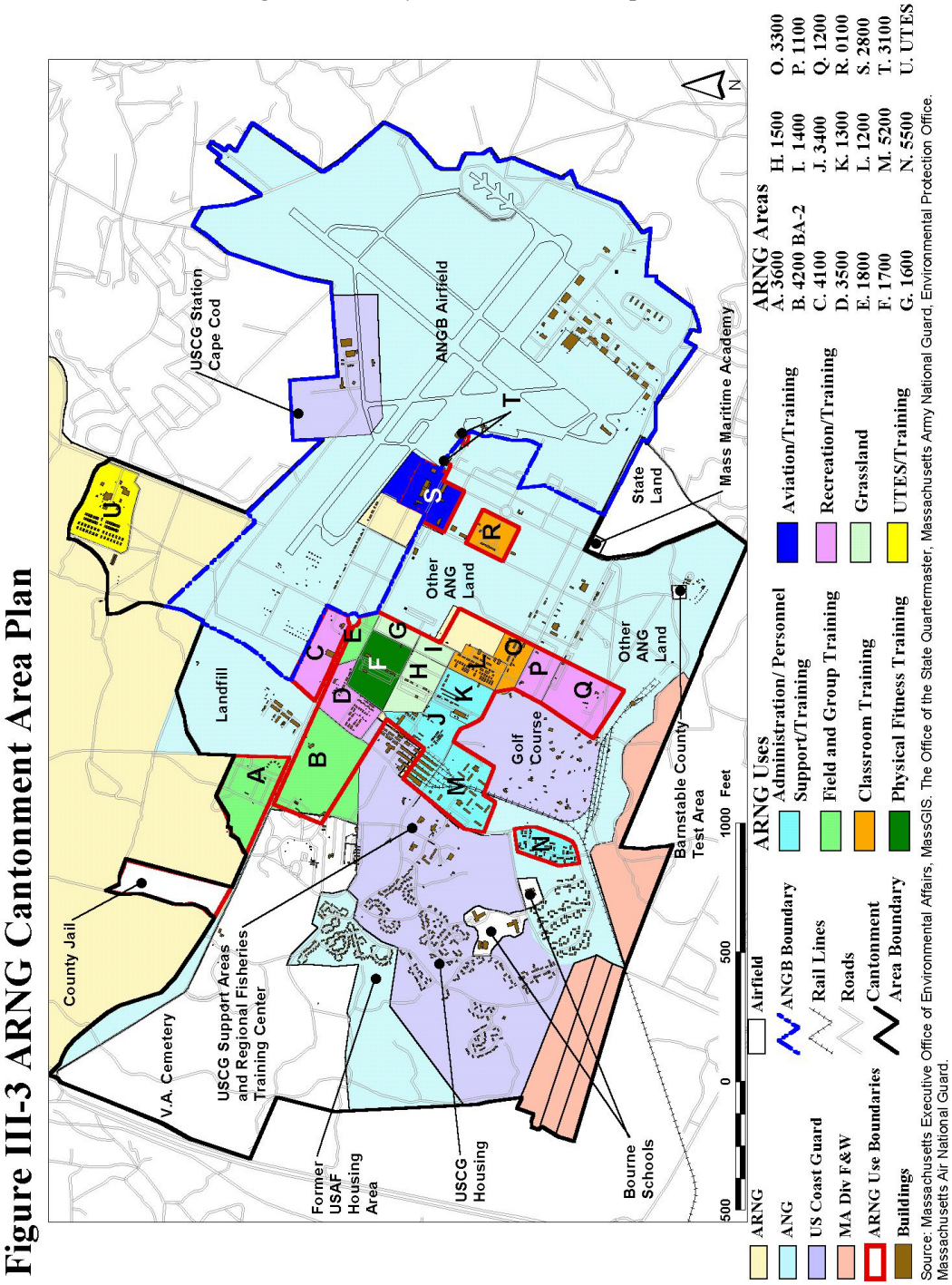
- 3600 Area – This is part of the field training areas and can be used for the initial main assembly (see descriptions of training activities in Part II of this documentation. It is serviced by all utilities including the base water and sewer lines and access from Connery Avenue. However, there are no stormwater utilities. The block also has an impervious pad, which allows equipment to be used for refueling vehicles from the field. The area includes a helicopter landing zone and temporary parking for field equipment.

- 4100 Area – Recreation fields and the Base Gymnasium are located in this area.

- 5200 Area – Barracks, dining facilities, administrative facilities, recreation fields, and the Base theatre are all located in this area.

- 5500 Area – These are transient sleeping quarters connected to the Base housing area.

Figure III-3 Army National Guard Properties



- BA-2 Area – This location is used as a small unit training area and includes the Leadership Reaction Course. It has also been used by the local Boy Scout troops as a campsite.

- 100 Area – This is an administrative training facility and transient sleeping quarters. It represents the historic center of the administrative facilities.

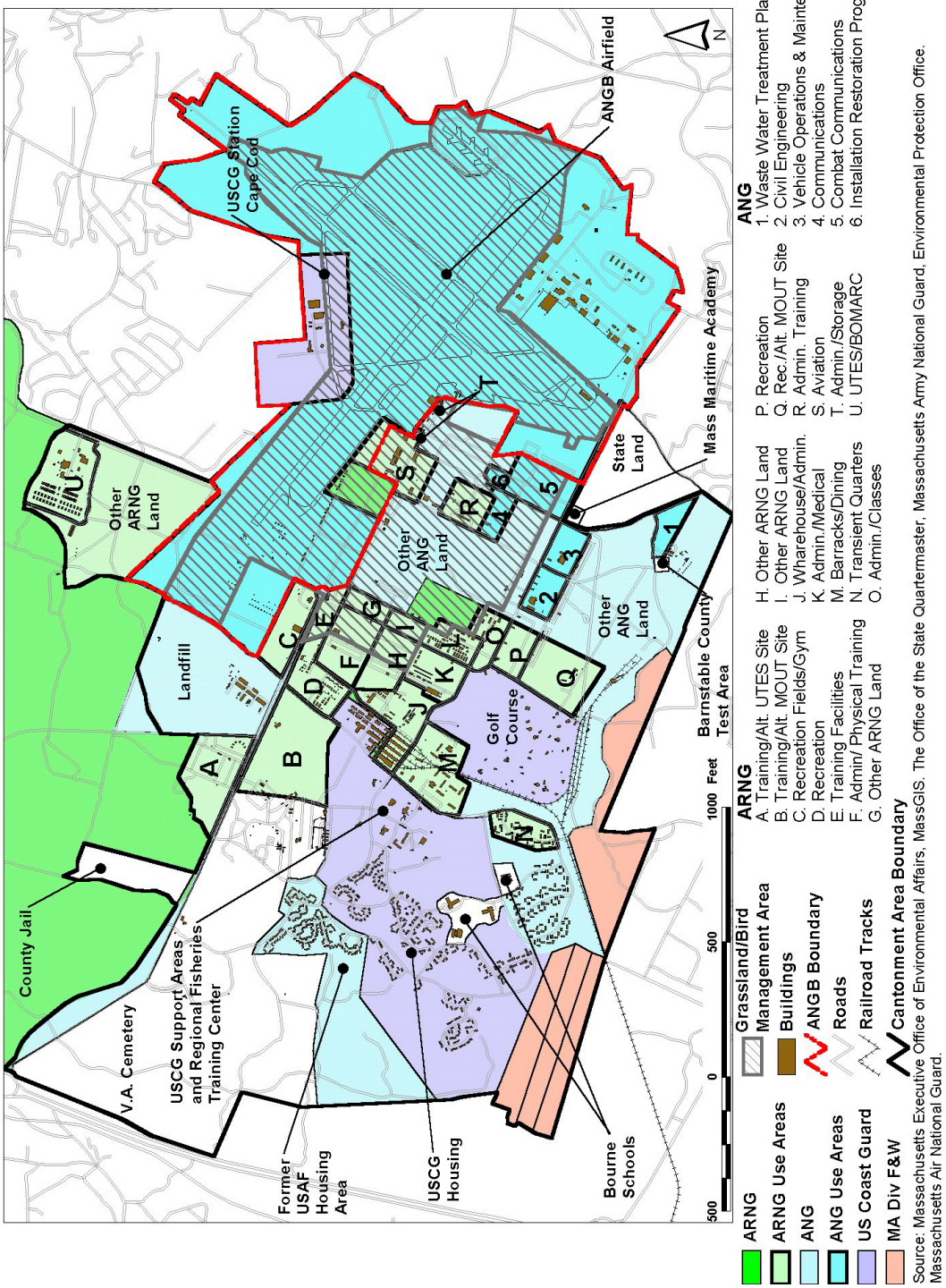
Massachusetts Air National Guard

The 102nd Fighter Wing of the Massachusetts Air National Guard is stationed at Otis Air National Guard Base. The Air National Guard provides services to state agencies during natural disasters, aids in search and rescue missions, and renders assistance during civil disturbances. As part of the United States Air Force, the Massachusetts Air National Guard provides operationally ready interceptor aircraft and flight support units for active duty in fulfilling United States Air Force commitments. Other duties include drug smuggling interdiction and maintenance of one of six eastern Launch Abort Sites (runways) for the United States Space Shuttle Program.

The 102nd Fighter Wing is charged with providing infrastructure support for Otis Air National Guard Base, United States Coast Guard Air Station Cape Cod, and Camp Edwards, and to a minor extent the National Cemetery, in the form of fire protection, utilities, wastewater treatment, and base communications.

The 253rd Combat Communications Group and 267th Combat Communications Squadron are separate and distinct units of the Massachusetts Air National Guard stationed at Otis Air National Guard Base. They train Air Guardsmen in tactical communications and air traffic control. The main building is the newest structure on the Base and was constructed with class and meeting rooms, administrative offices, and equipment maintenance and storage. The open land around the facility is large enough to erect some of the field equipment; i.e., antennas and signal equipment used by the Group.

Figure III-4: Air National Guard Properties



Other Cantonment Area Users

The Massachusetts National Guard does not directly control the following users and facilities. Consequently, their location and use of the Cantonment Area is included, without description of any planned change or alteration that may occur at those sites.

Environmental Public Health Center

Established in 1997 to address the environmental health concerns of citizens of the Upper Cape, the Environmental Public Health Center is a joint program of the Massachusetts Department of Public Health and the Agency for Toxic Substances and Disease Registry. The Center is funded in part by the United States Air Force.

Upper Cape Regional Transfer Station

A transfer station operates at the southern end of the Cantonment Area to transport solid waste by rail to the SEMASS resource recovery facility in Rochester, Massachusetts. Peak daily and weekly usage of the transfer station typically occurs during July or August. Daily transfer amounts range from 120 to 275 tons. The transfer station has an estimated annual capacity of 40,000 tons, and is partially owned and overseen by the Town of Falmouth. It receives solid waste from Bourne, Falmouth, Mashpee, Sandwich, and the Massachusetts Military Reservation users. Waste delivered to the transfer station is inspected, segregated, and then loaded onto railcars for transfer to the Southeastern Massachusetts waste-to-energy facility in Rochester, Massachusetts, where it is incinerated.

The Massachusetts Military Reservation typically contributes approximately 5.5 percent of the waste shipped from the transfer facility. Privately contracted solid waste handlers haul solid waste generated by Army National Guard and the United States Coast Guard to the transfer station. The Air National Guard also transfers its solid waste to the transfer station by contract. The remaining occupants at the Massachusetts Military Reservation dispose of solid waste via subcontracted services with licensed solid waste haulers.

Buzzards Bay Project

This program, sponsored by the Massachusetts Coastal Zone Management program and the Barnstable County Department of Health and Environment, is funded by a grant from the Environmental Protection Agency. The project tests and promotes innovative septic tank systems for use in the highly permeable soils of Upper Cape Cod. Within a fenced area, a number of test systems have been installed and are periodically tested for efficiency in reducing pollutant and nutrient loads in the leaching system and effluent.

Town of Bourne

The Town of Bourne holds three properties for public schools within the Massachusetts Military Reservation boundary. The Bourne public schools are on deeded land and are not

tenants on the Massachusetts Military Reservation. By the school year 2002, the Town of Bourne expects to be utilizing all three schools for classrooms.

Massachusetts Maritime Academy

The Massachusetts Maritime Academy operates classrooms and a donated boat storage yard on the Massachusetts Military Reservation under a Memorandum of Understanding with the Camp Edwards Commander. They are located on land owned by the Commonwealth of Massachusetts that is not part of the Army lease or license. Each year a public bid is made on the boats in storage to raise funds for the Academy.

Envirotech Center

This private, not-for-profit research center studies emerging environmental technologies for use in the cleanup of groundwater pollution at the Massachusetts Military Reservation.

Otis Fish and Game Club

The Otis Fish and Game Club operates a private recreational facility near the Bourne entrance to the Massachusetts Military Reservation. This facility includes skeet ranges used for practice and competition. The Otis Fish and Game Club also supports the Deer Management Program in conjunction with the Massachusetts Division of Fisheries and Wildlife.

Barnstable County Jail

The Barnstable County Sheriff has proposed to construct a new jail just north of Connery Avenue, opposite the National Cemetery entrance, within part of a Camp Edwards field training area (BA-3) and outside the area previously considered the Cantonment Area. In the Master Plan Final Report, the Community Working Group suggested this location was the optimum site for the Jail and so suggested the traditional boundary of the Cantonment Area should be extended to include this site.

Textron, Cape Cod Operations

A private defense contractor, Textron operated a weapons systems research and development facility on the Massachusetts Military Reservation from 1968 until last year. The work conducted currently is principally assembly of anti-armor weapons for testing at other ranges. The Textron license expired January 31, 1999 and Textron is currently returning the land to a natural state.

Cantonment Area Infrastructure Assessment

The infrastructure in the Cantonment Area is considered in five parts: Stormwater Drainage, Wastewater, Water, Electricity, and Communications. In accordance with the Secretary's Certificate, the analysis is made to determine the "cumulative impacts of future individual projects." The infrastructure systems included in the Draft Master Plan/ AEIR are again reviewed with this condition of impact considered.

Storm Water Drainage

The Air Base and southern Cantonment Area contain several large areas of impermeable pavement whose operational functions require stormwater to be collected and removed quickly and efficiently. The outfalls for these stormwater collection systems direct runoff to on-base kettleholes for recharge, or to drainage basins or swales which allow recharge during normal storms and off-base discharge during extreme events. These swales create intermittent streams within the cantonment area, which are active only during heavy rainfall events.

Two major stormwater collection systems operate within the Cantonment area at the Massachusetts Military Reservation (see Figure III-4). These two storm drainage systems are generally referred to as the Western and Eastern storm drainage systems. The Western drainage system serves the Coast Guard housing complex surrounding Osborne and Edmunds Ponds; the Eastern drainage system carries runoff from the Air Base runways and ramps.

Western Drainage System

The storm drainage system in the western part of the Cantonment area conveys runoff primarily from the United States Coast Guard housing area and shops to Osborne and Edmunds Ponds and other smaller depressions located in the housing area. Street and parking lot runoff is conveyed primarily to drainage swales and outfalls around the two ponds where infiltration occurs.

Eastern Drainage System

The eastern drainage system is more complex and incorporates four drainage ditches (SD-1, SD-2, SD-3, and SD-4) discharging towards Ashumet Pond and Johns Pond south of the Massachusetts Military Reservation boundary, as well as two additional infiltration basins**.** The eastern drainage system serves the runway and aircraft support areas, and two of the four drainage ditches leading off the reservation are equipped with interceptor basins which operate similar to an oil/water separator to remove fuels or oils floating on the storm water runoff.

Rain events of 1 to 2 inches per hour are typically sufficient to cause flow in the drainage ditches carrying runoff south, which then flow towards Ashumet and Johns Ponds. Sufficient rainfall to develop surface water discharge to Ashumet Pond occurs from one to four times per year on average.

Eastern Drainage System, SD-1

Drainage ditch SD-1 begins at an outfall located at the Massachusetts Military Reservation boundary south of South Outer Road. The drainage channel, completed in 1960, is approximately 1,500 feet long, up to 40 feet wide, and 6 to 10 feet deep. The channel is constructed of riprap blocks and is dammed in three separate areas to slow runoff and to better enable on-site groundwater recharge. The ditch conveys stormwater southward off base to the abandoned cranberry bogs located north of Ashumet Pond. The drainage ditch receives water at its northern end from one 48-inch and two 72-inch storm drains. The 48-inch line drains portions of the parade ground. During major rain events, the two 72-inch lines convey stormwater, which overflows from the SD-5 drainage area (see SD-5, below). The pipes under the road at the end of the channel have been sealed to prevent discharge towards Ashumet Pond.

Eastern Drainage System, SD-2

Drainage swale SD-2 begins at the terminus of two 42-inch storm drains and an oil/water separator located immediately south of South Outer Road. SD-2 extends approximately 2,500 feet south-southwest from the oil/water separator and is located approximately 300 ft east of the abandoned cranberry bog. The storm drain line discharging to SD-2 receives storm water runoff from the Petroleum Fuels Storage Area, aircraft maintenance ramp, and hangar nosedocks. The SD-2 system drains a surface area of approximately 6 million square feet including heavily developed areas along the flight line facilities. During major rain events, SD-2 discharges storm water to Ashumet Pond.

Eastern Drainage System, SD-3

The third drainage course collects runoff from the extreme eastern portion of the flight line (NW-SE runway) and hangar ramp area and empties into drainage system SD-4.

Eastern Drainage System, SD-4

Drainage area SD-4, Aircraft Maintenance Area Storm Drainage Ditch, is a drainage basin located on the northern and southern sides of Reilly Road. The drainage basin receives runoff from storm drains leading from Hangars 158, 128, and 124, and maintenance ramps after the stormwater has passed through an oil/water separator. Most of the water that enters the drainage basin after a normal rain event percolates into the subsurface. During major rain events, water overflows the basin and discharges to Johns Pond.

Eastern Drainage System, SD-5

Drainage area SD-5 is located about 2,600 feet north of the southern Massachusetts Military Reservation boundary, between North Inner Road and Lingley Avenue, just west of Runway No. 5 (NE-SW). The SD-5 drainage area receives runoff from the western and

southwestern portion of the flight line, and portions of the southern runway area. This stormwater runoff discharges to a central drainage swale within SD-5 where most of the storm water runoff infiltrates the subsurface. During heavy rain events, drainage basin SD-5 overflows into SD-1 (see above). The Installation Remediation Program plans to continue to block flow from SD-5 to SD-1 as part of remediation activities.

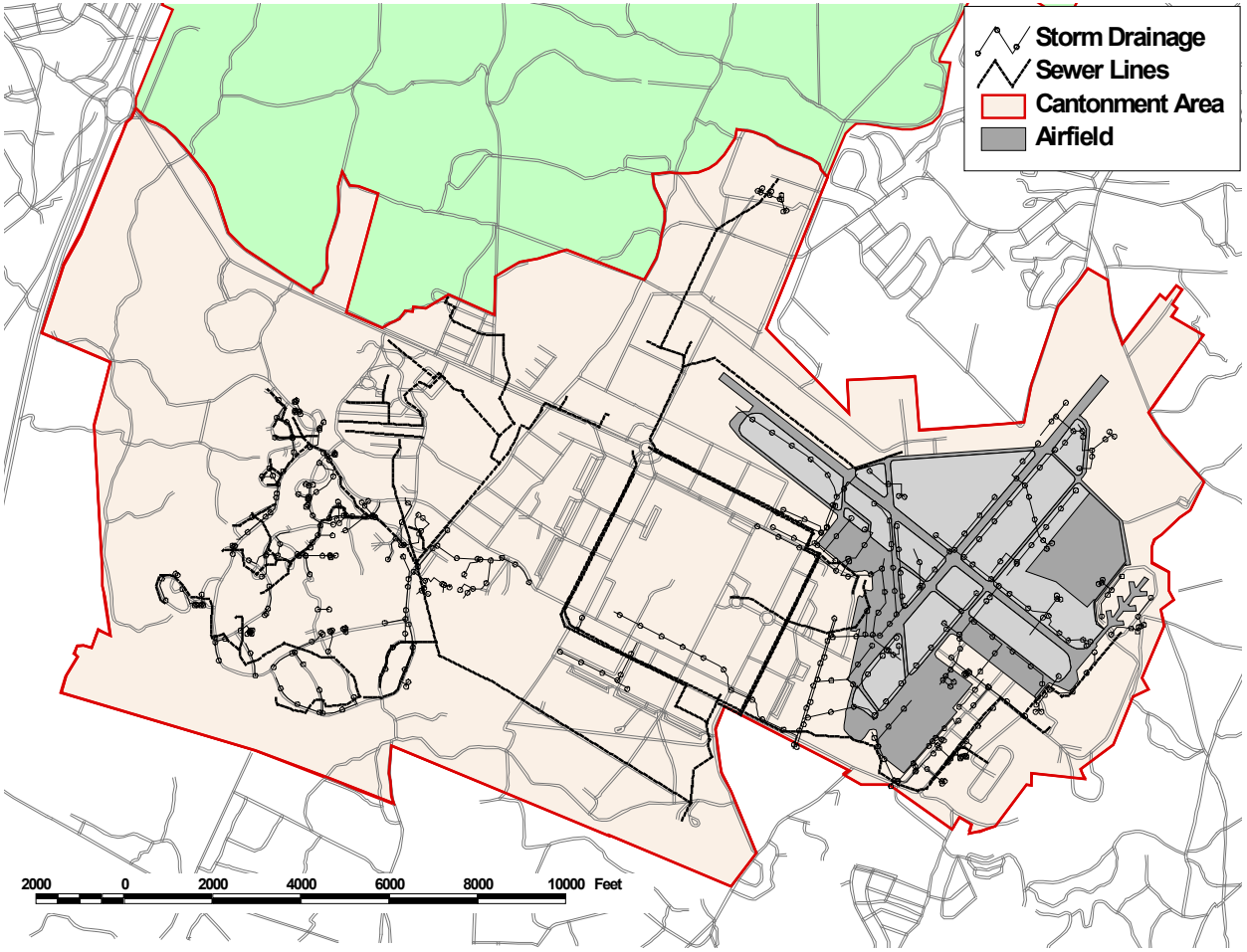
United States Coast Guard Cape Cod Air Station

At the Cape Cod Air Station, the stormwater drain system receives outflow from an oil/water separator, which discharges through an outfall on the west side of the station. This system discharges on the north side of the station. All of these system outflows remain on the Massachusetts Military Reservation and percolate to groundwater.

Drainage System Improvements

The Massachusetts Air National Guard has instituted an initiative to evaluate the potential of all stormwater recharging on site. SD-1/SD-5 has already been blocked with riprap berms to facilitate on-site recharging. In late 1996/early 1997, a retention pond was constructed on the North side of Reilly Street in an effort to better enable on-base recharge of stormwater to reduce flow to SD-4. Runoff from the northern portion of the airfield, including taxiways and the aircraft dispersal area, is collected and conducted to existing infiltration basins/ kettleholes at the east end of the flight line. The 102nd Fighter Wing has a project programmed that would divert stormwater flow from the SD-2 system to the SD-1 system. It is anticipated that funds will be provided in the Federal Fiscal Year 2001 budget for this project.

Figure III-5: Stormwater System



Drainage System Capabilities

The Cantonment Area drainage systems vary in capabilities. The Western System has not been extended over capacity, and so could physically handle additional flows. However, no significant expansion of development has yet been proposed for the housing area. In addition, because the system discharges to an inland wetland area, a significant increase in overall impact to the natural system is not anticipated. Consequently, significant expansion of the system's design is not considered a near-term option.

The Eastern System handles a very large area of impervious surface, and has been undergoing several improvements to reduce its off-site flows. Significant expansion of the impervious surfaces would require a significant upgrade and expansion of the drainage system. Consequently, significant expansion of the system's design is not considered a near-term option.

As a consequence, all new development within catchment area of these drainage areas would probably be required to either reduce other impervious surfaces to maintain total flows, or add new system capabilities to increase treatment and/or infiltration before discharge to the existing outfalls.

Stormwater runoff from the remaining property at Massachusetts Military Reservation percolates into the ground and is not contained by any engineered structures. Road runoff on the Massachusetts Military Reservation drains to the road shoulder and percolates into the ground. Some runoff from uncurbed roads within the cantonment area, such as South Inner Road is directed by grading to infiltration manholes (drywells) located at intervals on the road shoulder.

Wastewater Treatment and Disposal

Sanitary wastewater, cooling and heating system discharges, and process wastes from Massachusetts Army National Guard, United States Coast Guard, and the Massachusetts Air National Guard are generally discharged to the Otis Wastewater Treatment Plant. Other operations located within the Massachusetts Military Reservation discharge wastewater to septic systems. Details of wastewater treatment and disposal at the Massachusetts Military Reservation are described below.

Wastewater Treatment Plant

The 102nd Fighter Wing operates the installation's wastewater treatment plant, which is located on the southern boundary of the Massachusetts Military Reservation in the Town of Sandwich at the Falmouth town line. The original treatment plant was constructed in 1936 and was upgraded in 1941 to provide a 6.0 million gallon per day capacity. A new wastewater treatment plant became operational in December 1995. The new facility was built adjacent to the old plant, which was subsequently demolished. The new facility provides tertiary (drinking water quality) treatment. The tertiary treatment is provided by a biological nutrient process whereby nitrogen is removed to required standards prior to

discharge to sand filter beds near the Cape Cod Canal, ten miles to the north. The new plant has a Department of Environmental Protection permitted capacity of 300,000 gallons per day, with an average monthly flow of 200,000 gallons per day. With the proposed tie-in of the new Barnstable County House of Correction to the Otis Air National Guard Base wastewater treatment plant, the facility will be close to its current operating permit capacity as authorized by the Massachusetts Department of Environmental Protection

The ultimate discharge of the effluent for the Wastewater Treatment Plant is at the northern border of the Massachusetts Military Reservation, close to the Cape Cod Canal. The discharge is to a large inground leaching system that discharges the treated effluent to the soils, typical of the design used for smaller systems used for residential homes.

Wastewater System Capabilities

The Massachusetts Department of Environmental Protection (DEP) has identified the Massachusetts Military Reservation as a single facility. The determination entails joint consideration of all wastewater flows from the Massachusetts Military Reservation meaning that any new flows must be considered as part of the total flows. In effect, this takes all design considerations for wastewater flow out of the state's Title V regulations, which are the standard regulations used for all inground septic systems, and puts the design standards to a higher regulatory standard.

The first effect of this higher regulatory standard is to require the consideration of connection to the Wastewater Treatment Plant for all new projects. This raises two issues: one of cost and the other of process.

An example of the first issue is the proposed Barnstable County Jail. The proposed Jail is located probably about 1000 feet from the closest sewer (or water) line. Consequently, the connection to the system beyond the existing Cantonment Area could be a significant and potentially costly project. The second is an issue of utility privatization, which is a Department of Defense initiative to remove this responsibility from the military commanders.

Water System

The Air National Guard provides drinking water for most of the Massachusetts Military Reservation. The primary water supply well, Well J located just north of the airfield on Herbert Road, and the associated water distribution system serve the Cantonment Area, including all residential areas and general operating facilities, and all flight-line activities. Facilities farther from the Cantonment Area are not served by the main water supply distribution system. The VA Cemetery, Cape Cod Air Station, and United States Coast Guard (Transmitter Station) each maintain their own water supply wells. The Massachusetts Military Reservation system is connected to the town of Mashpee water supply as a backup to Well J.

Water Distribution System

Water to the Cantonment area is supplied by a system of approximately 14 miles of water transmission and distribution mains. The distribution system was constructed in the early 1940s and consists of cast iron, ductile iron, and asbestos-cement underground service mains ranging in size from 4 to 14 inches and installed in parallel alignments to the principal base roads. This distribution network is shown on Figure Water Distribution System. Water is supplied in laterals to individual users by 2 1/2 inch and 1 1/2-inch service connection lines.

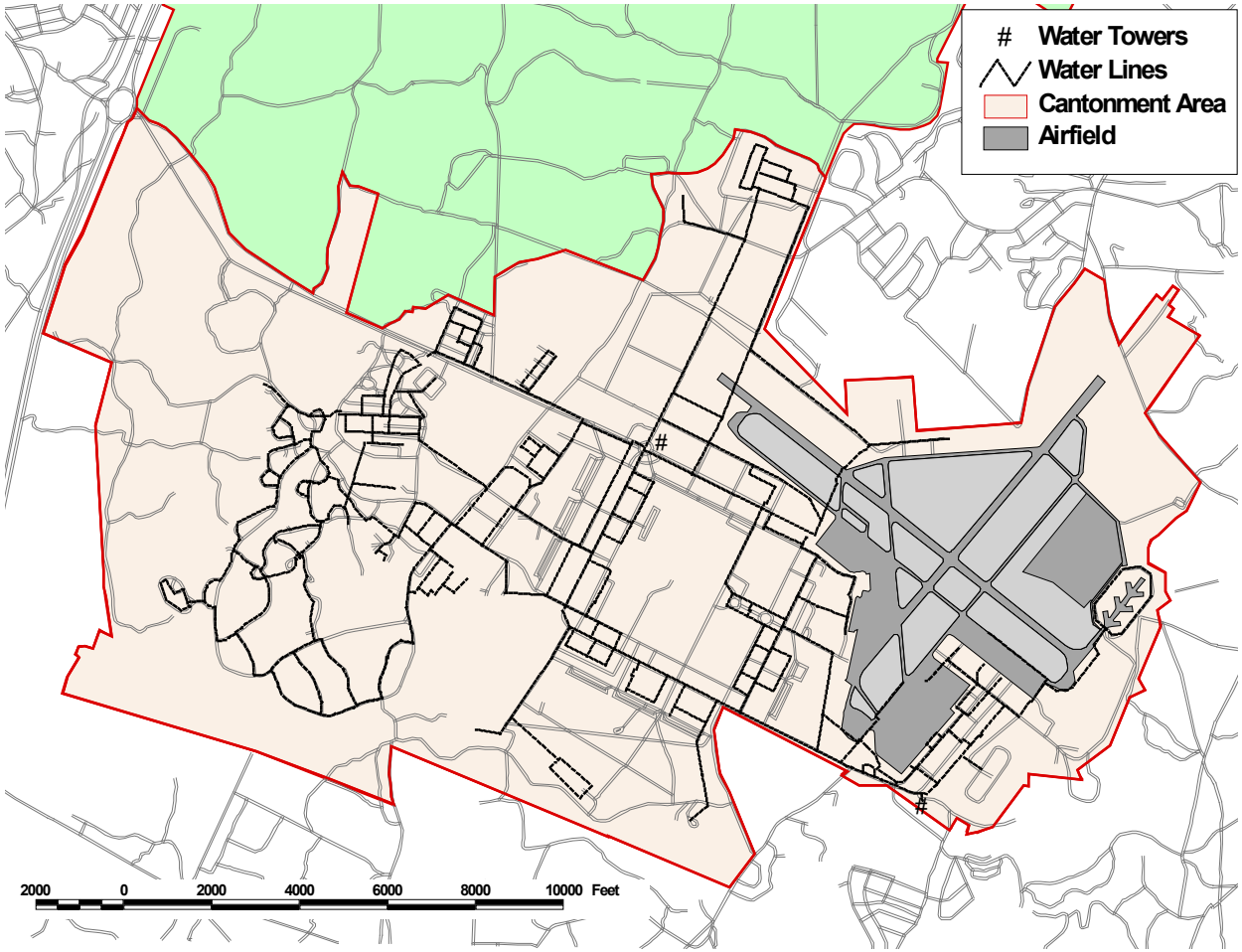
Water Supplies

The water distribution system includes one 375,000-gallon elevated storage tank and one 400,000-gallon elevated storage tank. There is also a 500,000-gallon aboveground deluge tank for fire suppression in Building 158. Operating since November 1985, Well J, has an average pumping rate of 284,000 gallons per day. The maximum available water supply from Well J over the typical 18-hour period is 1.40 million gallons per day (MGD). In July 1998, a temporary wellhead treatment system was added to Well J at the direction of the Massachusetts Department of Environmental Protection because of a one-time possible detection of explosive compound contamination in a single water sample. A permanent wellhead treatment system has been constructed in response.

Other Water Supply Wells

There are three other water supply wells (Wells B, E, and G) on the Massachusetts Military Reservation that were also once part of the main Massachusetts Military Reservation water supply system. Well B was taken out of service from the Massachusetts Military Reservation drinking water supply system in 1962 because of high levels of phenolic compounds, but recent testing has shown phenol concentrations to be below detection limits and so it meets drinking water standards. Well B is currently used to irrigate the golf course. Well E, which is located near the NW runway, was taken out of service in 1959-60 when the NW/SE runway was constructed. Well G, located in the United States Coast Guard area of the Cantonment Area, has been out of service since the late 1970s due to contamination from the LF-1 plume.

Figure III-6: Water System



Water System Capabilities

The future demand for water at the MNG properties is dependent on many development factors that are difficult to predict. For planning purposes, an assumption of 20% growth in water demand between 2000 and 2020 has been made. As discussed earlier, the maximum available water supply from Well J over the typical 18-hour period is 1.40 million gallons per day. The water supply obtained from this source is adequate to meet the projected average daily demand in the peak demand period and peak day demand (1.20 million gallons per day) through 2020.

However, while the Well J has the capacity to meet the Massachusetts Military Reservation's current needs, it is presently the only operating well in the Massachusetts Military Reservation system. No other future water source has yet been identified for the use of the Otis Air National Guard Base Water Department. Should Well J be out of service for any reason during the peak demand period, the MNG could be left without a water supply. An existing inter-municipal water connection with the Mashpee Water District provides a degree of backup supply for the Massachusetts Military Reservation, but the available supply in Mashpee may not be adequate to meet that community's needs during a peak demand condition. In order for the water supply on the Massachusetts Military Reservation to be considered adequate and reliable to meet future demand, an additional source of supply that can deliver 1.20 million gallons per day during an 18-hour period must be developed.

Water System Improvements

Two actions are currently changing the status and limitations of the on-site water system. Currently, the Department of Defense is conducting studies regarding the privatization of all utilities operated by the military, including the system at the Massachusetts Military Reservation. Within the Draft Area-wide Environmental Impact Report, a chapter was devoted to discussion of the methodology for privatization. The expected result is that the Air National Guard will no longer be responsible for the on-site water utilities. Other benefits are expected to include better economies, result in the purchase of utilities at a lower long-term cost, and create a service delivery system that is at least as reliable as the current system

The other action is the exploration and construction of new wells on the Massachusetts Military Reservation properties. Additional water sources suitable for development of a large public supply have been located and are expected to provide sources for future expansion of development outside the Massachusetts Military Reservation within the adjacent towns of the Upper Cape. The Department of Defense has determined that it is appropriate to fund a fair share of the development of additional water supplies necessary to meet projected shortfalls in drinking water supplies on the Upper Cape. Immediate shortfalls are estimated to be 3.0 million gallons per day and long term shortfalls are estimated to be approximately 8.5 million gallons per day by the year 2020. The Deputy Secretary of Defense, in a letter to Governor Celluci, committed the Department of

Defense to a process that will assure the funding necessary to develop an additional 3 million gallons per day water supply within three years. There are three well sites within Camp Edwards that are currently within the review and approval process for public water supplies.

Electric Power Distribution

The electric requirements of the Massachusetts Military Reservation is served by Commonwealth Electric Company via two overhead 25,000-volt transmission lines. Two Air National Guard substations provide on-base power to the Massachusetts Military Reservation. The Main Substation, located on the west side of the installation, steps transmission voltage down to 4,160 volts, and provides switching and voltage regulation. This facility was constructed in 1992 and serves the non-airfield Cantonment area including the Coast Guard housing areas, industrial areas, schools, barracks, Massachusetts Air National Guard support areas, and firing ranges. The East Substation, which is fed by a 25,000 volt transmission line from the West/Main Substation, currently serves the United States Air Force and the Otis Air Base side of the base. One Commonwealth Electric Company transmission line separately serves the Coast Guard Air Station.

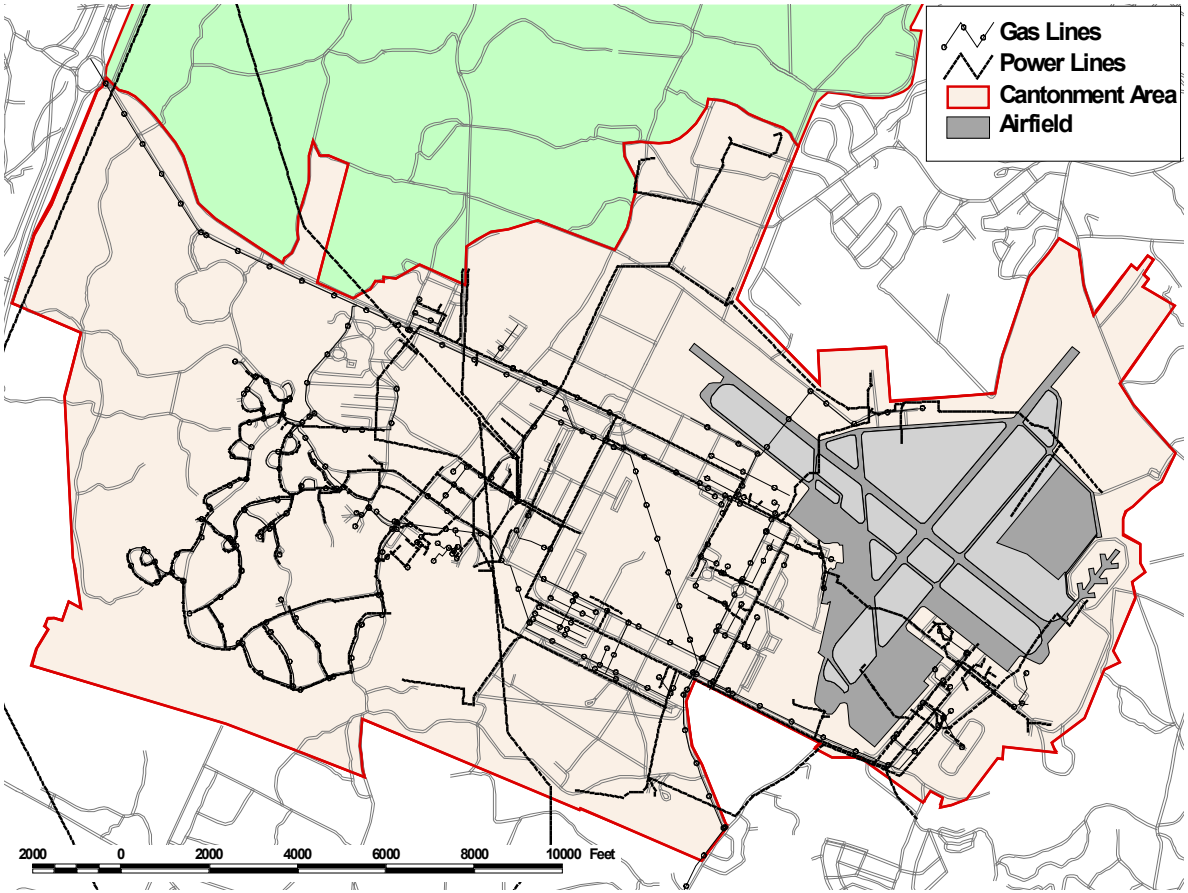
A project is currently underway to upgrade the electrical distribution system. This project will increase the output voltage at the West Substation and allow the East Substation to be demolished.

No local limitations are anticipated from the electric power distribution system, although the distribution of costs for electric power may be a future issue as general increases in demands and costs occur in the New England area.

Reservation Communications

Reservation communications on the Massachusetts Military Reservation are the responsibility of the 102nd Communications Flight under the Massachusetts Air National Guard. The Air National Guard has recently installed a new communication cable plant for all serviced customers replacing the old system.

Figure III-7: Electric and Gas Distributions Systems



Planned Use of the Cantonment Area

As noted above, in the descriptions of existing conditions and in the assessments of the Cantonment Area utility and road infrastructure, the potential for significant new development in this area of the Massachusetts Military Reservation is limited. In the event of a national emergency, most of the users would be called upon to maximize utilization of the facilities. However, more common situations will not demand more than what is presently available from the National Guard properties. In fact, new and expanded use of the Cantonment Area should be and will be closely reviewed before proceeding into development.

This does not mean that improvements could not be made for certain Army training programs requiring structural support. In fact, several projects could proceed and make needed improvements to the properties, and training facilities and activities could be developed within the Cantonment Area and still meet Army regulations (see Training in Section II of this documentation). These projects then become part of the Master Plan for the planned use of the Cantonment Area.

Potential Improvements to Army National Guard Cantonment Area Properties

Consideration has been given to the use of the Cantonment Area for expanded training activities. As discussed in the section on Alternatives within Section II of this documentation, the Secretary asks in the Certificate that the Cantonment Area be considered for relocation or establishment of field training activities presently occurring in the field training areas outside the Cantonment Area. Because of the size and nature of the Cantonment Area, there are limited options for almost all of the field training activities to expand upon the present activities. Nearby public roads and inhabited buildings effectively eliminates use of adjacent lands in the Cantonment Area.

However, the potential Unit Training Equipment Site project would substantially improve the training program and would shift some of the more intensive training activities into the Cantonment Area. Nor would it require adjunct use of any of the field training areas north of Connery Avenue, except as would normally be expected from a complete training program.

The Unit Training Equipment Site facility project is described as follows:

Unit Training Equipment Site facility
This project is for a new maintenance and storage space for Army National Guard tactical and engineering vehicles and training equipment assigned to the Massachusetts Military Reservation. Vehicles and equipment stored and maintained at the Massachusetts Military Reservation are allocated to transient personnel rather than require transport of vehicles and equipment from home armories to the Massachusetts Military Reservation. This project would consolidate three existing, older vehicle maintenance facilities into one modernized facility. It would also remove the Unit Training Equipment Site facility near the Greenway neighborhood, but would not expand capabilities beyond the existing facilities. No bulk storage of fuel or oil is proposed for the new facility.

Existing Conditions: The existing Unit Training Equipment Site maintenance facility supports 44 personnel and the storage, maintenance, and/or repair of 188 tracked vehicles, 64 wheeled vehicles, and 22 trailers**.** These activities are conducted at the existing Unit Training Equipment Site facility located on the former Boeing Michigan Aeronautical Research Center Missile Complex.

The existing location does not effectively support the Unit Training Equipment Site mission because it does not have adequate maintenance and storage space. The existing building (a former missile maintenance facility) is extremely energy inefficient as it was not designed for vehicle maintenance and the building configuration does not provide functional workspace for efficient operation. Existing vehicle bays are narrow (26 ft by 30 ft; 780-sf) and do not allow vehicles to be pulled or towed through. A typical Unit Training Equipment Site maintenance bay is approximately 32 ft by 32 ft (1,024-sf). Many existing vehicle types cannot be maintained indoors because the existing facility is too small. In most instances, the roof is too low and prevents the full elevation of radar, missile, or artillery systems. Consequently, this maintenance must be conducted outdoors, even in adverse weather conditions. This complex is also located within the boundary of Installation Restoration Program Site CS-10 (Boeing Michigan Aeronautical Research Center Missile Complex) and may cause operational constraints as the Boeing Michigan Aeronautical Research Center Complex is demolished as part of ongoing remediation efforts.

Another related facility is the Controlled Humidity Preservation Facility located in Hangar 128. This facility stores equipment within a controlled environment. This reduces impacts of vehicle storage in open lots and provides more stringent controls for spills and leaks from the equipment.

Siting Requirements: The location for a new Unit Training Equipment Site should support the maintenance and issuance of military equipment to units that train at the Massachusetts Military Reservation. It should also provide sufficient facilities and storage space to maintain adequately and efficiently the vehicles, equipment, and personnel currently

assigned to the Massachusetts Military Reservation. The maintenance facility should be large enough so that a work bay can be provided for
every three mechanics assigned to the installation, and designed so that vehicles can drive through each work bay. The building should also be designed so that maintenance on each vehicle type assigned to the base can be conducted with the doors closed.

The Unit Training Equipment Site should be located close to the training area to minimize fuel consumption, calculated by driving distance and time to and from the training area, and the use of existing paved roads by tracked vehicles (tracked vehicles break down the edges of paved roads). Other criteria include proximity to existing utility services, vehicle washrack, fuel dispensing site, existing parking areas, and roads which lead to the training area, and minimizing current or future conflicts with ongoing remediation efforts being conducted under the Installation Restoration Program.

Previous Proposal: This project was previously proposed in the Draft Area-wide Environmental Impact Report within the 3600 area. It was proposed at that location for the following reasons:

- The project in general allows consolidation of the separate maintenance facilities operated by the Army National Guard.

- The project would also allow the upgrade of out-dated facilities and allow current environmental controls to be incorporated into the design.

- The particular site was chosen for a number of reasons. It would reduce the vehicle miles required to move the military training vehicles from the storage areas to the main assembly area, which is at the 3600 area. It would keep the facility within the existing utility (water, sewer, electric) service area, and would not require additional extensions. In fact, it may allow the reduction in non-important utility lines that must now be maintained in the 3600 area because of the history of development there.

However, several commentors noted that the 3600 area is within the Zone II of a Bourne public water supply well (at a location potentially impacted by the landfill LF-1 plume). Consequently, although one of the existing vehicle maintenance facilities proposed to be improved is also within a Zone II area, consideration was given to locating the proposed facility at some other site. Below is a discussion of the initial alternatives considered.

Alternatives: Sites outside the existing, mapped, and approved Zone II areas, were considered as alternatives to the 3600 block. See Figure III-8 for an overlay of the Zone II wellhead protection areas on the lands available to the Army National Guard. These blocks of land include the following:

- The land adjacent to and south of the existing Unit Training Equipment Site area.
- The 2800 area adjacent to the airfield, the Grasslands areas.
- The southeastern most extent of the Army National Guard properties.

Figure III-8: Army Guard Proposal

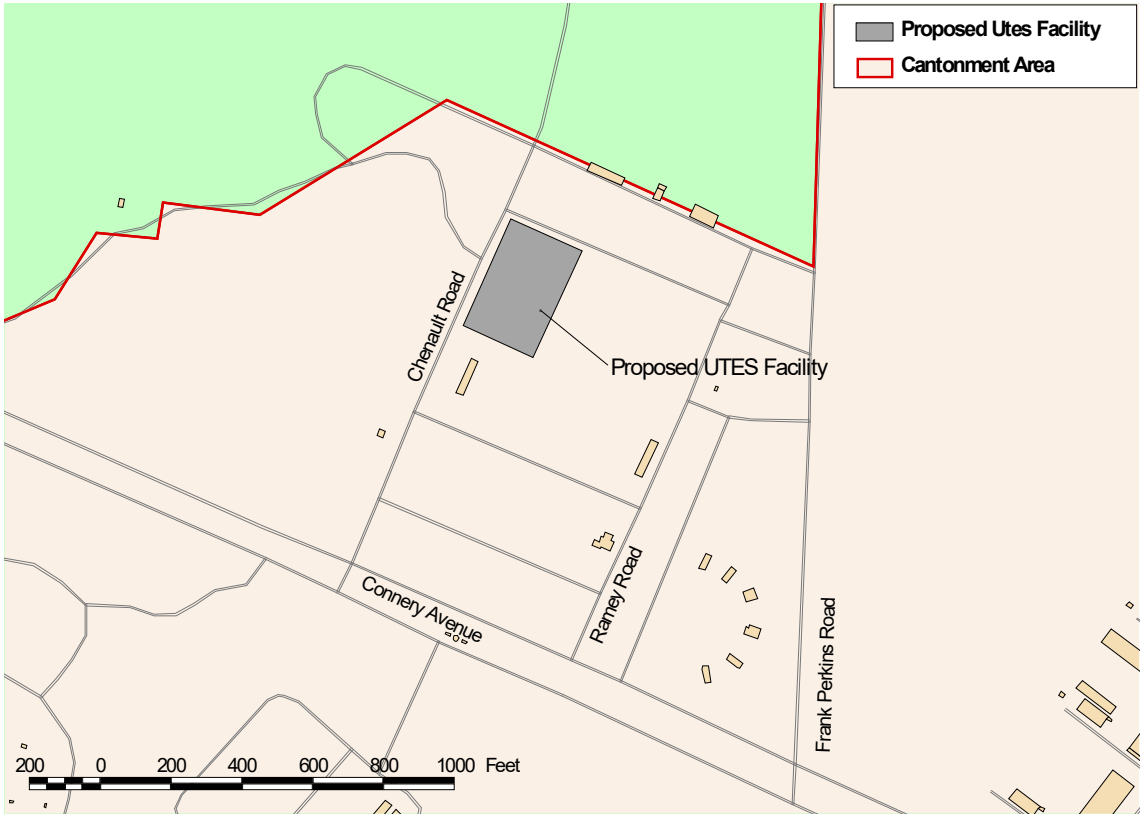
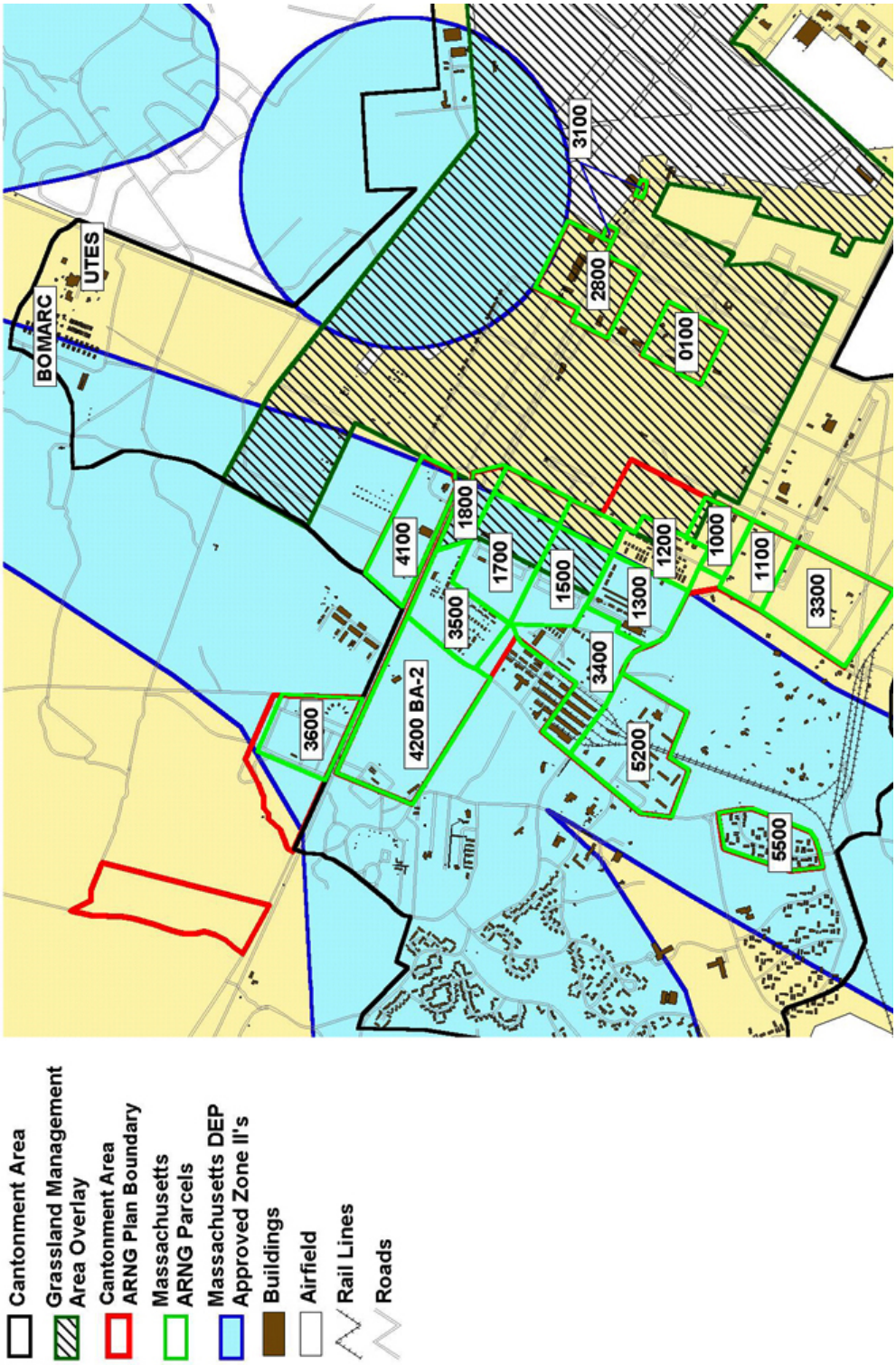


Figure III-9: Zone II Delineations in Cantonment Area



The last two locations identified, namely the 2800 and 3300 areas, are only connected to the 3600 block by the existing road system and would require that training vehicles travel on existing paved surface roads to gain access to the training areas. The sites would also require approximately the same distance for travel to the assembly site (3600 area) as the existing Unit Training Equipment Site and so would provide no benefit of reduced travel time and fuel usage. To construct the facility, other areas between these locations would require disturbance of the grassland bird habitat.

Most recently another consideration has been given to using a portion of the Cantonment Area set aside to accommodate the County Jail as an alternative site for the Unit Training Equipment Site facility. With the infrastructure added to the site for the Jail, the military facility could also be supported. Although the location may still be within the Bourne Zone II area, the impacts of both facilities should be acceptable.

As previously noted the existing Unit Training Equipment Site could be significantly impacted by the proposed Installation Restoration Program remediation of the Boeing Michigan Aeronautical Research Center site and so was not considered as a candidate for an alternative site. This does however, leave the area south of the Unit Training Equipment Site for consideration as an alternative. This location could access the assembly area although a new road connection would have to be constructed. Any disturbance in this area may be an issue because it is presently forested. The area does not have any clear cultural sensitivity as per the latest analysis and was not identified as a critical habitat area. However, all recently undisturbed areas are considered of some habitat value and are not completely discounted for cultural resources. In addition, as other areas are disturbed for remediation activities, water supply development and the County jail, the remaining relatively undisturbed areas become more important to maintaining the landscape qualities for habitat values and military training.

In comparison, the 3600 area has the following qualities and conditions:

- The 3600 block has been used for military training main assembly, which includes accumulation of vehicles used in driver training and convoys.
- The site is the location of refueling operations for field activities.
- The site was previously cleared as part of the history of activities on the Massachusetts Military Reservation.
- The site lies over groundwater impacted by the landfill (the LF-1 remediation site).
- The site has not been identified as a source of any pollution to the groundwater resources.
- The site is serviced by both water and sewer utilities.
- Because the site is graded and cleared, construction is relatively easy and land disturbance is minimized.

Consequently, the Army National Guard is willing to carry forward the area south of the existing Unit Training Equipment Site as an alternative if necessary for the analysis, but the preferred alternative for the new Unit Training Equipment Site facility is the 3600 area.

Potential Improvements to the Air National Guard Properties

The Air National Guard previously proposed three projects that were included in the Draft Area-wide Environmental Impact Report and are carried forward here in the Cantonment Area Master Plan. They are the Consolidated Services Facility, Fire Station, and the Aircraft Control Tower.

Consolidated Services Facility

Project Description: The new Consolidated Services Facility would consist of approximately 70,000 square feet of floor space in a multi-story building located within the Otis Air National Guard Base. Personnel located in other buildings would be relocated to the new structure. The number of Massachusetts Air National Guard personnel at the Massachusetts Military Reservation would not increase as a result of this proposed project.

Existing Conditions: Currently, the administrative activities and functions are located in seven different buildings: Building 197-Administration Facility, Building 198-Explosive Ordnance Shop, Buildings 166 and 167-Security Forces, Building 142-Chapel and Museum, and Buildings 970 and 971-Civil Engineering Complex. The total floor space of these existing buildings is 74,302 square feet. These buildings currently share several problems related to non-compliance with fire and life safety codes. The improved facility would provide for increased efficiency of the administrative functions and increase efficiency of the operations and maintenance of the buildings.

Siting Requirements: The Consolidated Services Facility requires location nearly central to the other functional areas and within an area not currently critical to environmental resource protection. The proposed location adjacent to other facilities and the airfield is considered the preferred location.

Fire Station

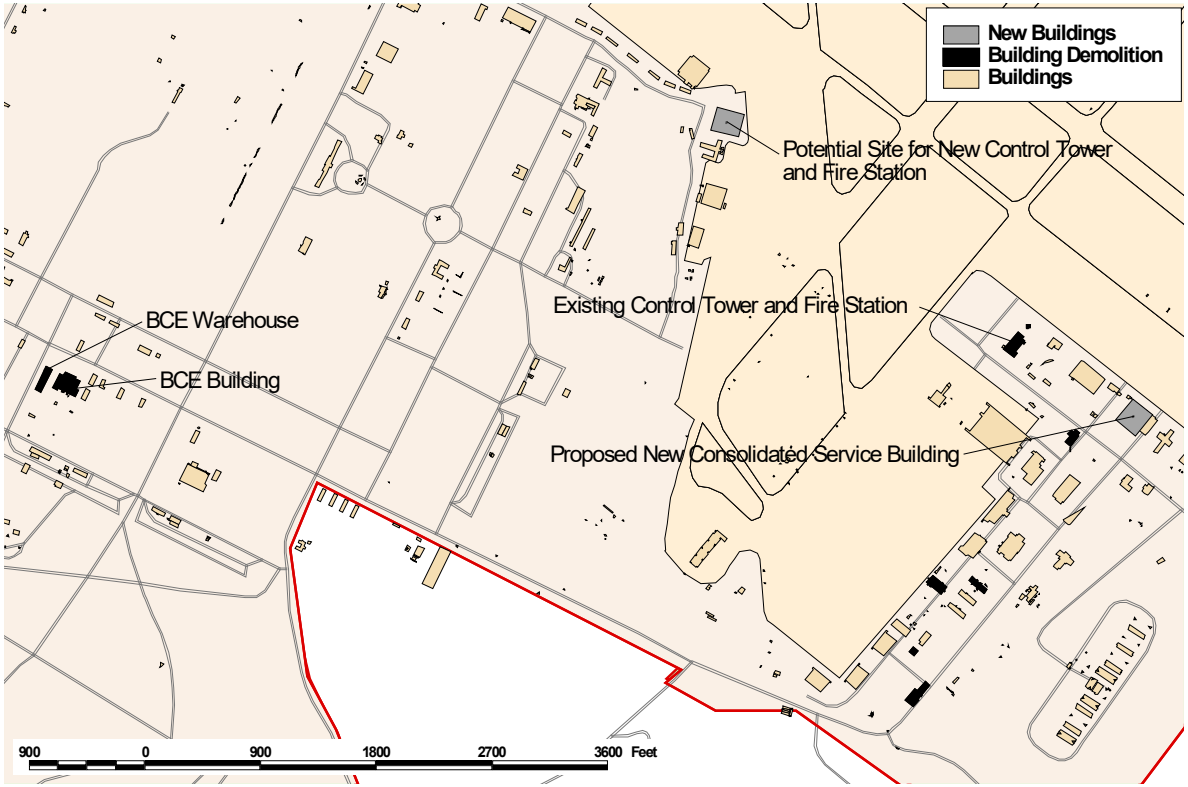
Project Purpose: This project would provide a modern facility with adequate berthing, classroom, and indoor vehicle parking areas for the Massachusetts Air National Guard/Otis Fire Department personnel and equipment. A modern Otis Air National Guard Base fire station will be compatible with local community fire stations and allow for better support in mutual aid responses.

Project Description: The proposed Fire Station would involve constructing a new, 32,000 square foot, two-story airfield crash and structure fire station or building. This new structure would consist of the following rooms: an Apparatus Room with drive-through bays for 14 vehicles; an Alarm Communications Center; Training Facilities; Living Quarters; and a Maintenance, Storage, and Support Center for fire equipment. If the fire station structure can be sited to serve both the airfield and the base housing area from a single facility, an additional 1,800 square-foot vehicle bay for the storage of two fire department vehicles will be added to the fire station program. Currently, there are 20 full- time personnel assigned to the fire

station per shift. The number of personnel and equipment currently assigned to the facility would not increase.

Existing Conditions: The existing fire station is inadequate in size and usable areas. Due to the lack of adequate vehicle bays and classroom space, several fire fighting and rescue vehicles are parked outside in adverse weather conditions, and classes are taught in the dining and berthing areas of the fire station. The existing fire station is poorly configured and is in non-compliance with many national and federal occupational life and safety codes, including National Fire Protection Association Life and Safety Codes for Firefighters, National Electric Codes, Occupational Safety and Health Administration Codes, and United States Air Force Occupational Health and Safety Codes. These violations include, but are not limited to, issues regarding separation between vehicle exhaust and berthing area, decontamination of fire fighter protective clothing, training facilities, equipment maintenance, female bathrooms and locker rooms, and medical supply storage. In addition, the current alarm control center is not adequate to house the new mandatory alarm control consoles including an Emergency 911 System and related ancillary equipment (computers, radios, telephones, remote video equipment, etc.).

Figure III-10: Air Guard Projects



Siting Requirements: The proposed new Fire Station must be located in the vicinity of the airfield due to its fire fighting focus on aircraft operations, and the need for minimum emergency response time to facilities within the airfield and cantonment areas of Massachusetts Military Reservation.

If the fire station complex can be sited to serve both the airfield and installation housing-complex within acceptable response time parameters, the satellite fire station in the housing area can be eliminated. The proposed site should have both adequate parking capacity and existing utility service in the immediate vicinity. Should a new fire station be constructed, the existing fire station would be demolished.

Aircraft Control Tower

Project Description: This project is for a replacement control tower that would provide a modern, 24-hour, centralized point of control and observation for all aircraft and ground vehicles utilizing the Otis Air National Guard Base airfield. The structure is one building with a 530 square feet of footprint under a five-story structure housing an air traffic control cab. The air traffic control cab is the portion of the tower that provides space for air traffic controllers and equipment. New equipment required for current operations would be provided in the new facility. This new equipment includes modern consoles for the air traffic controllers, weather and lighting controls, and radio communication equipment. The existing tower would be demolished with the new construction.

Existing Conditions: The existing tower was constructed in 1956 and no longer meets Federal Aviation Administration standards for size, technology, and safety. It also does not meet current building egress, electrical, or fire codes. Further, the building plumbing and heating utilities are inadequate.

Siting Requirements: The Aircraft Control Tower would have to be located for clear site lines across the airfield and would have to meet Federal Aviation Administration and Air Installation Compatible Use Zone safety guidelines for setbacks outside of flight safety zones.

Cantonment Area Master Plan

As noted previously, significant changes are not programmed for the National Guard properties within the Cantonment Area. The proposed projects are seen as supportive of improving and better managing the properties under control of the Air and Army National Guard. The Massachusetts National Guard currently plans no other significant land use or development changes for these properties.

The pieces of land outside of the National Guard's properties, principally the Veteran's Cemetery and the Coast Guard housing area, are not seen as changing significantly. The Veteran's Cemetery is already planned and programmed as a facility for burial of veterans. The Coast Guard is in the process of completing a master plan for their properties. It is anticipated that the plan will support

the existing uses of the Coast Guard's properties. As a result, significant change from the existing land use patterns is not anticipated.

The proposed changes to National Guard properties are those that will typically improve existing conditions and closely match existing land use. Following this program, the Cantonment Area Master Plan closely follows the existing pattern of land use in the National Guard properties. A balance is proposed to be reached in the total amount of both cleared land areas and impervious surfaces for projects or proposals. This requires a comprehensive framework for management of the properties. Limited land use inclusions may be acceptable where they can be managed by the principal property managers to ensure a balanced impact with acceptable infrastructure demands.

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