

**INTEGRATED NATURAL RESOURCES
MANAGEMENT PLAN**

**NATICK SOLDIER SYSTEMS CENTER
NATICK, MASSACHUSETTS
2006 - 2010**



FEBRUARY 2007

**INTEGRATED NATURAL RESOURCES
MANAGEMENT PLAN
2006 – 2010**

**U.S. ARMY SOLDIER SYSTEMS CENTER
NATICK, MASSACHUSETTS**

Prepared for:

U.S. Army Soldier Systems Center
Natick, Massachusetts

Prepared by:

MACTEC Engineering and Consulting, Inc.
Portland, Maine

Project No. 3618058033

FEBRUARY 2007

Reviewed and Approved by:

Andrea L. Fogg
Project Environmental Scientist

Jeffrey S. Pickett
Program Manager

This document was prepared for the sole use of the U. S. Army Soldier Systems Center, the only intended beneficiary of our work. No other party shall rely on the information contained here in without prior written consent of MACTEC Engineering and Consulting, Inc.

**INTEGRATED NATURAL RESOURCES
MANAGEMENT PLAN**

**U.S. ARMY SOLDIER SYSTEMS CENTER
NATICK, MASSACHUSETTS**

APPROVAL

This Integrated Natural Resources Management Plan meets the requirements of the Sikes Act (16 USC 670A et seq.) as amended.

Approving Officials:

Mr. John Manning
Acting Garrison Manager
U.S. Army Soldier Systems Center
Natick, Massachusetts

Date

Marvin Moriarty
Regional Director
U.S. Fish & Wildlife Service
Region 5 Office
300 Westgate Center Drive
Hadley, Massachusetts, 01035

Date

Wayne MacCallum
Director
Massachusetts Division and Fisheries and Wildlife
251 Causeway Street, Suite 400
Boston, Massachusetts 02114

Date

Note to SSC: From Guidance:

“This page will include those who approve the INRMP by signature. Normally this will be the installation commander, and the MACOM representative. The director of the appropriate State agency, and the regional director of the USFWS, will approve the fish and wildlife aspects of the INRMP. In lieu of signatures from the state agency and the USFWS, concurrence letters from those agencies may be inserted immediately following the signature page.”

**INTEGRATED NATURAL RESOURCES
MANAGEMENT PLAN**

**U.S. ARMY SOLDIER SYSTEMS CENTER
NATICK, MASSACHUSETTS**

PREPARED BY

MACTEC Engineering and Consulting, Inc.
511 Congress Street
Portland, Maine 04112-7050

U.S. ARMY SOLDIER SYSTEMS CENTER REVIEW

Mr. John J. McHugh, Director of Environmental Safety and Health
Ms. Michelle L. Bonanca, Urban Forestry Management Coordinator, Integrated Pest Management
Coordinator
Mr. Terence Garrahan, Cultural Resources Management Coordinator
Mr. Joseph Hohmann, Director of Public Works

**INSTALLATION MANAGEMENT COMMAND
NORTHEAST REGION REVIEW**

Mr. Stephen S. Mason, Chief, DPW Division

**INTEGRATED NATURAL RESOURCES
MANAGEMENT PLAN**

**U.S. ARMY SOLDIER SYSTEMS CENTER
NATICK, MASSACHUSETTS**

TABLE OF CONTENTS

Section No.	Title	Page No.
<hr/>		
	EXECUTIVE SUMMARY	ES-1
1.0	GOALS AND POLICIES	1-1
1.1	GOALS.....	1-1
1.2	POLICIES	1-1
1.3	MONITORING PROGRESS.....	1-3
2.0	LOCATION AND ACREAGE.....	2-1
2.1	LOCATION.....	2-1
2.2	ACREAGE AND ACQUISITION	2-1
2.3	INSTALLATION HISTORY.....	2-2
2.4	NEIGHBORS.....	2-4
2.5	SATELLITE PROPERTIES.....	2-5
3.0	MILITARY MISSION.....	3-1
3.1	OVERVIEW	3-1
3.2	NATURAL RESOURCES NEEDED TO SUPPORT THE MILITARY MISSION	3-1
3.3	EFFECTS OF THE MILITARY MISSION ON NATURAL RESOURCES	3-1
3.4	EFFECTS OF NATURAL RESOURCES OR THEIR MANAGEMENT ON THE MISSION	3-2
3.5	FUTURE MILITARY MISSION IMPACTS ON NATURAL RESOURCES	3-3
4.0	FACILITIES	4-1
4.1	OVERVIEW	4-1
4.2	TRANSPORTATION SYSTEM	4-1
4.3	WATER SUPPLY	4-2
4.4	PROJECTED CHANGES IN FACILITIES.....	4-3
5.0	RESPONSIBLE AND INTERESTED PARTIES	5-1
5.1	INSTALLATION ORGANIZATIONS	5-1
5.2	OTHER DEFENSE ORGANIZATIONS	5-2
5.3	OTHER FEDERAL AGENCIES	5-2
5.4	STATE AGENCIES	5-2
5.5	UNIVERSITIES	5-3
5.6	CONTRACTORS.....	5-3
5.7	OTHER INTERESTED PARTIES	5-3
5.8	SIGNATORY AGENCIES	5-3
6.0	NATURAL RESOURCES AND CLIMATE.....	6-1
6.1	SETTING.....	6-1
6.1.1	SSC Main Installation	6-1

MACTEC Engineering and Consulting, Inc.

**INTEGRATED NATURAL RESOURCES
MANAGEMENT PLAN**

**U.S. ARMY SOLDIER SYSTEMS CENTER
NATICK, MASSACHUSETTS**

TABLE OF CONTENTS

Section No.	Title	Page No.
6.1.2	Natick Housing Areas	6-1
6.1.3	Hudson Housing Area	6-1
6.1.4	Needham Housing Area	6-2
6.1.5	Wayland Housing Area	6-2
6.2	TOPOGRAPHY	6-3
6.3	GEOLOGY	6-3
6.4	CLIMATE	6-4
6.5	PETROLEUM AND MINERALS	6-5
6.6	SOILS.....	6-5
6.6.1	SSC Main Installation	6-5
6.6.2	Natick Housing Areas	6-6
6.6.3	Needham Housing Area	6-6
6.6.4	Hudson Housing Area	6-6
6.6.5	Wayland Housing Area	6-7
6.7	WATER RESOURCES.....	6-7
6.7.1	SSC Main Installation	6-7
6.7.1.1	Lake Cochituate.....	6-7
6.7.1.2	Bordering Vegetated Wetland	6-9
6.7.1.3	Groundwater	6-10
6.7.2	Natick Housing Areas	6-10
6.7.2.1	Little Roundy Pond.....	6-10
6.7.2.2	Kansas Street Housing Area Wetland	6-11
6.7.3	Hudson Housing Area	6-11
6.7.3.1	Forested Wetland.....	6-12
6.7.3.2	Bog	6-12
6.7.3.3	Potential Vernal Pools	6-12
6.7.3.4	Needham Housing Area	6-13
6.7.3.5	Wayland Housing Area	6-13
6.8	FLORA	6-13
6.8.1	SSC, Main Installation	6-13
6.8.2	Lake Cochituate	6-14
6.8.3	Little Roundy Pond	6-15
6.8.4	Kansas Street Housing Area.....	6-15
6.8.5	Hudson Housing Area	6-15
6.8.6	Needham Housing Area	6-16
6.8.7	Wayland Housing Area	6-16
6.9	FAUNA	6-16
6.9.1	SSC, Main Installation and Natick Housing Areas	6-16
6.9.2	Hudson Housing Area	6-17
6.9.3	Needham Housing Area	6-18
6.9.4	Wayland Housing Area	6-18

MACTEC Engineering and Consulting, Inc.

**INTEGRATED NATURAL RESOURCES
MANAGEMENT PLAN**

**U.S. ARMY SOLDIER SYSTEMS CENTER
NATICK, MASSACHUSETTS**

TABLE OF CONTENTS

Section No.	Title	Page No.
6.10	THREATENED AND ENDANGERED SPECIES.....	6-19
6.10.1	SSC Main Installation and Adjacent Housing Areas	6-19
6.10.2	Hudson Housing Area	6-19
6.10.3	Needham Housing Area	6-20
6.10.4	Wayland Housing Area	6-20
7.0	LAND USE AND MANAGEMENT UNITS.....	7-1
7.1	LAND USES	7-1
7.1.1	Improved Grounds	7-1
7.1.2	Semi-Improved Grounds	7-1
7.1.3	Unimproved Grounds.....	7-1
7.1.4	Management Implications	7-2
7.2	MANAGEMENT UNITS	7-2
8.0	NATURAL RESOURCES MANAGEMENT.....	8-1
8.1	OBJECTIVES	8-1
8.2	FOREST MANAGEMENT	8-1
8.3	AGRICULTURAL/GRAZING OUTLEASES.....	8-2
8.4	HABITAT MANAGEMENT	8-3
8.5	GAME HARVEST MANAGEMENT.....	8-3
8.6	RARE, THREATENED, OR ENDANGERED SPECIES MANAGEMENT	8-3
8.7	FURBEARER MANAGEMENT	8-3
8.8	OTHER NON-GAME SPECIES MANAGEMENT	8-3
8.9	TRANSPLANTS AND STOCKS	8-4
8.10	WETLANDS MANAGEMENT	8-4
8.11	WATER QUALITY MANAGEMENT	8-5
8.11.1	Surface Water Management	8-5
8.11.2	Groundwater Management.....	8-6
8.12	LAND REHABILITATION AND MAINTENANCE.....	8-7
8.13	SOIL RESOURCES MANAGEMENT	8-7
8.14	CANTONMENT AREA MANAGEMENT.....	8-7
8.15	PEST MANAGEMENT	8-8
8.16	FIRE MANAGEMENT.....	8-10
8.17	SPECIAL INTEREST AREA PROTECTION	8-11
8.18	TRAINING REQUIREMENTS INTEGRATION (TRI)	8-11
9.0	INVENTORYING AND MONITORING.....	9-1
9.1	OBJECTIVES	9-1
9.2	GENERAL	9-1
9.3	FLORA INVENTORY AND MONITORING.....	9-2
9.4	FAUNA INVENTORY AND MONITORING	9-2

MACTEC Engineering and Consulting, Inc.

**INTEGRATED NATURAL RESOURCES
MANAGEMENT PLAN**

**U.S. ARMY SOLDIER SYSTEMS CENTER
NATICK, MASSACHUSETTS**

TABLE OF CONTENTS

Section No.	Title	Page No.
9.5	WATER QUALITY MONITORING	9-3
9.6	SOIL RESOURCES INVENTORY AND MONITORING.....	9-3
9.7	DATA STORAGE, RETRIEVAL, AND ANALYSIS	9-4
9.8	FIVE YEAR PLANS.....	9-4
10.0	RESEARCH AND SPECIAL PROJECTS.....	10-1
10.1	OBJECTIVES	10-1
10.2	RESEARCH MECHANISMS	10-1
10.3	PLANNED RESEARCH/SPECIAL PROJECTS.....	10-1
11.0	ENFORCEMENT	11-1
11.1	OBJECTIVES	11-1
11.2	HISTORY AND AUTHORITY	11-1
11.3	JURISDICTION AND ENFORCEMENT ACTIVITIES	11-1
11.4	TRAINING.....	11-2
12.0	ENVIRONMENTAL AWARENESS	12-1
12.1	OBJECTIVES	12-1
12.2	PROGRAMS AND RESOURCES FOR ENVIRONMENTAL AWARENESS.....	12-1
13.0	OUTDOOR RECREATION.....	13-1
13.1	OBJECTIVES	13-1
13.2	MILITARY MISSION CONSIDERATIONS	13-2
13.3	PUBLIC ACCESS	13-2
13.4	HUNTING, FISHING, AND TRAPPING PROGRAMS	13-2
13.5	OTHER NATURAL RESOURCES ORIENTED OUTDOOR RECREATION.....	13-2
13.6	RECREATION AND ECOSYSTEM MANAGEMENT	13-2
13.7	SAFETY AND SECURITY	13-3
14.	CULTURAL RESOURCES PROTECTION	14-1
14.1	OBJECTIVES	14-1
14.2	CULTURAL AND HISTORIC RESOURCES.....	14-1
14.2.1	Cultural Resources	14-1
14.2.2	Historic Resources	14-2
14.3	NATURAL RESOURCES MANAGEMENT IMPLICATIONS.....	14-2
14.3.1	Effects of Natural Resource Activities on Cultural Resources	14-2
14.3.2	Effects of Cultural Resource Activities on Natural Resources	14-3
14.3.3	Compliance with Native American Consultation Requirements	14-3

MACTEC Engineering and Consulting, Inc.

**INTEGRATED NATURAL RESOURCES
MANAGEMENT PLAN**

**U.S. ARMY SOLDIER SYSTEMS CENTER
NATICK, MASSACHUSETTS**

TABLE OF CONTENTS

Section No.	Title	Page No.
15.0	NATIONAL ENVIRONMENTAL POLICY ACT	15-1
15.1	OBJECTIVES	15-1
15.2	NEPA RESPONSIBILITIES AND IMPLEMENTATION.....	15-1
15.3	NEPA AND NATURAL RESOURCES MANAGEMENT.....	15-1
16.0	BIOPOLITICAL ISSUE RESOLUTION	16-1
17.0	IMPLEMENTATION.....	17-1
17.1	ORGANIZATION, ROLES, AND RESPONSIBILITIES	17-1
17.2	MANPOWER	17-1
17.3	PROJECT/PROGRAMS PRIORITIES.....	17-1
17.4	IMPLEMENTATION FUNDING OPTIONS.....	17-2
17.5	COMMAND SUPPORT.....	17-3
18.0	REFERENCES	18-1
19.0	PERSONS CONTACTED.....	19-1

ACRONYMS AND ABBREVIATIONS

LIST OF FIGURES

APPENDICES

- A URBAN FORESTRY MANAGEMENT PLAN
- B FLORA SPECIES LISTS
- C FAUNA SPECIES LISTS
- D RARE SPECIES INFORMATION

**INTEGRATED NATURAL RESOURCES
MANAGEMENT PLAN**

**U.S. ARMY SOLDIER SYSTEMS CENTER
NATICK, MASSACHUSETTS**

LIST OF FIGURES

Figure No.	Title
1	Site Location Map, Main Installation and Natick Housing Areas
2	Site Location Map, Hudson Housing Area
3	Site Location Map, Needham Housing Area
4	Site Location Map, Wayland Housing Area
5	Site Map, Main Installation
6	Cover Type Map, Main Installation and Natick Housing Areas
7	Cover Type Map, Hudson Housing Area
8	Cover Type Map, Needham Housing Area
9	Cover Type Map, Wayland Housing Area

Purpose. In accordance with the Army memorandum Army Goals and Implementing Guidance for Natural Resources Planning Level Surveys (PLS) and Integrated Natural Resources Management Plan (INRMP) (DoA, 1997a), the purpose of the INRMP is to ensure that natural resource conservation measures and Army activities at Soldier Systems Center (SSC) are integrated and are consistent with federal and state stewardship requirements.

Environmental Compliance. This INRMP has been developed in compliance with the Sikes Act of 1960 (as amended through 2003), Department of Defense (DoD) Instruction 4715.3 (DoD, 1996), Department of the Army Regulation 200-1 (DoA, 1997b), Department of the Army Regulation 200-3 (DoA, 1995), Army Goals and Implementing Guidance for PLS, and INRMP (DoA, 1997a).

The INRMP follows the U.S. Army's Guidelines to Prepare Integrated Natural Resources Management Plans for Army Installations and Activities (USAEC, 1997). As stated in these guidelines, INRMPs may be considered major federal actions (as defined under Section 1508.18 of the Council for Environmental Quality [CDQ] regulations) and therefore are subject to requirements of the National Environmental Policy Act (NEPA) of 1969. Under Army Regulation 200-2 (Section 5-3.k.), development of natural resources management plans require an Environmental Assessment (EA) under NEPA (DoA, 2002).

In addition to the regulatory requirements described above, the INRMP complies with applicable federal and state laws and executive orders including:

- Endangered Species Act of 1973
- National Historic Preservation Act of 1966 (as amended through 1992)
- Executive Order 13148-Greening the Government through Leadership in Environmental Management
- Executive Order 13112-Invasive Species
- Archeological Resources Protection Act of 1979
- American Indian Religious Freedom Act of 1978
- Native American Graves Protection and Repatriation Act of 1990
- Federal Noxious Weed Act of 1974
- Clean Water Act of 1972 (as amended through 2002)
- Clean Air Act (as amended through 1990)
- Federal Insecticide, Fungicide, and Rodenticide Act of 1947 (as amended through 1996)

MACTEC Engineering and Consulting, Inc.

EXECUTIVE SUMMARY

- Protection of Wetlands, 1977, Executive Order 119900
- Migratory Bird Treaty Act of 1918 (as amended through 1998)
- Massachusetts Wetlands Protection Act
- Massachusetts Endangered Species Act
- Massachusetts Forest Cutting Practices Act
- Massachusetts Surface Water Quality Standards
- Massachusetts Environmental Title 5

Scope. This INRMP provides for the management of natural and cultural resources and installation activities affecting those resources occurring on or associated with SSC's main installation and family housing area properties. This INRMP is a comprehensive natural resources management plan for the installation and is supported by and integrated with several installation-specific management plans, including an Urban Forestry Management Plan, a Cultural Resources Management Plan (CRMP), and an Integrated Pest Management Plan (IPM).

Relationship to the Military Mission. SSC is a multi-service organization comprising several DoD partners, which constitute science and technology centers, an integrated logistics support center, and program/product/project managers teams. These groups work together to provide technology, development and engineering, fielding, and sustainment of our military's food, clothing, shelters, airdrop systems, and soldier support items that protect and sustain America's military forces. SSC also provides technical advice to civilian first responders, helping them adopt the latest technologies developed by the military for the War on Terrorism.

Because SSC is a research and development organization and not a military training facility, natural resources at the installation are not used to directly support mission activities. However, natural resources at the installation may be potentially impacted from general facility and grounds keeping activities, with impacts potentially caused by stormwater runoff, construction activities, pest infestations, chemical spills, and pesticide/herbicide and fertilizer applications.

This INRMP has been developed to ensure protection and enhancement of the natural resources at the SSC. Protection and management of natural resources will ultimately benefit the installation as a whole by (1) providing an aesthetically pleasing, cleaner and more natural landscape for civilian and military personnel working and residing at the installation and (2) by increasing efficiency and cost savings

MACTEC Engineering and Consulting, Inc.

through pollution prevention, use of reclaimed water, and, in general, a proactive approach to the environmental and natural resources management.

Partnerships. SSC partners who operate at the installation include the following:

- US Army Research, Development, and Engineering Command (RDECOM);
- US Army Installation Management Command (IMCOM);
- US Army Research Institute of Environmental Medicine;
- US Army Integrated Logistics and Support Center (ILSC);
- US Coast Guard;
- US Navy Clothing and Textile Research Facility (NCTRF);
- US Army Natick Soldier Center (NSC);
- Program Executive Office Soldier;
- US Army Product Manager Force Sustainment Systems (PM FSS); and
- RDECOM Acquisition Center – Natick.

Other organizations that will support implementation of the Plan include USFWS, other DoD agencies, other Federal and State agencies, universities, contractors, and private citizens.

Planned Major Initiatives. The major initiatives of this INRMP over the next 5 years are to:

- Complete an EA of the INRMP to ensure compliance with NEPA;
- Provide necessary training for staff for implementation of the INRMP;
- Continue implementation of the integrated pest management program, forestry management plan, and CRMP;
- Continue implementation of projects to enhance environmental awareness;
- Perform surveys and biological monitoring as needed to ensure protection of sensitive species and habitats; and
- Continue on-going stormwater and groundwater monitoring programs.

Costs and Benefits. Costs: Costs are associated with training and implementation of plan components. Funding for implementation of this INRMP will be obtained from the Installation Management Command

EXECUTIVE SUMMARY

Northeast. (IMCOM NE) Note, Execution of any project laid out in this document is subject to availability of funds.

Military Mission Benefits: Implementation of this INRMP will result in an enhanced quality of life for SSC personnel, improved community relations, and a reduction in costs associated with pollution prevention and recycling practices, as well as a potential reduction in future environmental costs.

Environmental Benefits: Environmental benefits of this plan will include protection of natural resources and environmentally sensitive areas and an improvement in the quality of the environment.

Summary. Implementation of this INRMP will allow SSC to more effectively manage its natural resources and to integrate components of its natural resources management plan, pest management plan, and CRMP into one comprehensive conservation plan for the installation.

1.0 GOALS AND POLICIES

The U.S. Army is committed to natural resources management, and, in accordance with Army Regulation 200-3 (Section 1-5), strives to maintain, protect, and improve environmental quality, aesthetic values and ecological relationships (DoA, 1995).

To meet this objective, and to ensure natural resources management actions that are integrated and compatible with Soldier System Center's (SSC) mission, the following goals and policies have been established.

1.1 GOALS

The general goals of this INRMP are as follows:

- Protection and management of natural and cultural resources,
- Compliance with Federal and State laws and regulations pertaining to the management of natural and cultural resources,
- Integration of and compatibility between natural resources management measures and the SSC military mission, and
- Enhanced quality of life for civilian and military personnel who reside and/or work at the installation.

1.2 POLICIES

The following policies have been developed to address each of the goals identified in Section 1.1.

Protection and Management of Natural Resources:

- Provide management of natural resources at the installation that is ecosystem focused to the extent possible;