



Integrated Natural Resources Management Plan
Naval Air Station Pensacola Complex
Pensacola, Florida

2018
Update

Integrated Natural Resources Management Plan Naval Air Station Pensacola Complex Pensacola, Florida



2018 Update

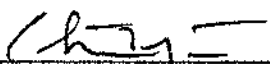


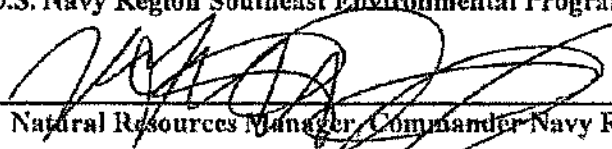
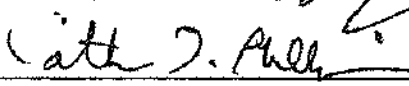
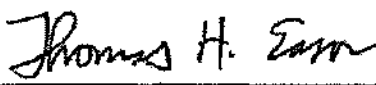

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Pensacola, Florida



2018 Update

**NAVAL AIR STATION PENSACOLA COMPLEX
PENSACOLA, FLORIDA
INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN
(INRMP) - 2018 OPERATIONS AND EFFECT CONCURRENCE**

The Sikes Act and Department of Defense instruction require that annual and 5-year operation and effect reviews of INRMPs occur with federal and state partners. Representatives of the Navy, U.S. Fish & Wildlife Service, Florida Fish and Wildlife Conservation Commission, and National Marine Fisheries Service are invited annually to participate in the yearly Naval Air Station Pensacola INRMP and Natural Resources Metric review. The last operation and effect review of this INRMP was completed in August 2013. We have revised the installation INRMP with input from the signatory partners as part of the required 5-year review process. By signing below, the partners concur that the management actions prescribed in the INRMP and implemented will contribute to the conservation and rehabilitation of installation natural resources.

 _____ Commanding Officer, Naval Air Station Pensacola	<u>16 04 18</u> Date
 _____ Natural Resources Manager, Naval Air Station Pensacola	<u>10/4/2018</u> Date
 _____ U.S. Navy Region Southeast Environmental Program Manager	<u>8/13/2018</u> Date
 _____ Natural Resources Manager, Commander Navy Region SE	<u>8/13/2018</u> Date
 _____ U.S. Fish and Wildlife Service	<u>8/16/2018</u> Date
 _____ Florida Fish and Wildlife Conservation Commission	<u>10/3/18</u> Date
 _____ National Marine Fisheries Service	<u>8/16/18</u> Date

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List of Acronyms

ABD	Applied Biology Department
AICUZ	Air Installation Compatible Use Zone
ATV	All-Terrain Vehicle
BAHWG	Bird/Animal Hazard Working Group
BARP	Blue Angel Recreation Park
BASH	Bird/Animal Strike Hazard
BGS	Below Ground Surface
BMAP	Basin Management Action Plan
BMP	Best Management Practice
CA	Conservation Associate
CAA	Clean Air Act
CARL	Conservation and Recreation Land
CCCL	Coastal Construction Control Line
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CHRIMP	Consolidated Hazardous Material Reutilization Inventory Management Program
CID	Center for Information Dominance
CISMA	Cooperative Invasive Species Management Area
CMC	Center for Marine Conservation
CMP	Clean Marina Program
CNIC	Commander, Navy Installations Command
CNO	Chief of Naval Operations
CO	Commanding Officer
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DANTES	Defense Activity for Non-Traditional Educational Support
DCA	Department of Community Affairs
DoD	Department of Defense
DoDINST	Department of Defense Instruction

List of Acronyms (continued)

DoN	Department of the Navy
DOT	Department of Transportation
EA	Environmental Assessment
EFH	Essential Fish Habitat
EMS	Environmental Management System
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act of 1973
° F	Degrees Fahrenheit
FAA	Federal Aviation Administration
FCMP	Florida Coastal Management Program
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FDNR	Florida Department of Natural Resources
FEMA	Federal Emergency Management Agency
FFS	Florida Forest Service
FWC	Florida Fish and Wildlife Conservation Commission
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
FIRM	Flood Insurance Rate Map
FMIS	Forest Management Information System
FNAI	Florida Natural Areas Inventory
FPC	Federal Prison Camp
GCPEP	Gulf Coastal Plain Ecosystem Partnership
GINs	Gulf Islands National Seashore
GIS	Geographic Information System
HCP	Habitat Conservation Plan
HM	Hazardous Materials
HS	Hazardous Substance
HW	Hazardous Waste
HWMP	Hazardous Waste Management Plan
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
IPM	Integrated Pest Management
IRP	Installation Restoration Program
LGP	Low Ground Pressure

List of Acronyms (continued)

LLA	Longleaf Alliance
LMD	Land Management Department
MBTA	Migratory Bird Treaty Act
MMPA	Marine Mammal Protection Act
MSL	Mean Sea Level
MWR	Morale, Welfare, and Recreation Division
NAAQS	National Ambient Air Quality Standards
NAAS	Naval Auxiliary Air Station
NAS	Naval Air Station
NASP	Naval Air Station Pensacola
NAVFACENCOM	Naval Facilities Engineering Command
NAVFACINST	Naval Facilities Instruction
NAVSUP	Naval Supply Systems Command
NAWCTSD	Naval Air Warfare Center Training Support Division
NCTC	Naval Communications Training Center
NEPA	National Environmental Policy Act
NETC	Naval Education and Training Command
NETPDTC	Naval Education and Training Professional Development and Technology Center
NETPMSA	Naval Education and Training Program Management Support Activity
NFA	No Further Action
NH	U.S. Naval Hospital
NJROTC	Navy Junior Reserve Officer Training Candidate
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollution Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRM	Natural Resources Manager
NROTC	Navy Reserve Officer Training Candidate
NTTC	Naval Technical Training Center
NFWMD	North Florida Water Management District
OFW	Outstanding Florida Water
NOLF	Navy Outlying Landing Field
O & M(N)	Navy Operations and Maintenance
OPNAVINST	Chief of Naval Operations Instruction

List of Acronyms (continued)

P2	Pollution Prevention
P5	Perdido Pitcher Plant Prairie Preserve
PCE	Polychlorinated Ethylene
PMP	Pest Management Plan
RA	Resource Assistant
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facilities Investigation
ROICC	Resident Officer in Charge of Construction and Contracts
RSIP	Regional Shore Infrastructure Plan
SAIA	Sikes Act Improvement Act of 1997
SARA	Superfund Amendments and Reauthorization Act
SAV	Submerged Aquatic Vegetation
SCA	Student Conservation Association
SCORP	State Comprehensive Outdoor Recreation Plan
SCS	Soil Conservation Service
SMP	Smoke Management Plan
SOUTHDIV	Southern Division of Naval Facilities Engineering Command
SPCC	Spill Prevention Control and Countermeasures
SSURGO	Soil Survey Geographic
SWPPP	Stormwater Pollution Prevention Plan
TNC	The Nature Conservancy
TSI	Timber Stand Improvement
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
VA JACC	Veterans Affairs Joint Ambulatory Care Center
WMP	Watershed Management Plan
WRAP	Wetland Rapid Assessment Procedure

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EXECUTIVE SUMMARY

ES.1 TYPE OF DOCUMENT

This is an Integrated Natural Resources Management Plan (INRMP).

ES.2 PURPOSE OF DOCUMENT

The purpose of this document is to meet statutory requirements under the Sikes Act Improvement Act (SAIA), Public Law 105-85, Div. B. Title XXIX, Nov. 18, 1997, 111 Stat 2017-2019, 2020-2022. In November 1997, the Sikes Act, 16 U.S.C. § 670a et seq., was amended to require the Secretary of Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on military Installations. To facilitate this program, the amendments require the Secretaries of the military departments to prepare and implement INRMPs for each military Installation in the United States unless the absence of significant natural resources on a particular Installation makes preparation of a plan for the Installation inappropriate. The Act mandates that all military Installations prepare and implement an INRMP by November 17, 2001. The United States Department of the Navy (DoN) has prepared this INRMP for the Naval Air Station Pensacola (NASP) Complex, Florida.

ES.3 GOALS AND OBJECTIVES OF THE INRMP

The goal of the INRMP is to implement an ecosystem-based conservation program that provides for conservation and rehabilitation of natural resources in a manner consistent with the military mission; integrates and coordinates all natural resources; provides for sustainable multipurpose uses of natural resources; and provides public access for use of natural resources subject to safety and military security considerations. The INRMP covers a period of 10 years. Five Installation-wide ecosystem management goals and 17 objectives have been identified for the NASP Complex. The objectives developed to implement each goal are identified to a natural resources issue facing the Installation. Following are the goals, issues, and objectives for the NASP Complex.

Goal 1: Protect and maintain the natural resources within the NASP Complex through the continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission.

Issue: As development and training activities have a significant potential to affect land area at the NASP Complex, land management decisions and practices will become increasingly important aspects of ecosystem management. The use and management of lands for military mission needs, and the decision-making process regarding such land use, directly affect the sustainability of the ecosystem. To protect and maintain natural resources while ensuring the continuation of the military mission, the NASP Complex needs to implement programs to meet the following objectives:

Objective 1.1: Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;

Objective 1.2: Reduce and control invasive and exotic species;

Objective 1.3: Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;

Objective 1.4: Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;

Objective 1.5: Protect and enhance shorelines through existing and new programs; and

Objective 1.6: Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices.

Goal 2: Protect and enhance forest resources by practicing ecologically-sound forest management leading to sustained yield of quality forest products, watershed protection, and wildlife habitat.

Issue: The NASP Complex manages approximately 2,486 acres of forestland. To protect and enhance forest resources by practicing ecologically-sound forestland management, while ensuring sustainability of commercial products, the NASP Complex needs to implement programs to address the following objectives:

Objective 2.1: Practice the ecosystem management concept for sustained yield of forest products and forest health;

Objective 2.2: Manage forests in an ecologically-sound way to provide habitat for wildlife; and

Objective 2.3: Manage forest stands for watershed protection.

Goal 3: Protect, maintain, and restore native communities for plant and animal life, while improving the quality of life and ensuring the continuation of the military mission.

Issue: Little of the native communities that originally occurred at the NASP Complex remain today. The natural communities that remain suggest the diversity of habitats that once covered the NASP Complex. These remaining natural communities provide good quality habitat for both plant and animal life and should be protected and enhanced.

Often, nuisance wildlife species such as rodents and some birds become overpopulated or congregate in areas creating a threat to human health and/or the military mission. In such cases, these wildlife species must be controlled to prevent problems. To protect, maintain, and restore native communities for plant and animal life, while preventing nuisance wildlife from negatively impacting quality of life and the military mission, the NASP Complex needs to implement programs to address the following objectives:

Objective 3.1: To maintain ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;

Objective 3.2: To preserve and protect threatened and endangered species and species of special concern to ensure no reduction in species numbers or population sizes; and

Objective 3.3: To control nuisance wildlife and wildlife diseases that may adversely affect human health or welfare, the health of the ecosystem, and/or the military mission.

Goal 4: Provide facilities and develop policies that allow for recreational and educational uses of natural resources, and result in positive effects to these natural resources while improving the quality of life.

Issue: The SAIA requires that military Installations evaluate the potential for providing outdoor recreational resources to the general public. Current access to the NASP Complex's existing recreational resources is limited to Installation Department of Defense (DoD) civilians, uniformed military personnel and dependents, and retired military personnel. However, the general public is allowed access to several natural and cultural resources at the NASP Complex. The Commanding Officer (CO) authorizes access for educational and outdoor natural resources recreational activities consistent with the military mission and security levels. The following objective was developed to provide for recreational opportunities:

Objective 4.1: To develop additional recreational facilities and trails and/or interpretive centers to support present and future natural resources-based outdoor recreation participants at the NASP Complex.

Goal 5: Protect and conserve the ecological value and diversity of natural resources through fostering knowledge of, and participation in, adaptive ecosystem management.

Issue: Existing Installation programs and plans for maintaining and managing natural resources within the NASP Complex do not currently consider the interrelationships among resources on the Installation, as well as those regionally. Instead, existing programs and plans have typically focused on the management of individual resources in accordance with federal or state laws. To participate in adaptive ecosystem management, the NASP Complex needs to implement programs to meet the following objectives:

Objective 5.1: To provide adequate staffing, equipment, technology, and training to the Natural Resources Department to ensure proper implementation of this INRMP;

Objective 5.2: To incorporate the concept of ecosystem management into all planning and management processes;

Objective 5.3: To implement training, education and stewardship initiatives for ecosystem management; and

Objective 5.4: To establish a planning team to review and update the INRMP in accordance with OPNAVINST 5090.1D, 12-3.4 (c)(4) and 12-3.4 (c)(12).

ES.4 FUNCTIONAL AREAS AND MANAGEMENT FOCUSES

To achieve Installation-wide goals and objectives the Installation has been divided into functional areas. Functional areas are established in the plan to acknowledge the use of the area for its military purpose and for considering the opportunities to achieve natural resources management goals and objectives. Within each functional area, natural resources management focuses are identified. The focus of natural resources management within a functional area provides geographic emphasis for the primary management practices necessary to achieve the long-term goals and objectives of the INRMP. The management focus for an area may include: land management, forestry, fish and wildlife, and outdoor recreation.

The INRMP divides the NASP Complex into 12 functional areas: four protected areas, five operational protected areas, and three mixed-use management areas. Although many functional areas have a forestry focus, there are no areas at the NASP Complex designated as a Forest Management functional area.

- *Protected areas (P)* include land protected due to the unique natural, cultural or aesthetic value.
- *Operational Protected areas (OP)* include areas vital to the continuance of the military mission that are intensively utilized.

- *Mixed-use management areas (MU)* include areas where non-timber values such as wildlife habitat, water quality (wetland, stormwater and floodplains protection), and recreational potential or urban management is the basis for management decisions.

The NASP Complex is composed of four properties. Based on geography, land use, and natural resources, the NASP Complex is divided into 12 functional areas:

- At NAS Pensacola (see Figure 2-6):
 - Protected Area 1 (P-1);
 - Protected Area 2 (P-2);
 - Operational Protected Area 1 (OP-1);
 - Operational Protected Area 2 (OP-2);
 - Mixed-Use Management Area 1 (MU-1); and
 - Mixed-Use Management Area 2 (MU-2).
- At Bronson Field (see Figure 2-7):
 - Mixed-Use Management Area 3 (MU-3);
 - Operational Protected Area 3 (OP-3); and
 - Protected Area 3 (P-3).
- At Corry Station (see Figure 2-8):
 - Operational Protected Area 4 (OP- 4).
- At Saufley Field (see Figure 2-9):
 - Operational Protected Area 5 (OP-5); and
 - Protected Area 4 (P-4).

ES.5 SPECIES MANAGEMENT

The natural resource actions described in this INRMP are for the benefit of the plants, animals, and ecosystems occurring on this installation. Special attention is given to rare, threatened, and endangered (RTE) species, and their habitats, through management actions referenced in Table ES-1. These actions are long-term conservation measures that provide benefits for terrestrial and aquatic habitats on the installation. Management actions such as soil conservation and storm water management, for example, control sediment and pollutant runoff to protect nearshore water quality for species such as alligators, shorebirds, and fish. Forestry actions such as prescribed burning, thinning, and reforestation help to establish longleaf pine stands and herbaceous low-lying vegetation that provide habitat and resources for gopher tortoises, as another example.

The “Wildlife Habitat Management and Threatened and Endangered Species” section of this INRMP (Section 5.3.2) includes additional goals, objectives, strategies, and projects for the benefit and long-term conservation of RTE species found, or potentially found, on the installation. Animal and plant species explicitly accounted for in this INRMP are:

- Alligator Snapping Turtle
- American Alligator
- American Oyster Catcher (bird)
- American Swallow-tailed Kite (bird)
- Black Skimmer (bird)
- Caribbean Electric Ray (fish)
- Carolina Lily (plant)
- Chapman’s Butterwort (plant)
- Drummond’s Yellow-eyed Grass
- Dwarf Seahorse
- Eastern Diamondback Rattlesnake
- Florida Pine Snake
- Giant Manta Ray (fish)
- Godfrey’s Golden Aster (plant)
- Gopher Frog
- Gopher Tortoise
- Gulf Rock Rose (plant)
- Gulf Sturgeon (fish)
- Large-leaf Jointweed (plant)
- Least Tern (bird)
- Little Blue Heron (bird)
- Marian’s Marsh Wren (bird)
- Monarch Butterfly
- Osprey (bird)
- Parrot Pitcherplant
- Primrose-flowered Butterwort (plant)
- Purple Pitcher Plant
- Rufa Red Knot (bird)
- Reddish Egret (bird)
- Saltmarsh Topminnow (fish)
- Sea Turtles
 - Green Sea Turtle
 - Hawksbill Sea Turtle
 - Kemp’s Ridley Sea Turtle
 - Leatherback Sea Turtle
 - Loggerhead Sea Turtle
- Snowy Orchid (plant)
- Snowy Plover (bird)
- Southern Hog-nosed Snake
- Southern Red Lily (plant)
- Spoonflower
- Spoon-leaf Sundew (plant)
- Tricolored Heron (bird)
- West Indian Manatee
- White-fringed Orchid (plant)
- White-top Pitcher Plant

Table ES-1. Habitat Management Actions at the NAS Pensacola Complex	
Habitat Management Actions	Section
Wetland Management	5.1.1
Soil Conservation and Erosion Control	5.1.2
Stormwater and Water Quality Control	5.1.3
Floodplain Management	5.1.4
Marine Coastal Management	5.1.5
Landscaping and Grounds Maintenance	5.1.6
Invasive, Exotic, and Noxious Species	5.1.7
Urban Forestry	5.1.8
Silvicultural Activities (i.e. Thinning, Prescribed Burns)	5.2.1
Forest Protection (i.e. Wildfire Protection)	5.2.2
Fisheries Management	5.3.1
Migratory Birds	5.3.2
Threatened and Endangered Species	5.3.3
Nuisance Wildlife and BASH	5.3.4

ES.6 PROJECTS OF THE INRMP

Projects are discrete actions for fulfilling a particular strategy (strategies implement objectives). Projects may be required in order for the NASP Complex to fulfill regulatory requirements regarding natural resources management, or in order to enhance existing measures for ensuring compliance. Other projects are not compliance-driven, but may allow for more effective and efficient management of natural resources and/or simply provide for sound natural resources stewardship. Projects require labor resources and funding in addition to the day-to-day requirements of the Installation. The projects to be implemented by the NASP Complex are Presented in Table A-1 (in Appendix A). Projects were identified by the NASP Complex NRM in consultation with foresters, fish and wildlife biologists, and soil conservationists with the NAVFAC Southeast Natural Resources Section, as well as with federal, state, and county wildlife biologists, foresters, and land managers.

It is the intent of the NASP Complex to implement the projects to the greatest extent possible. The implementation of projects is largely dependent upon availability of funds. Funding for implementation of the INRMP will come from the Installation, Commander Navy Installations Command (CNIC), or Naval Facilities Engineering Command natural resources fund sources. The natural resources programs and projects described here are divided into mandatory and stewardship categories to reflect implementation priorities. Every effort will be made to acquire O&M (N) Environmental, or other funding to implement DoD mandatory projects in the timeliest manner possible. Stewardship projects will be funded through forestry, agricultural outlease, fish and wildlife, Legacy, installation funds, or other fund sources as funding and personnel resources become available. Table A-1 in Appendix A summarizes the projects of this INRMP.

ES-ES.7 MISSION SUSTAINABILITY

The goal at the NASP Complex is to maintain and enhance the capability of military lands to support the training mission, while conserving the area's natural resources. Implementation of the INRMP will primarily focus on enhancing and sustaining the military mission but, at the same time, the resource managers will implement projects designed to enhance and protect the natural resources within the NASP Complex since the natural habitat is necessary for success of the military mission. Issues such as uncontrolled erosion and downstream public sedimentation, inappropriate use of herbicides, and unplanned public use of aquatic resources must be addressed to ensure that enforcement actions by regulatory agencies do not affect the military training mission.

Table ES-2 provides a cross reference of the discussions presented in this INRMP and the April 2006 Navy Guidance for INRMPs. Sections that are not applicable for the NASP Complex are also identified.

Table ES-2. Cross-Reference of OSD Format to Format Used in this INRMP	
OSD recommended INRMP format	Cross reference to required information in this document
Cover Page	Cover Page
Signature Page	Signature Page
Executive Summary	Executive Summary
Table of Contents	Table of Contents
Chapter 1 - Overview	Chapter 1.0 – Introduction
1.a – Purpose	1.1 – Purpose and Organization
1.b – Scope	1.4 – Scope
1.c – Goals and Objectives Summary	1.5 – Goals and Objectives
1.d – Responsibilities of Stakeholders	1.3 – Responsibilities
1.e – Commitment of Regulatory Agencies	1.7 – Commitment of Regulatory Agencies
1.f – Authority	1.2 – Authority
1.g – Stewardship of Compliance Statement	1.6 – Stewardship and Compliance
1.h – Review and Revision Process	1.8 – Review and Revision Process
1.i – Management Strategies	1.9 – Management Strategy
1.j – Integration with other Plans	Not applicable
Chapter 2 – Current Conditions and Use	Chapter 2.0 – Current Conditions and Use
2.0 – Installation Information	2.1 – Installation Information
2.a.1 – Location Statement (concise)	2.1.1 – General Description
2.a.2 – Regional Land Use	2.1.6 – Regional Land Use
2.a.3 – History and Pre-Military Land Use (abbreviated)	2.1.5 – Abbreviated History and Pre-Military Land Use
2.a.4 – Military Mission (concise)	2.1.2 – Military Mission
2.a.5 – Operations and Activities	2.1.1 – General Description
2.a.6 – Constraints Map	2.1.3 – Constraints Map
2.a.7 – Opportunities Map	2.1.4 – Opportunities Map
2.b – General Physical Environment and Ecosystems	2.2 – General Physical Environment and Ecosystems
2.c – General Biotic Environment	2.3 – Biotic Environment
2.c.1 – Threatened and Endangered Species and Species of Concern	2.3.2 – Rare, Threatened and Endangered Species
2.c.2 – Wetlands and Deep Water Habitats	2.2.6 – Wetlands
2.c.3 – Fauna	2.3.1 – Natural Communities
2.c.4 – Flora	2.3.1 – Natural Communities
Chapter 3 – Environmental Management Strategy and Mission Sustainability	Chapter 3.0 – Environmental Management Strategy and Mission Sustainability
3.a – Supporting Sustainability of the Military Mission and the Natural Environment	3.1 – Supporting Sustainability of the Military Mission and the Natural Environment
3.a.1 – Integrate Military Mission and Sustainability Land Use	3.1.1 – Military and Mission and Sustainable Land Use
3.a.2 – Define Impact to the Military Mission	3.1.2 – Defining Impact on the Military Mission

Table ES-2. Cross-Reference of OSD Format to Format Used in this INRMP	
OSD recommended INRMP format	Cross reference to required information in this document
3.a.3 – Describe Relationship to Range Complex Management Plan or other Operational Area Plans	3.1.3 - Relationship to the Gulf of Mexico Range Complex and Pensacola Operational Area Management Plans
3.b – Natural Resources Consultation Requirements (Section 7, EFH)	3.2 – Natural Resource Consultation Requirements
3.c – NEPA Compliance	3.3 – Planning for National Environmental Policy Act Compliance
3.d – Opportunities for Beneficial Partnerships and Collaborative Resource Planning	3.4 – Beneficial Partnerships and Collaborative Resource Planning
3.e – Public Access and Outreach	3.5 – Public Access and Outreach
3.e.1 – Public Access and Outdoor Recreation	3.5 – Public Access and Outreach
3.e.2 – Public Outreach	3.5 – Public Outreach
3.e.3 – Encroachment Partnering	3.6 – Encroachment Partnering
3.e.4 – State Comprehensive Wildlife Plans (SCWP) Integration	3.7 – Florida’s State Wildlife Action Plan
Chapter 4 – Program Elements	Chapter 5.0 – Program Elements
4.a – Threatened and Endangered Species and Species Benefit, Critical Habitat, Species of Concern Management	5.3.3 –Threatened and Endangered Species
4.b – Wetlands and Deep Water Habitats	5.1.1 – Wetland Management
4.c – Law Enforcement	Not Applicable
4.d – Fish and Wildlife	5.3 – Fish and Wildlife
4.e – Forestry	5.2 – Forest Management
4.f – Vegetation	4.1.4 – Vegetative Management
4.g – Migratory Birds	5.3.2 – Migratory Birds
4.h – Invasive Species	5.1.7 – Invasive, Exotic, and Noxious Species
4.i – Pest Management	5.3.4 – Nuisance Wildlife and BASH
4.j – Land Management	5.1 – Land Management
4.k – Agricultural Outleasing	Not Applicable
4.l – GIS Management, Data Integration, Access, and Reporting	5.5.2 – Geographical Information Systems, Data Integration, and Reporting
4.m – Outdoor Recreation	5.4 – Outdoor Recreation
4.n – Bird Aircraft Strike Hazard	5.3.4 – Nuisance Wildlife and BASH
4.o – Wildland Fire	5.2.2 – Forest Protection
4.p – Training of Natural Resource Personnel	5.5.1 – Training of Natural Resource Personnel
4.q – Coastal/Marine	5.1.5 – Marine Coastal Maintenance
4.r – Floodplains	5.1.4 – Floodplain Management
4.s – Other Leases	Not Applicable
Chapter 5 - Implementation	Appendix A – NASP Complex Projects
5.a – Summary of Project Prescription Development Process	Appendix A – NASP Complex Projects

Table ES-2. Cross-Reference of OSD Format to Format Used in this INRMP	
OSD recommended INRMP format	Cross reference to required information in this document
5.b – Achieving No Net Loss	3.1 – Supporting Sustainability of the Military Mission and the Natural Environment
5.c – Use of Cooperative Agreements	3.4 – Beneficial Partnerships and Collaborative Resource Planning
5.d – Funding Process	ES.6 – Projects of the INRMP
Appendix 1. Acronyms	List of Acronyms
Appendix 2. Detailed Natural Resources Prescriptions	2.3. – Biological Environment
Appendix 3. List of Projects	Appendix A. INRMP Projects
Appendix 4. Surveys: Results of Planning Level Surveys	Not Applicable
Appendix 5. Research Requirements	Not Applicable
Appendix 6. Migratory Bird Management	5.3.2 – Migratory Birds
Appendix 7. Benefits for Endangered Species	5.3.3 – Threatened and Endangered Species
Appendix 8. Critical Habitat	2.3.2.1 – Critical Habitat

1

Introduction

1.1 PURPOSE AND ORGANIZATION

This document meets statutory requirements under the Sikes Act Improvement Act (SAIA), Public Law 105-85, Div. B. Title XXIX, November 18, 1997, 111 Stat 2017-2019, 2020-2022. The Sikes Act, 16 U.S.C. § 670a et seq., was amended in November 1997 to require the Secretary of Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on military installations. The amendments require the secretaries of the military departments to prepare and Implement Integrated Natural Resources Management Plans (INRMPs) for each military installation in the United States unless the absence of significant natural resources on a particular installation makes preparation of a plan inappropriate. The SAIA mandated all military installations with significant natural resources to prepare and implement an INRMP by November 17, 2001.

The primary purpose of the INRMP is to ensure natural resources conservation measures and military operations on Naval Air Station Pensacola Complex, Florida (NASP Complex) are integrated and consistent with stewardship and legal requirements. This INRMP was developed to balance the use of resources on NASP Complex utilizing an ecosystem management approach, taking into account mission requirements and other land use activities affecting the installation. This INRMP was prepared in cooperation with the United States Fish and Wildlife Service (USFWS) and Florida Fish and Wildlife Conservation Commission (FWC) to reflect mutual agreement on the fish and wildlife management aspects of the plan.

The United States Department of the Navy (DON) is updating this INRMP for the NASP Complex to comply with the SAIA and with Department of Defense Instruction (DODINST 4715.3). This INRMP also complies with the Office of the Chief of Naval Operations Instruction (OPNAVINST) 5090.1D, Chapter 12, ASN (I&E) Memorandum of 12 August 1998, OUSD Memorandum of 21 September 1998, Chief of Naval Operations (CNO) letter Ser N45D/8U589016 of 25 September 1998, and CNO letter Ser N456F/8U589129 of 30 November 1998.

The first three sections of this INRMP establish the existing conditions at the NASP Complex. Section 1 provides a general overview of the purpose and intent of the INRMP and processes for review, implementation, and revision of the plan. Section 2 establishes the importance of the military mission within the DON, discusses the organization of the NASP Complex, provides a brief overview of the natural resources program, and identifies installation partnerships and stakeholders with a particular interest in the protection of installation and regional natural resources. Section 3 discusses the existing physical and biological characteristics of the local and regional environment. Physical characteristics include climate, topography, geology, soils, hydrology, groundwater, and land use. Biological characteristics include wetlands, wildlife, threatened and endangered species, coastal zone issues, and natural vegetative communities.

The remaining sections of the INRMP identify issues pertaining to the long-term management of the Complex ecosystem and land management programs and practices for achieving desired conditions. Section 4 discusses ecosystem management goals, objectives, strategies, initiatives, and projects that comprise a logical sequence of actions for achieving the long-range aim of ecosystem management. Section 5 discusses ecosystem management at the NASP Complex. Appendix A describes the projects that will be implemented by the NASP Complex. The NASP Complex Forest Management Plan is provided as Appendix B and Appendix C provides information pertaining to outdoor recreation at the Complex.

1.2 AUTHORITY

The NASP Complex INRMP is written to meet the requirements of the SAIA of 1997 (16 U.S.C. § 670a et seq.), and the requirements of the DoD Environmental Conservation Program (DoDINST 4715.3). It also incorporates guidance given in OPNAVINST 5090.1D, the Navy Environmental Protection and Natural Resources Manual, and the NAVFAC Real Estate Procedural Manual (NAVFAC P-73).

1.3 RESPONSIBILITIES

The Commander, Navy Region Southeast (CNRSE) is responsible for ensuring the NASP Complex INRMP complies with DoD, Navy, and CNO policy on the INRMP and associated NEPA document preparation, revision, and implementation; ensuring the NASP Complex INRMP undergoes annual and formal 5-year reviews; ensuring the programming of resources necessary to maintain and implement the NASP Complex INRMP; and participating in the development and revision of the NASP Complex INRMP.

The NASP Complex Commanding Officer (CO) is responsible for the preparation, completion, and implementation of this INRMP and associated NEPA documents for the NASP Complex and systematically applying the conservation practices set forth in this INRMP. The CO's role is to act as the steward of natural resources under his or her jurisdiction and integrate natural

resources management requirements into the daily decision making process; ensure natural resources management and this INRMP comply with all natural resource-related legislation, Executive Orders (EO) and Executive Memorandums, and DoD, Secretary of the Navy (SECNAV), Navy, and CNO directives, instructions and policies; involve appropriate tenant, operational, training, or research and development (R&D) commands in the INRMP review process to ensure no net loss of military mission; designating a Natural Resources Manager (NRM) that is responsible for the management efforts related to the preparation, revision, implementation and funding for this INRMP, as well as coordination with installation trainers, subordinate commands and installations; involve appropriate Navy Judge Advocate General (JAG) or Office of the General Counsel (OGC) Legal Counsel to provide advice and counsel with respect to legal matters related to natural resources management and this INRMP; and, endorse this INRMP via CO signature.

1.4 SCOPE

The NASP Complex is located on the west end of the Florida panhandle, associated with Pensacola Bay and associated water bodies. The scope of the INRMP includes all lands currently managed by the NASP Complex, including NAS Pensacola, Bronson Field, Corry Station, and Saufley Field (Figure 2-1), creating the framework for the implementation of a natural resources management program to conserve and rehabilitate natural resources. Appropriate and effective management of natural resources on Navy lands will be achieved in accordance with the principles and practices of ecosystem management. Ecosystem management initiatives include the following steps, which do not necessarily take place in a particular sequence and often occur in parallel with each other and can be repeated as the process evolves:

- Recognizing and defining the problems or opportunities;
- Delineating boundaries;
- Identifying and involving participants;
- Establishing a common vision;
- Assessing ecological, economical, and social constraints and opportunities;
- Acquiring funding;
- Making decisions and implementing solutions; and
- Monitoring progress, evaluating impacts, and adapting based on new information (The Keystone Center, 1996).

The INRMP does not substitute for a pest management plan, hazardous waste plan, stormwater retention plan, or integrated cultural resources management plan (ICRMP). It has the dual purpose of complying with various natural resources related laws while supporting the military mission of the NASP Complex.

1.5 GOALS AND OBJECTIVES

The development and implementation of the INRMP is a dynamic, multidisciplinary planning process that incorporates as its primary goal supporting and sustaining the military mission while managing, protecting, and enhancing the biological integrity of military lands and waters. The military's use of land and water resources must comply with legal mandates and will, to the extent practicable, be integrated with ecosystem-level goals, plans, and use of lands and waters inside and outside the boundaries of military installations. The INRMP creates an ecosystem-based conservation program that provides for conservation and rehabilitation of natural resources in a manner that is consistent with the military mission, integrates and coordinates all natural resources management activities, provides for sustainable multipurpose uses of natural resources; and provides for military personnel access for use of natural resources subject to safety and military security considerations. The management objectives are to integrate wetland management, soil conservation, water quality control, floodplain management, grounds maintenance, land management, forest management, wildland fire management, vegetative management, fish and wildlife management, migratory bird management, and management for outdoor recreational opportunities, as practicable and consistent with the military mission and established land uses. Specific goals and objectives are discussed in detail in Section 4.

The NASP Complex has developed a mission statement that provides the standard by which to measure the effects and effectiveness of INRMP decisions.

The primary mission of the NASP Complex is to provide support to naval air training, tenants, and other customers through continuous improvement in quality of life, workforce, environment, and public image. The mission of the Navy's natural resources program is to support the Navy mission through responsible stewardship of the Installation's natural resources utilizing integrated natural resources management and principles of ecosystem management to ensure ecosystem viability and biodiversity. The primary goal of the INRMP is to restore, develop, and maintain balanced ecosystems supporting the DON mission in an appropriate, sustainable, multiple-use environment. This goal is accomplished through a combination of careful planning and implementation of management prescriptions.

1.6 STEWARDSHIP AND COMPLIANCE

The responsibilities of the natural resources management program at the NASP Complex can be classified as either meeting stewardship needs or mandatory requirements. Stewardship projects (e.g., watchable wildlife projects, urban forestry) are based upon the land management responsibility of the Navy, and are not required to be implemented to meet regulatory needs.

Mandatory projects (e.g., endangered and threatened species surveys) are required to be implemented to meet legal requirements that apply to the operations of the NASP Complex.

Legal requirements are laws, executive orders, regulations, and memoranda regarding the protection and management of natural resources (see Table 1-1). This INRMP will be updated as legal requirements change. Relevant legal requirements for natural resources management are also presented throughout Section 5.

Funding for implementation of the INRMP will come from the installation, CNIC, and NAVFAC natural resources stewardship. The natural resources programs and projects described in this INRMP are divided into stewardship and mandatory categories to reflect implementation priorities. Stewardship projects will be funded through forestry, agricultural outlease, fish and wildlife, Legacy, installation funds, and other fund sources as funding and personnel resources become available. Every effort will be made to fund mandatory projects through Navy Operations and Maintenance (O & M [N]) Environmental.

1.7 COMMITMENT OF REGULATORY AGENCIES

The USFWS and FWC are an integral part of the INRMP development, review, and revision process for the NASP Complex, under a cooperative agreement with the DON as outlined in the Sikes Act. The USFWS and FWC cooperate in the development of the INRMP and participate in the annual reviews and revisions, as well as the formal 5-year review of the NASP Complex INRMP.

Other government agencies outside the DON that have provided technical support to natural resources management at the NASP Complex include The Nature Conservancy (TNC), with which the DON also has a cooperative agreement, the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), United States Forest Service (USFS), Gulf Coastal Plain Ecosystem Partnership (GCPEP), Florida Department of Agriculture and Consumer Services (FDACS), Florida Forest Service, Florida Department of Environment Protection (FDEP), and Escambia County land management professionals.

Table 1-1. Legal Drivers for Natural Resources Management	
Name/Description	Citation
Addresses off-road vehicle use	Executive Order 12608
Bald and Golden Eagle Protection Act	16 U.S.C. 668
Clean Air Act	42 U.S.C. 7401
Clean Water Act	33 U.S.C. 1251, 33 USC 1341
Coastal Zone Management Act	16 U.S.C. 1456
Cooperative Conservation	Executive Order 13352
Coral Reef Protection	Executive Order 13089
Endangered Species Act	16 U.S.C. 1531 & 1536
Environmental Conservation Program	DODINST 4715.3
Erosion Protection Act	33 U.S.C. 426
Estuary Protection Act of 1968	16 U.S.C. 1221
Farm Land Protection Policy	7 CFR 658
Farmland Protection Policy Act of 1981	7 U.S.C. 4201
Federal Insecticide, Fungicide, and Rodenticide Act	7 U.S.C. 136
Federal Land Policy and Management Act of 1976	43 U.S.C. 1701
Federal Leadership in Environmental, Energy, and Economic Performance	Executive Order 13514
Federal Noxious Weed Act of 1974	7 U.S.C. 2801
Federal Pest Plant Act	7 U.S.C. 150
Fish and Wildlife Conservation Act	16 U.S.C. 2901
Fish and Wildlife Coordination Act, as amended	16 U.S.C. 661-666c
Floodplain Management	Executive Order 11988
Greening the Government through Environmental Management	Executive Order 13148
Invasive Species	Executive Order 13751
Magnuson-Stevens Fisheries Conservation and Management Act, as amended	Public Law 94-265
Management of Undesirable Plants of Federal lands	7 U.S.C. 2814
Marine Mammal Protection Act of 1972	16 U.S.C. 1361
Migratory Bird Treaty Act	16 U.S.C. 703
Military Construction and Authorization Act – Leases, Non-excess property	10 U.S.C. 2667
Military Reservations and Facilities – Hunting, Fishing, and Trapping	10 U.S.C. 2671
Multiple-Use Sustained Yield Act of 1960	16 U.S.C. 528
National Environmental Policy Act of 1969	42 U.S.C. 4321
Natural Resources Management Program	32 CFR 190
North American Wetland Conservation Act	16 U.S.C. 2912, 4401, 4808
Outdoor Recreation – Federal/State Program Act	16 U.S.C. 460 P-3
Protection and Enhancement of Environmental Quality	Executive Order 11514
Protection of Wetlands	Executive Order 11990
Recreational Fisheries	Executive Order 12962
Responsibilities of Federal Agencies to Protect Migratory Birds	Executive Order 13186
Rivers and Harbors Act of 1899	33 U.S.C. 401
Sikes Act Improvement Act of 1997	16 U.S.C. 670
Soil and Water Conservation Act of 1977	16 U.S.C. 2001
Soil Conservation Act	16 U.S.C. 590
Timber Sales on Military Lands	10 U.S.C. 2665
Use of Off-Road Vehicles on DOD Lands	Executive Order 11989
Water Resources Planning Act	42 U.S.C. 1962
Watershed Protection and Flood Prevention Act	16 U.S.C. 1001, 33 USC 701

1.8 REVIEW AND REVISION PROCESS

The NASP Complex must complete an evaluation of the effectiveness of this INRMP annually. The evaluation can be readily completed using the web-based Metrics Builder tool on the Environmental Management Services (EMS) website (<https://conservation.dandp.com/nr/#/dashboard>), which requires log-in. The Metrics Builder provides the means to evaluate performance in seven areas:

- INRMP Implementation
- Partnership/Cooperation and Effectiveness
- Team Adequacy
- INRMP Impact on the Installation Mission
- Status of Federally Listed Species and Critical Habitat
- Ecosystem Integrity
- Fish and Wildlife Management and Public Use

Annual reviews of the NASP Complex INRMP will include annual revisions, so that the review and revision processes are integrated.

1.9 MANAGEMENT STRATEGIES

The DoD takes an ecosystem approach to natural resources management. Ecosystem management is a goal-driven approach to managing natural resources that support present and future mission requirements, preserves ecosystem integrity, is at a scale compatible with natural processes, is cognizant of nature's time frames, recognizes social and economic viability within functioning ecosystems, is adaptable to complex and changing requirements, and is realized through effective partnerships among private, local, state, tribal, and Federal interests. Ecosystem management is a process that considers the environment as a complex system functioning as a whole, not as a collection of parts, and recognizes that people and their social and economic needs are a part of the whole. The INRMP and the implementation of its management plans and projects provides for ecosystem management at NASP Complex. The INRMP takes into account specific projects and management techniques that serve to manage the ecosystem and maintain biological diversity at a landscape scale.

Ecosystem management at the NASP Complex is achieved through adaptive and cooperative management strategies. Adaptive management is a systematic approach for continually improving management practices by learning from the outcome of projects, programs and other experiences. Adaptive management involves testing, monitoring, and evaluating applied strategies, and incorporating new knowledge into management approaches that are based on scientific findings and the needs of society. Results are used to modify management policy, strategies, and practices. The Metrics Builder provides the means to evaluate performance in

INRMP reviews and updates for the NASP Complex. The Metrics Builder can be applied to completed and ongoing projects, natural resource practices, and new proposals.

The NASP Complex manages its natural resources cooperatively with government agencies for responsible resource stewardship. In cooperative management, representatives of government agencies share information, resources, and responsibility. At the NASP Complex, the USFWS, FWC, and Navy cooperatively manage the natural resources and strive to meet the military mission while conserving and enhancing the natural resources of the base. The NRM and forester at the NASP Complex also provide management support for forestry and agriculture at the NAS Whiting Field Complex.

Ecosystem-based management and cooperative natural resources management are holistic strategies that benefit individual species in the ecosystem, most notably federally-listed and state-listed threatened and endangered species. The DoD is obligated to comply with the Endangered Species Act of 1973 (ESA), and federally-listed species on the NASP Complex receive full protection under the ESA, enhanced by the Complex's effective cooperative relationship with the regulatory agencies. Ecosystem management protects and enhances habitats for listed species. Management actions such as erosion control and stormwater management, for example, control sedimentation and pollution runoff to protect nearshore habitats and water quality for rufa red knots (*Calidris canutus* ssp. *rufa*), sea turtles, West Indian manatees (*Trichechus manatus*), and fish such as dwarf seahorses (*Hippocampus zosterae*). Forestry actions such as prescribed burning, thinning, and reforestation help maintain longleaf pine (*Pinus palustris*) stands and herbaceous vegetation that provide habitat and resources for gopher tortoises (*Gopherus polyphemus*), as another example.

2

Current Conditions and Use

2.1 INSTALLATION INFORMATION

2.1.1 General Description

The NASP Complex is located on the western end of the Florida panhandle near Pensacola Bay and is comprised of the following four properties, encompassing approximately 8,423 total acres:

- NAS Pensacola, 5,800 acres;
- Bronson Field, 1,098 acres;
- Saufley Field, 878 acres. and
- Center for Information Dominance (CID) Corry Station, 432 acres;
 - U.S. Naval Hospital Pensacola, 43 acres;
 - Veterans Affairs Joint Ambulatory Care Center (VA JACC), 28 acres;
 - Navy Housing Corry, 88 acres; and
 - Navy Exchange Mall and Commissary Corry, 47 acres.

2.1.1.1 *NAS Pensacola: Operations and Activities*

NAS Pensacola is the Complex's principal property and is situated on a peninsula approximately five miles southwest of the City of Pensacola (see Figure 2-1). NAS Pensacola is bordered to the south by Big Lagoon and Pensacola Bay, to the east by Pensacola Bay, and to the north by Bayou Grande. It serves as a primary training site for Navy and Joint Service training and is the Navy's premier location for enlisted aviation technical training. The NASP Complex supports over 50 DoD-related tenant commands and customers including Naval Education and Training Command, Training Air Wing Six, Naval Air Technical Training Center, Naval Operational Medicine Institute, NAVFAC SE PWD Pensacola, and U.S. Air Force aviation squadrons. NAS Pensacola also supports numerous non-defense related tenants on the Installation, including the Barrancas National Cemetery (administered by Veterans Affairs), Federal Aviation Administration (FAA), Gulf Islands National Seashore, and the National Museum of Naval Aviation. A combined workforce of approximately 19,000 military and civilian personnel makes up the population of the station (NASP 2012). Host support services, such as

Navy Gateway Inns and Suites, MWR, family services center, housing, security, and exchanges, are also located at the NASP Complex.

2.1.1.2 Bronson Field: Operations and Activities

Bronson Field is located on the east side of Perdido Bay, approximately 12 miles northwest of NAS Pensacola, 5 miles west of Pensacola, and 1 mile east of the Alabama border (see Figure 2-1), extending approximately 1 mile along the eastern shoreline of Perdido Bay. Tarkiln Bayou State Preserve and Pitcher Plant Prairie is located directly south of Bronson Field. Land area at Bronson Field includes 1,098 acres of forest, grass, wetlands, and approximately 200 acres of abandoned airstrips and taxiways. The flight training mission at Bronson Field ended in 1993 and there are no flight training mission buildings or structures remaining at the property. The 400-acre Blue Angel Recreational Park (BARP) was established in 1989 on the western portion of Bronson Field, adjacent to Perdido Bay, and provides many outdoor recreational activities including boating, fishing, camping, picnicking, and hiking.

2.1.1.3 Saufley Field: Operations and Activities

Saufley Field is located approximately 9 miles northwest of NAS Pensacola on State Highway 173 (see Figure 2-1), and has been used by the military since the early 1940's. The primary mission at Saufley Field is to create and provide innovative education and training products and services that contribute to the development of the professional warrior. It is home to the Naval Education and Training Professional Development and Technology Center (NETPDTC), which was established in 1996 and provides information systems support, administers the Navy Reserve Officer Training Candidate (NROTC) and the Navy Junior Reserve Officer Training Candidate (NJROTC) programs, manages the Navy's Volunteer Education Program, oversees the Navy's General Library Program, and designs and delivers training programs for the Chaplains' Corps. Two runways and several buildings on the south side of the Field are used for training development. Tenants at Saufley Field include Navy Reserve Operational Support Center, U.S. Coast Guard (USCG) Reserve, FAA, Defense Activity for Non-Traditional Educational Support (DANTES), and Naval Air Warfare Center Training Support Division (NAWCTSD). A Department of Justice Federal Prison Camp is also located there. Approximately 890 military and civilian personnel are assigned to Saufley Field (NASP 2012).

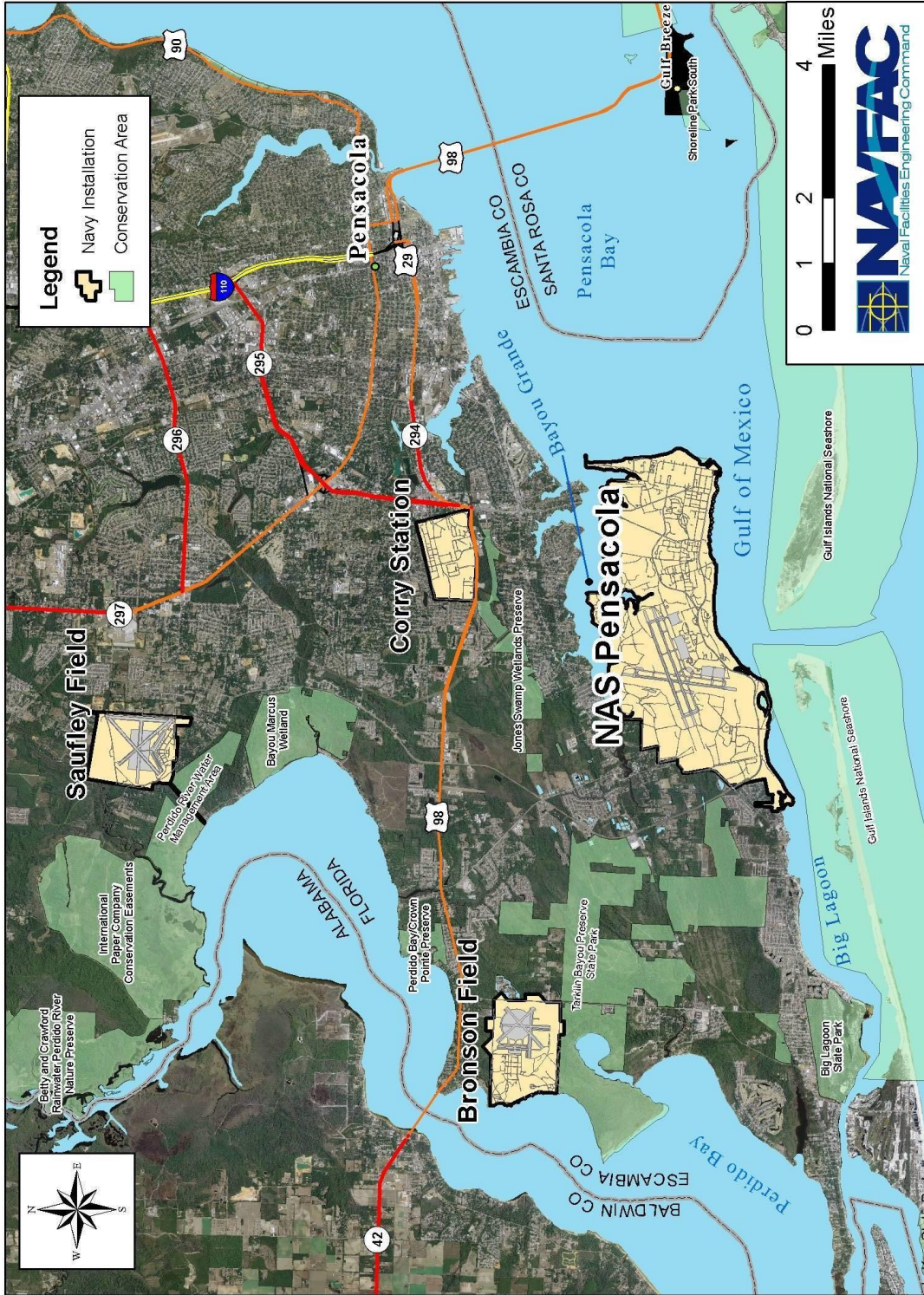


Figure 2-1. Naval Air Station Pensacola Complex

2.1.1.4 Corry Station: Operations and Activities

Corry Station is located in Escambia County, Florida; approximately 2 miles north of NAS Pensacola and 2 miles west of the City of Pensacola on Highway 98 (see Figure 2-1). The command became the Center for Cryptology Corry Station in 2003, as part of the Chief of Naval Operations establishment of Navy Learning Centers in support of the Revolution in Training. Two years later, in 2005, Center for Cryptology Corry Station and the Center for Information Technology San Diego merged to become the Center for Information Dominance (CID) Corry Station. The mission of CID Corry Station is to deliver full spectrum cyber information warfare and intelligence training to achieve decision superiority. CID Corry Station aligns the training responsibilities for the key disciplines of information dominance (exploit, attack, defend, and operate), and provides training for approximately 24,000 members of the U.S. Armed Services and allied forces each year. The Center employs the Navy's Human Capital Strategy in developing Information Warfare and Information Professional officers, and enlisted career specialists in Cryptology and Information Technology. CID is the Navy's Learning Center that leads, manages and delivers Navy and joint force training in information operations, information technology, cryptology and intelligence. Approximately 1,300 military, civilian and contracted staff members help the CID oversee the development and administration of more than 168 courses at four commands, two detachments and 14 learning sites throughout the United States and in Japan.

U.S. Naval Hospital Pensacola - Operations and Activities

U.S. Naval Hospital Pensacola (NH Pensacola) is located on 43 acres in the southwest corner of CID Corry Station (see Figure 2-1). It was begun in 1826 and is among one of the oldest and most respected Navy medical facilities in the country. For more than 30 years, NH Pensacola has been a "teaching hospital." It is home to one of the Navy's Family Practice Residency training programs where doctors come to earn their Family Practice specialty during three years of academic and hands-on training. The residency program prepares trainees for a practice in family medicine, and encompasses all fields of practice. The residency training program is fully accredited by the Accreditation Council for Graduate Medical Education. NH Pensacola was named the No. 1 Department of Defense (DoD) medium-sized hospital in the nation for patient satisfaction in 2006. NH Pensacola continues to be a significant entity in the area's medical community by providing healthcare to more than 73,000 DoD-eligible family members throughout northwest Florida and south Alabama. The assigned mission of NH Pensacola includes the following primary functions:

- Provide a comprehensive range of emergency, outpatient, and inpatient health care services to active duty Navy and Marine Corps personnel and active duty members of other Federal Uniformed Services;
- Provide, as directed, health care services in support of the operation of the Navy and Marine Corps shore activities and units of the Operating Forces; and

- Participate as an integral element of the Navy and Tri-Service Regional Health Care Systems.

Veterans Affairs Joint Ambulatory Care Clinic (VA JACC): Operations and Activities

The Veterans Affairs Joint Ambulatory Care Clinic (VA JACC) is situated on 28 acres on the southeastern portion of Corry Station (see Figure 2-1). The Veterans Affairs Joint Ambulatory Care Clinic (VA JACC) provides primary care and mental health services to veterans. It offers highly qualified primary care providers, blood drawing services, and routine prescription processing.

Navy Housing Corry: Operations and Activities

Navy Housing Corry is situated on 88 acres on the southeastern portion of Corry Station (see Figure 2-1). The housing area consists of 200 duplex units that were built in 1972 and renovated in 1996. The housing is for enlisted personnel and their families. A recreational area is located in the southeastern portion of Navy Housing Corry. The family housing program is managed by the Navy Regional Family Housing Department through a public-private venture.

Navy Exchange Mall and Commissary Corry: Operations and Activities

The Navy Exchange Mall and Commissary Corry is situated on 47 acres at Corry Station (see Figure 2-1). The mall is located to the west and north of Navy Housing Corry. The mall was established in 1979 and provides numerous conveniences such as retail stores, automotive services, food service facilities, a mini-mart and package store, laundry facilities, video rental, personalized services (i.e., hair dresser, optical shop, barber shop, jewelry store), and others. Use of the mall is restricted to active duty and reserve military personnel assigned to the Installation, their dependents and accompanied guests; federal civilian employees, their dependents and accompanied guests; and military retirees.

2.1.2 Military Mission

The military mission of the NASP Complex is to fully support the operational and training missions of assigned tenants, enhancing the readiness of the U.S. Navy, its sister armed services and other customers. The initial training of all Navy Aviators begins here. Training centers at the Complex create and provide innovative education and training products and services that contribute to the development of the professional warrior. The CID delivers full spectrum cyber information warfare and intelligence training to achieve decision superiority. NH Pensacola provides high-quality, safe, cost-effective, patient-focused care anytime and anywhere.

2-2.1.3 Constraints Map

The future expansion of properties at the NASP Complex would be limited or impractical, depending upon the property (see Figure 2-1). Expansion at NAS Pensacola is not possible to the north, east, and south, as Bayou Grande, Pensacola Bay, and Big Lagoon surround the property in all three directions. Expansion to the west is possible, but would involve crossing Highway 173 and would result in encroachment by existing development north and south of the available area. Such expansion has not been programmed and is not anticipated. Bronson Field is constrained by Perdido Bay to the north and west, Tarkiln Bayou Preserve State Park to the south, and urban development to the east. Saufley Field cannot be expanded to the northeast or southeast to urban development. Expansion west is possible, but such action has not been programmed and is not anticipated. Expansion at Corry Station, which encompasses NH Pensacola, VA JACC, Navy Housing Corry, and Navy Exchange Mall and Commissary Corry, is not possible due to urban development to the west, north, and east, and Highway 98 to the south.

2.1.4 Opportunities Map

The NASP Complex will continue partnering with entities such as the Tarkiln Bayou Preserve State Park and Gulf Islands National Seashore (see Figure 2-1) to help limit encroachment on Navy properties by outside development. The Complex will interface with the Community Planning Liaison Officer and explore the option of creating easements to limit encroachment as necessary and appropriate.

2.1.5 Abbreviated History and Pre-Military Land Use

The Spanish established a permanent settlement at Pensacola in 1698 and encountered tenuous environmental conditions; the soil was poor and irregularly resupplied, and the area was unpopular due to disease and extreme heat. A town at Pensacola was not developed until the British acquired control in 1763 and laid out a modern street plan. Spain wrested control back from Britain at the conclusion of the American Revolution, in 1781, but ended up transferring it, and all of Spanish Florida, to the United States four decades later, in 1821. Pensacola immediately became a vital American port for shipping cotton and timber from the Florida panhandle and Alabama.

A Navy Ship Yard was built at Pensacola only five years later, in 1826, at the behest of President John Quincy Adams and Secretary of the Navy, Samuel Southard; the Navy Hospital was also established at this time. The Pensacola Navy Yard became one of the most productive ship yards in the country. It was surrendered to Confederate forces in 1861, at the outbreak of Civil War, only to be destroyed and abandoned one year later in the face of imminent Union capture. The Yard was rebuilt after the war and many of the present structures

on the installation were built during this period. A hurricane struck the area in June 1906 and the resulting storm surge again destroyed many structures at the Navy Yard.

Five years later, in 1911, the Navy secured an appropriation from Congress for the nation's first naval air station to be established at Pensacola, and the station has since been known as "The Cradle of Naval Aviation". The Navy Yard was decommissioned and replaced by the Pensacola Naval Aeronautics Station in 1914, and it was the Navy's only training station for pilots at the outbreak of World War I. Expansion of the cadet training program in 1935, increasing demand on Naval Air Station (NAS) Pensacola; Corry Field was added as an auxiliary base in 1934, Saufley Field was added in 1940, and Bronson Field was added in 1942 to accommodate the added training. The number of pilots trained at NAS Pensacola reached its peak in 1944, when over 12,000 aviator trainees logged almost two million training hours in preparation for their involvement in World War II.

Today, the NAS Pensacola Complex employs more than 19,000 military civilian personnel. This includes major tenant commands Naval Air Schools Command, Naval Air Technical Training, Marine Aviation Training Support Group 21, the Blue Angels Navy flight demonstration squadron, and the headquarters site for the Naval Education and Training Command (NETC), which combines direction and control of all Navy education and training.

2.1.6 Regional Land Use

Regional land uses in Pensacola are governed by several local government policies. Escambia County specifies the desired development pattern through a land use category system that provides for the location, type, density and intensity of development and redevelopment based on natural conditions and dependent on the availability of services. Open space is preserved as necessary by the Conservation Land Use District to protect water resources, preserve scenic areas, preserve historic sites, provide parklands and wilderness reserves, conserve endemic vegetation, and prevent flood damage and soil erosion. Such areas are protected from development pursuant to site plan review. The county also has policies in place to manage land use in residential, neighborhood, redevelopment, business, commercial, office, industrial, airport, and interstate corridor districts. Regional natural resources and historic, architectural, and archaeological resources are protected in accordance with Escambia County's *Land Development Code*. All development and redevelopment in the coastal high-hazard area must be consistent with the Coastal Management Element of the *Future Land Use Plan* and shall be coordinated with appropriate regional hurricane evacuation plans. Local governments and agencies coordinate with the *Escambia/Santa Rosa Coastal Resources Management Plan* to reduce or minimize adverse impacts in the region due to development. Non-conforming land

uses incompatible or inconsistent with the *Future Land Use Plan* will not be allowed to expand, to be enlarged, or to be rebuilt or reopened if destroyed.

2.2 GENERAL PHYSICAL ENVIRONMENT AND ECOSYSTEMS

2.2.1 Climate

Pensacola is located within the coastal plain of the Gulf Coastal Lowlands of the Eastern Gulf Coastal Plain. The climate is characterized by mild winters with hot, humid, but breezy summers. Pensacola has an average temperature of 67.7 degrees Fahrenheit (° F) and receives an average of 62.3 inches of rainfall per year (see Table 2-1). January is the coldest month of the year, with an average temperature of 50.6° F. July is the hottest month of the year with an average temperature of 82.1° F; however, high temperatures also occur in the other summer months.

Rainfall may be influenced by three types of weather disturbances that result in unpredictable weather patterns: cold fronts, thunderstorms, and hurricanes. Hurricanes are the most destructive of these. Hurricane season extends from June through November, and the frequency of hurricanes in the Gulf of Mexico is greatest during August through October. Pensacola and the various facilities comprising the NASP Complex are buffered from the open ocean by barrier islands but they may be subject to severe flooding and high winds during tropical storms. On the average, a hurricane strikes the Florida Panhandle once every 17 years, and fringe effects are experienced once every 5 years. In 1995, the Pensacola area was directly affected by two major hurricanes within two months of each other, Hurricanes Erin (5 August 1995) and Opal (5 October 1995). Pensacola was severely damaged by category 3 Hurricane Ivan (16 September 2004) and the area was hit the very next year by category 3 Hurricane Dennis (10 July 2005). Both of these storms caused significant damage to the natural resources at the NASP Complex.

2.2.1.1 Climate Change

Climate change is estimated to result in rising sea levels, altered precipitation patterns, and changing ecological systems, and will shape strategic, infrastructure, and natural resources considerations for the foreseeable future. The NASP Complex must have the land, air, and water necessary to train and operate to successfully execute its military mission. The frequent and intense heat extremes projected to occur with climate change may limit outdoor training, strain personnel efficiency, degrade air quality through elevated ozone caused by higher temperatures, and strain electricity supply due to the increased demand on the grid. Changes in precipitation patterns will reduce water supply, increase the frequency and intensity of wildfires, damage local ecosystems, and cause shifts in species composition or geographic range.

Table 2-1. Average Temperatures and Rainfall in the Pensacola Vicinity				
Month	Average Temp (°F)	Days per Month Below 32°F	Days per Month Above 90°F	Average Rainfall (inches)
January	50.6	6	0	4.7
February	53.6	3	0	5.4
March	60.4	1	0	5.6
April	67.6	0	N/A	3.8
May	74.5	0	3	4.2
June	80.3	0	13	6.4
July	82.1	0	19	7.4
August	81.5	0	16	7.4
September	78.4	0	9	5.3
October	69.3	N/A	N/A	4.2
November	60.6	1	0	3.5
December	53.7	4	0	4.3
Average/Total	67.7	16	60	62.3

Source: Internet <http://www.cityrating.com>

2.2.2 Air Quality

The Clean Air Act (CAA) is the primary federal statute governing the control of air pollution. The CAA requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for six criteria pollutants considered harmful to public health and the environment. These pollutants are respirable particulate matter (PM10), carbon monoxide, sulfur dioxide (SO2), nitrogen dioxide (NO2), lead, and ozone (O3), and the levels of these pollutants must not exceed limits set by the NAAQS.

Air pollutant emissions at the NASP Complex are generated from stationary and mobile sources. Stationary sources include surface coating, fuel storage and handling, and firefighting training facilities and miscellaneous small stationary combustion sources. Mobile sources include aircraft, motor vehicles, and ground support equipment. Military aircraft operations are the most significant source of air pollutant emissions at NAS Pensacola. The NASP Complex is located within the Mobile-Pensacola-Panama City-Southern Mississippi air quality control region. The EPA classifies this region as "in attainment" for the six NAAQS criteria pollutants.

Prescribed burning, which is an essential management tool at the NASP Complex, can contribute to higher concentrations of PM10 in the air. Smoke is a mixture of carbon particles and water vapor. If air quality in an area was approaching the NAAQS limit for PM10, prescribed burning could potentially cause the region to exceed the daily limit. However, prescribed burning on the NASP Complex is limited, with an average of five burns each year, each consisting of 500 acres, on average. The Complex will coordinate with the Florida Forest Service to avoid potential adverse impacts from prescribed burns on regional air quality. A

Smoke Management Plan (SMP) was submitted to the EPA by the Florida Forest Service that describes prescribed burn activities, sets guidelines, and authorizes prescribed fires in the state. In addition, the Florida Fire Management Information System, a GIS-based system for recording smoke sensitive areas, weather, and prescribed fires (University of Florida Cooperative Extension Service; <http://edis.ifas.ufl.edu/FR058>), has been established and is utilized for prescribed burns on the NASP Complex. The Complex is subject to the prescribed burning laws and requirements of Florida

2.2.3 Geology, Topography, and Soils

The NASP Complex is located within the Gulf Coastal Lowlands physiographic region, which has a surface geology characterized by three types of sediments: limestones, organics, and clastics (silt, clay, sand, gravel; Wolfe *et al.* 1988). The Pensacola region is underlain, in descending order, by the Sand and Gravel Aquifer, the Intermediate System (a regional confining unit), and the Floridian Aquifer. These hydrostratigraphic units are discussed in more detail in Section 3.6. The Gulf Coastal Lowlands are characterized by nearly level, poorly drained land extending about 12 miles inland from the coast. Ground elevations in the Pensacola region range from sea level to over 50 feet above mean sea level (MSL).

The topography at NAS Pensacola is level, ranging from sea level to approximately 40 feet above MSL. The principal soils at NAS Pensacola are strongly acidic, well to somewhat excessively drained, and sandy textured. The sand or loamy sand surface is 30 to 42 inches thick and underlain by sandy loam to sandy clay substrata. The topography at Bronson Field is level, with elevations ranging from sea level to 30 feet above MSL. Soils at Bronson Field range from upland sandy soils in the northern portions of the site to hydric soils in the southern portions of the site. The topography at Corry Station is level, with an elevation of 20 to 30 feet above MSL. Soils are primarily light-colored and well drained. Saufley Field is located along a low ridge with an elevation of approximately 85 feet MSL. The ridge drops off to 25 feet MSL on the north side of Eightmile Creek, and 10 feet MSL at the edge of Perdido Bay, to the south. Soils at Saufley Field range from well-drained sandy and loamy soils, in the vicinity of the field and northeast of the field, to poorly drained sandy and muck soils on the south, southwest, and northwest sides of the field. Current soils data for Escambia County can be obtained electronically through the Soil Survey Geographic (SSURGO) database (<http://soils.usda.gov/survey/geography/ssurgo/>). NASP soils are mapped on Figure 2-2; Bronson Field soils on Figure 2-3; Corry Station soils on Figure 2-4; and soils at Saufley Field on Figure 2-5.

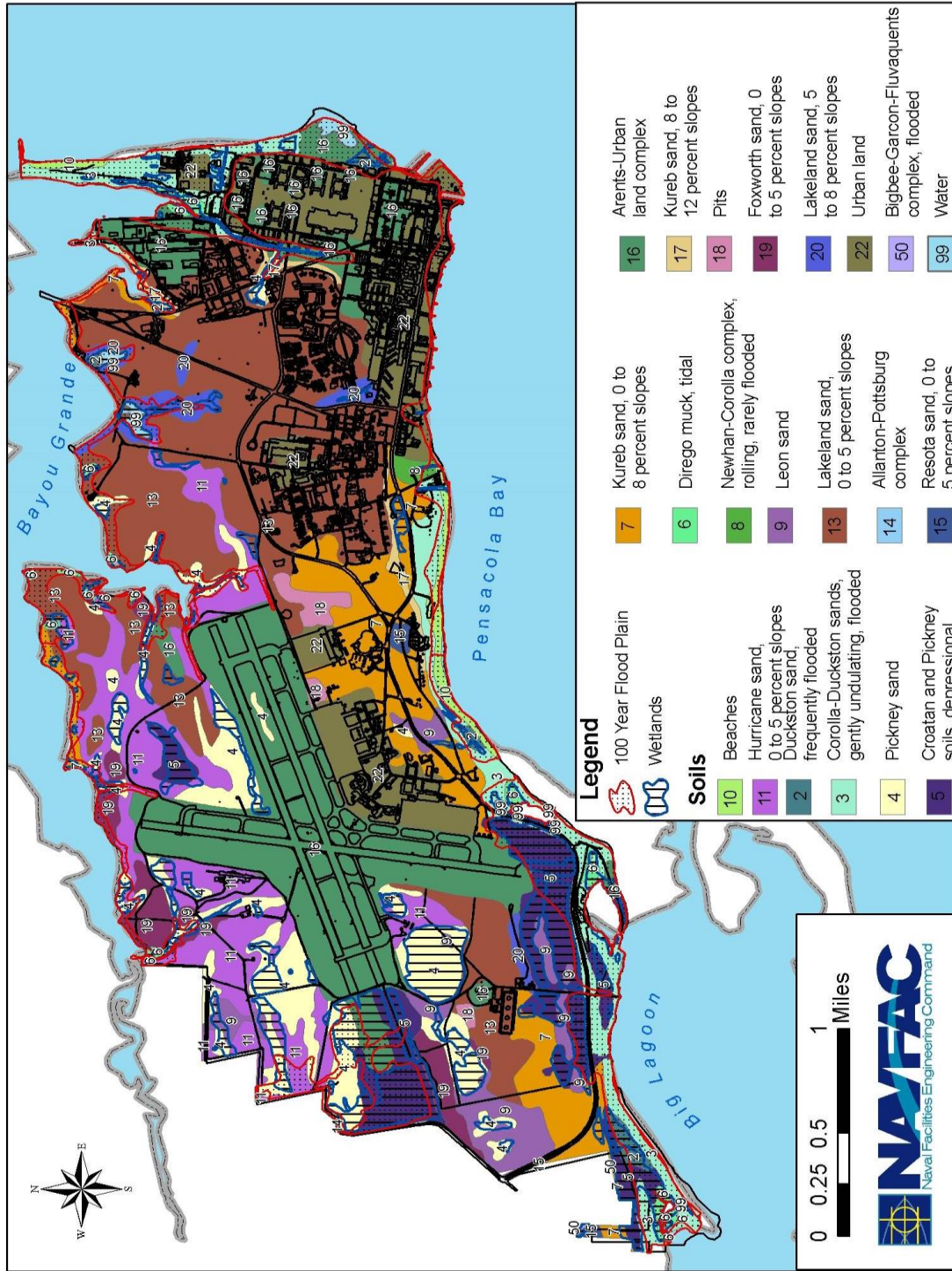


Figure 2-2. Soils, Floodplains, and Wetlands at NAS Pensacola

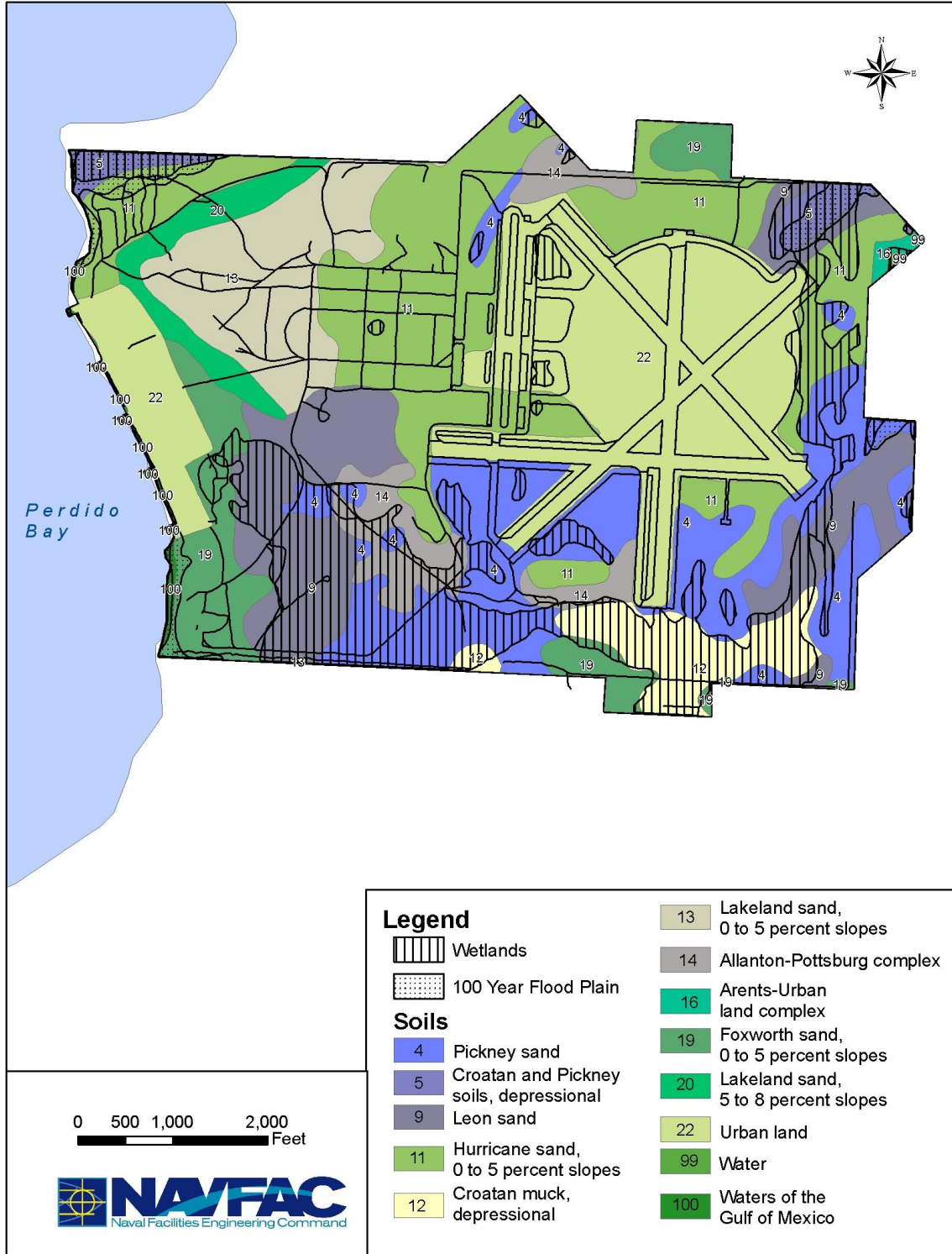


Figure 2-3. Soils, Floodplains, and Wetlands at Bronson Field



Figure 2-4. Soils, Floodplains, and Wetlands at Corry Station

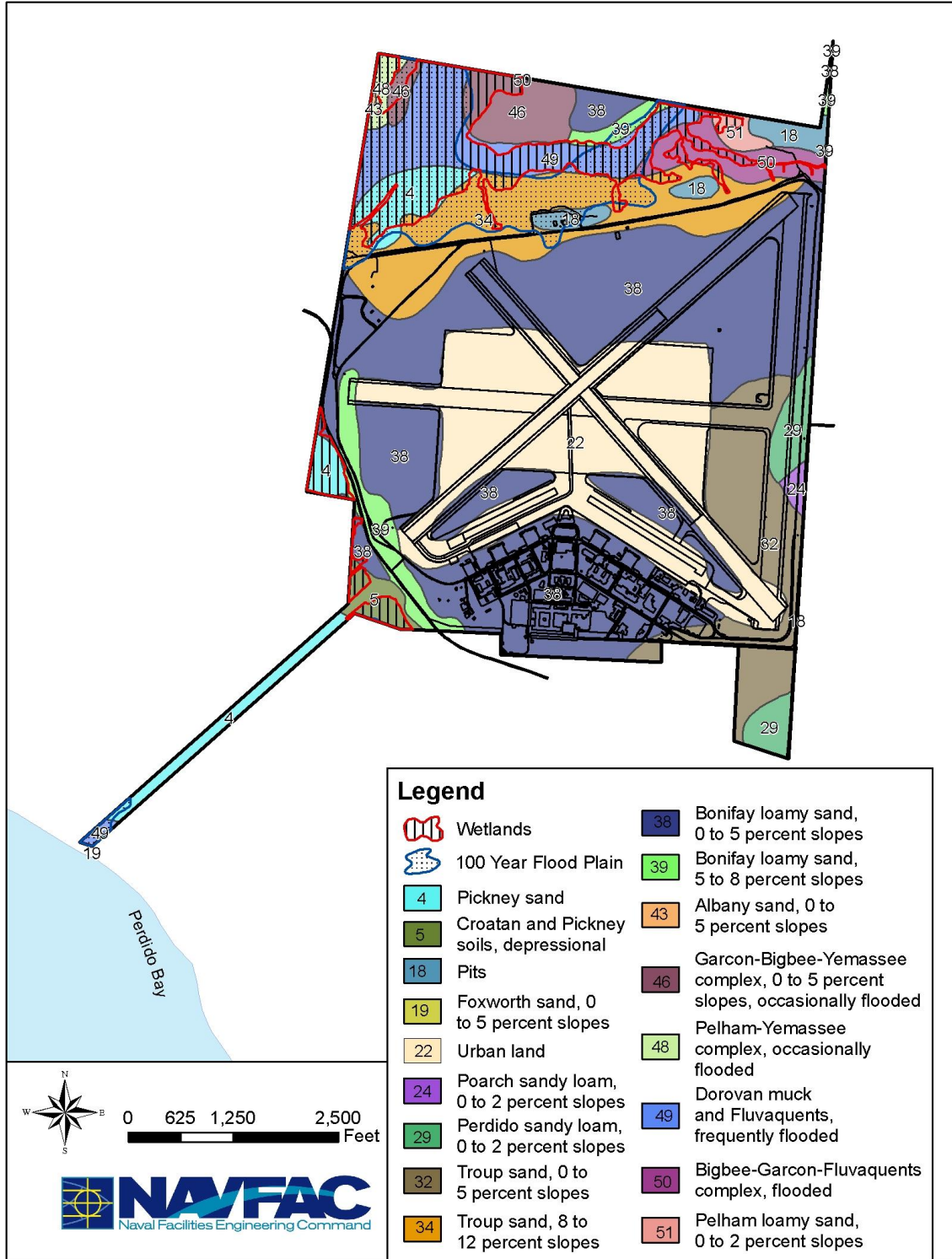


Figure 2-5. Soils, Floodplains, and Wetlands at Saufley Field

2.2.4 Coastal Resources

The NASP Complex is located within the State of Florida, Perdido Bay and Pensacola Bay Ecosystem Management Areas. The NASP Complex has approximately 17 miles of shoreline within this system on Bayou Grande, Pensacola Bay, Perdido Bay, and the Intracoastal Waterway at the entrance to the Gulf of Mexico.

The Coastal Zone Management Act (CZMA) requires federal facilities to carry out activities in a manner consistent with the state's coastal zone management program. The Florida Coastal Management Program (FCMP) was approved by the National Oceanic and Atmospheric Administration (NOAA) in 1981. The FCMP compiles 23 Florida Statutes, which are administered by 11 state agencies and four of the five state water management districts. The FCMP is designed to ensure the wise use and protection of the state's water, cultural, historical and biological resources; to minimize the state's vulnerability to coastal hazards; to ensure compliance with the state's growth management laws; to protect the state's transportation system; and to protect the state's proprietary interest as the owner of sovereign submerged lands (Florida Department of Community Affairs (DCA) 1999). The INRMP and associated Environmental Assessment (EA) will be reviewed by the State of Florida for Coastal Zone Consistency in compliance with the Federal CZMA.

Coastal zones are also regulated by FDEP under the Florida Coastal Zone Protection Act (1985). Under this program, permits are required for any erosion control devices, excavations, or erection of structures within the coastal construction control line (CCCL). The CCCL occurs only on mainland or barrier island coasts bordering the Gulf of Mexico or the Atlantic Ocean. The actual CCCL is determined separately for each county in Florida. Construction in the Coastal Building Zone is also subject to stricter requirements than structures built farther inland. The Coastal Building Zone extends 1,500 feet landward of the CCCL for mainland coasts and 5,000 feet (or the entire island, whichever is less) for barrier islands. Properties of the NASP Complex are not affected by the CCCL or the Coastal Building Zone because they are not on a barrier island or directly adjacent to the Gulf of Mexico.

2.2.4.1 Clean Marina Program

Two marinas at the NASP Complex, Bayou Grande and Sherman Cove Marina, have been designated as members of the Clean Marina Program (CMP). Members of the CMP pledge to take a proactive approach to environmental stewardship and implement a set of Best Management Practices (BMPs) that help protect coastal waterways. Membership must be maintained annually to ensure adherence to the BMPs. The BMPs include a variety of measures that ensure good water quality, such as proper use of fertilizers and pesticides, proper storage and disposal of oils, fuels, solvents, and soiled rags, proper use and disposal of cleaning supplies, adequate and well-managed trash receptacles, convenient recycling of batteries, refrigerants, and fluorescent bulbs, zero discharge of

raw sewage, written plans for hurricane preparedness, and possession of a National Pollution Discharge Elimination System (NPDES) stormwater permit and a Stormwater Pollution Prevention Plan.

2.2.5 Hydrology and Water Quality

2.2.5.1 Watersheds and Surface Waters

The NASP Complex is located within the Perdido-Escambia River Basin, which drains directly into the Pensacola Bay and Perdido Bay systems (See Figure 2-1). The Escambia River, the largest stream in the area, flows southward from Alabama; it divides Escambia County from Santa Rosa County and empties into Escambia Bay, which becomes Pensacola Bay to the south. The Perdido River flows into Perdido Bay, which empties into various, relatively small, inland bays and bayous, and ultimately the Gulf of Mexico. Perdido Bay is connected to the Pensacola Bay System via the Intracoastal Waterway and Big Lagoon.

2.2.5.2 Freshwater Streams and Ponds

Due to its relatively level topography and young geologic age, the drainage system of the Coastal Lowlands is weakly developed and has little dissection (USDA, 1960). A small number of unnamed streams and ponds occur on the NASP Complex; several of these are associated with the golf course and drain into Bayou Grande and Pensacola Bay. A small, unnamed stream and a beaver pond occur in the southeastern portion of Bronson Field. At Corry Station, Jackson's Branch, a tributary of Bayou Chico, flows east along the northeastern portion of the station. Elevenmile and Eightmile Creeks flow southwest through the northwest portion of the Saufley Field property. The NASP Complex is a partner in the Bayou Chico Basin Management Action Plan.

2.2.5.3 Estuarine and Marine Waters

Estuaries are semi-enclosed coastal bodies of water in which the ocean water is significantly diluted by fresh water from land runoff. Marine waters are tidally influenced with increased salinity (Thurman, 1988). NASP has 17 miles of shoreline within the Perdido and Pensacola Bay systems. Marine and estuarine waters in close proximity to the NASP Complex include Pensacola Bay, Bayou Grande, Big Lagoon, Perdido Bay, and a portion of the Intracoastal Waterway (see Figure 2-1). Pensacola Bay, which forms the eastern and southern borders of NAS Pensacola, has a surface area of approximately 54 square miles with a mean depth of 19.5 feet. Pensacola Bay is a saline bay with a 0.5-mile-wide pass (Pensacola Pass) to the Gulf of Mexico. The Bay is the receiving body of water for Escambia and East Bays, and Bayous Texar, Chico and Grande (FDEP 1998). Bayou Grande, an estuary that drains into Pensacola Bay, forms the northern border of NAS Pensacola. Bayou Grande is approximately 1.7 square miles. Big Lagoon is primarily a saline body of water directly southwest of NAS Pensacola between the mainland and Perdido Key. Perdido Bay is a semi-enclosed estuary west of Bronson Field. It is connected to the Gulf of Mexico via Perdido Pass, and to Big Lagoon via

the Intracoastal Waterway. Perdido Bay has a surface area of approximately 33 square miles. Perdido Bay is partially fed by the Perdido River and Elevenmile and Eightmile Creeks.

The Pensacola Bay and Perdido Bay watersheds have been impacted by non-point source pollution such as urban stormwater runoff and agricultural runoff, and point source pollution such as effluents from municipal-private domestic wastewater treatment plants and industrial plants. Pensacola Bay and Perdido Bay are considered Category I basins (Watersheds in Need of Restoration; see Section 1.6.4) under the Unified Watershed Assessment (UWA) and priority list for Florida.

Pensacola Bay, Perdido Bay, and Bayou Grande are classified as Class II and Class III waters, and are thus designated to support shellfish propagation and recreational and wildlife use. Section 303(d) of the CWA requires that states develop a list of waters that do not meet water quality standards or do not support their designated uses. Pensacola Bay (near the pass), Perdido Bay, and Bayou Grande were each on the 1998 303(d) list for water segments in Florida that do not support their designated uses. These waters have not been delisted. Parameters of concern included coliform and dissolved oxygen for Bayou Grande; metals, biological oxygen demand, nutrients, turbidity, and total suspended solids for Pensacola Bay; and dissolved oxygen and nutrients for Perdido Bay.

2.2.5.4 Groundwater

The Pensacola area is underlain by three principal hydrogeologic units: the Sand-and-Gravel Aquifer, the Intermediate System, and the Floridian Aquifer System. The Sand-and-Gravel Aquifer occurs from the ground surface to a depth of approximately 220 to 330 feet below ground surface (BGS), in southern Escambia County. It consists of a complex sequence of unconsolidated to poorly indurated sand, gravel, silt, and clay (Roaza *et al.* 1991). The surficial zone is contiguous with the ground surface, and contains groundwater under water table, or perched water table conditions. Below this aquifer is the Intermediate System, a regionally extensive and vertically persistent hydrogeologic unit of low permeability. The Intermediate System in southern Escambia County is approximately 550 to 1,200 feet thick (Roaza *et al.* 1993). The Floridian Aquifer System, which is composed of limestone formations, underlies the Intermediate System and occurs at depths between approximately 1,100 and 1,500 feet BGS, in southern Escambia County (Scott *et al.* 1991). The Sand-and-Gravel Aquifer and the Floridian Aquifer are used for groundwater by this region, while the Intermediate System acts as a confining unit.

Shallow groundwater, associated with several Installation Restoration Program (IRP) sites at NAS Pensacola, has been contaminated. Potable water is therefore supplied to NAS Pensacola from wells at Corry Station. Aquifer systems in the region provide an abundant supply of fresh water. Potable groundwater in Escambia County is generally withdrawn from the Sand-and-Gravel Aquifer; the Floridian Aquifer is highly productive in other parts of the region, but it is too mineralized to be a potable water source in the Pensacola area. The high annual rainfall for this region provides ample

water to recharge the groundwater and surface water systems of this area. Regionally, contamination from polychlorinated ethylene (PCE), a dry cleaning chemical, has been a concern, but granular activated carbon filters on the affected wells have been used to treat the contaminated water.

2.2.5.5 Floodplains

Floodplains are low, relatively flat areas adjoining inland and coastal waters and include flood-prone areas of offshore islands. The Federal Emergency Management Agency (FEMA) defines these areas as being subject to a one percent or greater chance of flooding in any given year. According to FEMA 100-year Flood Insurance Rate Maps (FIRM), portions of NAS Pensacola, Bronson Field, and Saufley Field lie within the 100-year floodplain (see Figures 2-2, 2-3, and 2-5). NAS Pensacola's proximity to the Gulf of Mexico and Pensacola Bay also make it is susceptible to coastal flooding during hurricanes and other strong storm events. The 100-year tidal flood elevation at NAS Pensacola is approximately 9 feet above MSL. There are no areas on Corry Station, including NH Pensacola, Navy Housing Corry, and the Navy Exchange Mall and Commissary Corry, within the 100-year floodplain.

2.2.6 Wetlands

Wetlands are transitional zones between the terrestrial and aquatic environment. These areas are characterized by physical, chemical, and biological features indicative of hydrological conditions. Currently, wetlands are regulated by the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA of 1977. Wetlands are defined by the USACE as *"...those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."* Wetland jurisdictional lines at NAS Pensacola, Saufley Field, and Corry Station were delineated in 1997 using the USACE 1987 Wetland Delineation Manual. Wetlands were delineated at Bronson Field in 1991. Approximately 1,000 acres of wetlands were identified within the NASP Complex. Wetland quality has not been assessed at the NASP Complex to date, but wetland quality assessments will be implemented in the future pending availability of staff and funds.

The NASP Complex occasionally undertakes activities to maintain or renovate existing facilities, such as marine-related facilities and structures at NAS Pensacola. These activities may require state and federal permits, such as Environmental Resource Permits (FDEP and NFWFMD) or CWA Section 404 permits and Rivers and Harbors Act Section 10 permits (USACE). The Florida Environmental Resources Permit Program, administered by the FDEP and NFWFMD, regulates dredging, filling, or construction in, on, or over waters and wetlands that are connected, either naturally or artificially, to "named waters". Online submittal guidelines for FDEP are at [https://floridadep.gov/water/submerged-lands-environmental-resources-coordination /content/submitting-erp](https://floridadep.gov/water/submerged-lands-environmental-resources-coordination/content/submitting-erp), and those for NFWFMD are at

<https://www.nfwwater.com/Permits/Environmental-Resource-Permits>. Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) prohibits the obstruction or alteration of navigable waters of the United States without a permit from the USACE. Section 404 of the CWA (33 U.S.C. 1344) prohibits the discharge of dredged or fill material into waters of the United States without a permit from the USACE. If it is determined that wetland impacts are unavoidable, mitigation in the form of the creation of wetlands, or the restoration or enhancement of previously degraded ones, may be required under state and federal permits. Wetland banking is allowed in Florida and will be considered if needed.

2.2.6.1 NAS Pensacola: Wetlands

Maintenance activities at NAS Pensacola periodically occur at Sherman Cove Marina and the sea wall at the USCG Facility (responsibility of the Coast Guard), and periodic dredging of the shipping channel and entrance to Bayou Grande are also conducted. These activities may require state and federal permits. Any activity that could potentially affect wetlands or water bodies should be reviewed by the NRM for permit requirement determination.

A formal delineation of the wetland jurisdictional boundaries on NAS Pensacola was completed in 1997. A total of 99 wetlands were identified, comprising approximately 650 acres (see Figure 2-2). Wetlands included a mixture of palustrine wetlands, such as forested, scrub/shrub, and emergent. Some of the wetlands along the coastline of Pensacola Bay are tidally influenced and considered estuarine emergent and estuarine aquatic bed (seagrasses). Major wetland complexes are located along the southern and western edges of the Installation. Along the northern and eastern edges of the Installation, wetlands tend to be smaller and more isolated from one another (Water and Air Research, Inc. 1998a).

2.2.6.2 Bronson Field: Wetlands

A wetland inventory and classification was conducted for Bronson Field in May 1991 (see Figure 2-3). Approximately 250 acres of wetlands were identified, including a mixture of forested, scrub/shrub, and emergent wetlands. Although the Installation is along the shore of Perdido Bay, there were no estuarine wetlands identified. A majority of the wetland acreage was concentrated along the southern and eastern boundaries of Bronson Field. The wetlands in the interior of the Installation are isolated and small relative to the periphery wetlands (EPA, 1992).

2.2.6.3 Corry Station - Wetlands

A formal delineation of the jurisdictional wetland boundaries was conducted on Corry Station in April 1997. Two forested wetlands, covering approximately 0.5 acres, were delineated (see Figure 2-4; Water and Air Research, Inc., 1998b). Both were isolated wetlands, but one was hydrologically connected to Jones Creek via a ditch under US Highway 98.

2.2.6.4 Saufley Field: Wetlands

A formal delineation of the jurisdictional wetland boundaries was conducted at Saufley Field in August 1997. Approximately 100 acres of wetlands were identified (see Figure 2-5). A majority of the wetland acreage was associated with the floodplain areas of Elevenmile and Eightmile Creeks in the northern portion of the property. Other wetlands on the property were associated with an unnamed swamp forest adjacent to Perdido Bay, at the southwest corner of the property.

2.2.7 Land Use

Presently, the NASP Complex occupies 8,423 acres of land, which are divided into four general categories based on operational needs and the intensity of required maintenance (Table 2-2).

- **Improved** lands or grounds include residential, commercial, and industrial areas; linear infrastructure facilities, which include transportation, communications, and utilities; and recreational and construction sites. Maintenance of these areas is performed primarily to obtain a pleasing appearance. Frequency of mowing varies based on weather, grass species, desired height, and other special considerations (i.e., security). Improved grounds occur over approximately 10 percent of the Complex.
- **Semi-improved** grounds include agricultural lands, altered lands, mowed airfield areas, clear zones, road shoulders, and other land use areas that require infrequent maintenance. Maintenance is performed primarily to provide an erosion resistant cover of vegetation, to control weeds and brush, and to reduce fire hazard. Semi-improved lands occur over approximately 17 percent of the Complex.
- **Unimproved** areas include other unpaved areas not included in the improved or semi-improved categories and on which no maintenance is performed. These areas include forestlands, wetlands, waterways and water bodies, and other non-developed areas and occur over approximately 41 percent of the Complex.
- **Other** lands include areas occupied by buildings, streets, parking areas, sidewalks and other paved areas, and occur over approximately 32 percent of the Complex.

Functional Areas at the NASP Complex serve military purposes, and some have potential for natural resources management. Land uses at various functional areas are largely fixed and the potential for natural resources management depends upon the availability and suitability of natural resources within the parameters of the military use on the property. Functional areas can be classified into one or more of the following classes:

- **Protected Areas** include land protected due to the unique natural, cultural or aesthetic value. Examples include rare geologic features, significant historical sites, natural heritage sites, threatened and endangered species' critical habitat, unique high-value recreation areas, and exemplary natural communities;

- **Operational Protected Areas** are vital to the continuance of the military mission, and intensively utilized for this purpose. Examples include AICUZ areas, intensively developed and built areas, dredge spoil sites, high security restricted areas, industrial support areas, and BASH areas;
- **Mixed-Use Management Areas** facilitate the military mission, but also exist in a natural condition, contain valued natural features, and could benefit from effective natural resources management practices. Consistent with the military mission, non-timber values such as wildlife habitat, water quality (wetland, storm water and floodplains protection), recreational potential, and urban forestry provide the framework for management decisions. Examples include streamside management zones, cypress domes and ponds, fresh water fisheries, shoreline, habitat for established conservation priorities, grounds maintenance, and urban forestry;
- **Forest Management Areas** include lands where forest management is the primary objective and includes areas that may be designated for commercial harvesting. The management intensity within each area will be considered against factors such as regulations, economic and wildlife considerations, slope stability concerns, soils, inaccessibility, aesthetics, and site productivity. Examples include bottomland hardwood stands, upland hardwood and softwood areas with natural regeneration, wildlife corridors, and stands with extended rotation ages.

Table 2-2. Categories of Installation Land Use by Acreage					
Property/Land Use	I	SI	U	O	Total Acres
NAS Pensacola	559	911	2,514	1,816	5,800
Bronson Field	15	165	480	438	1,098
Saufley Field	37	260	297	284	878
Corry Station	93	88	103	148	432
US Naval Hospital Pensacola	13	6	7	17	43
Navy Housing Corry	80	8	0	0	88
Navy Exchange Mall and Commissary Corry	34	0	13	0	47
Total	831	1,438	3,414	2,703	8,386

Key:

- I = Improved Grounds
- U = Unimproved Grounds
- SI = Semi-Improved Grounds
- O = Other

2.2.7.1 NAS Pensacola: Land Use

Protected Area 1

Protected Area 1 (P-1) is located in the southwest portion of NAS Pensacola along the shoreline of Big Lagoon (Figure 2-6). This is a Protected Area due to the presence of unique natural communities exhibiting high aesthetic and recreational value. Protected Area 1 is bounded on the north by Radford Road and on the south by Big Lagoon. It is characterized by beach dune, scrubby flatwoods, scrub, estuarine tidal marsh communities, and submerged and aquatic vegetation along Big Lagoon, and is mostly within the 100-year floodplain. The Trout Point Nature Trail, which is a section of the

Great Florida Birding Trail, provides excellent wildlife viewing and environmental education on various habitats. Trout Point offers easy beach access and is designated for public use for hiking and nature study.

Sherman Cove Marina, which is located in the central portion of P-1, is the main powerboat facility at the NASP Complex. This facility offers both wet slips and dry storage space for personal craft storage. In addition, boating and fishing gear and other supplies may be purchased at the Marina. Extensive seagrass beds exist in P-1, particularly at Sherman Cove. Lake Frederic, located in the eastern portion of P-1, provides recreational fishing opportunities, as well as quality wetland habitat along its edges.

Protected Area 2

Protected Area 2 (P-2) is located along the south central edge of NAS Pensacola, along the Pensacola Bay shoreline, directly east of P-1 (Figure 2-6). This is a Protected Area due to the presence of unique cultural resources, high-value recreation areas, and beach-dune natural communities. Historical sites include Fort Barrancas and the Advanced Redoubt, managed by the NPS as part of GINS, and the Pensacola Lighthouse managed by the USCG and Pensacola Lighthouse Association. Protected Area 2 is used primarily for outdoor recreation, but contains scattered buildings and facilities such as the Lighthouse Point Chief Petty Officer's Club, Navy Lodge, cabins, cabanas, and softball fields. The Oak Grove Campground, which offers both RV and tent camping, is located in the western portion of P-2, adjacent to Pensacola Bay.

Operational Protected Area 1

Operational Protected Area 1 (OP-1) is located on the western portion of NAS Pensacola (Figure 2-6). This is an Operational Protected Area due to the presence of facilities and operations deemed vital to the military mission. It consists primarily of Forrest Sherman Field and surrounding lands that are composed of managed forests. The airfield and surrounding lands are considered severely constrained in terms of development potential due to air operations. An AICUZ exists for the field.

Operational Protected Area 2

Operational Protected Area 2 (OP-2) is located on the eastern portion of NAS Pensacola (Figure 2-6). This is an Operational Protected Area due the presence of operations and facilities deemed vital to the military mission. It consists primarily of operational and urban areas, and includes administration buildings, community facilities, public works and utility offices, medical facilities, operations facilities, maintenance and supply facilities, training facilities, family housing, troop housing, and restaurants. In addition, OP-2 contains significant historical sites such as Barrancas National Cemetery and Fort San Carlos de Austria. The area is bordered on the east and south by Pensacola Bay and on the north by Bayou Grande.

Operational Protected Area 2 has extensive urban and waterfront development, high human activity, and limited natural resources, so land management focuses on activities related to soil erosion, grounds maintenance, urban forestry, shoreline management, and stormwater management practices for the protection of wetlands and water quality for fish and wildlife.

Mixed-Use Management Area 1

Mixed Use Management Area 1 (MU-1) is located along the north central portion of NAS Pensacola adjacent to Bayou Grande (Figure 2-6). This is a Mixed Use Management Area due to its potential for outdoor recreational benefits and available habitat for wildlife in the pine stands and mixed forests. The eastern portion of MU-1 is the location of a former sanitary landfill; this area was designated as a site requiring further environmental investigation following a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) assessment in 1988. The northern portion of MU-1, adjacent to Bayou Grande, is the site of the Bayou Grande Nature Trail (approximately 1 mile). The trail begins at the NAS Family Picnic Center, includes 31 interpretive stops, a gazebo, a 115-foot cable bridge, and an observation deck over a sawgrass inlet. Primitive camping sites are also maintained along the northern portion of MU-1.

Mixed-Use Management Area 2

Mixed Use Management Area 2 (MU-2) is located adjacent to and east of MU-1 (Figure 2-6). This is a Mixed Use Management Area due to its potential for outdoor recreational benefits. The A. C. Read Golf Course comprises most of MU-2. Grounds within the golf course are intensively managed, even in out-of-play areas. The southeast section of MU-2 contains several buildings that were historically used as metal-work facilities, but are presently used for storage and maintenance activities. A depression area, located near these structures, was designated as a wetland and has been included as a site under the IRP.

2.2.7.2 Bronson Field: Land Use

Mixed-Use Management Area 3

Mixed Use Management Area 3 (MU-3) falls within the boundaries of BARP (Figure 2-7). This is a Mixed Use Management Area due to its potential for effective natural resources management practices. This area is located on the western portion of Bronson Field, adjacent to Perdido Bay. Blue Angel Recreational Park contains recreational boating facilities, RV and primitive camping facilities, and a mountain bike trail. A few rare animals and plants have been documented at BARP, including ospreys, gopher tortoises, primrose-flowered butterwort, white-top pitcher-plants, and parrot pitcher-plants. Most of the site consists of live oak, slash, and longleaf pine communities. Mixed Use Management Area 3 has outstanding recreational opportunities, including campgrounds, trails, and access to Perdido Bay.

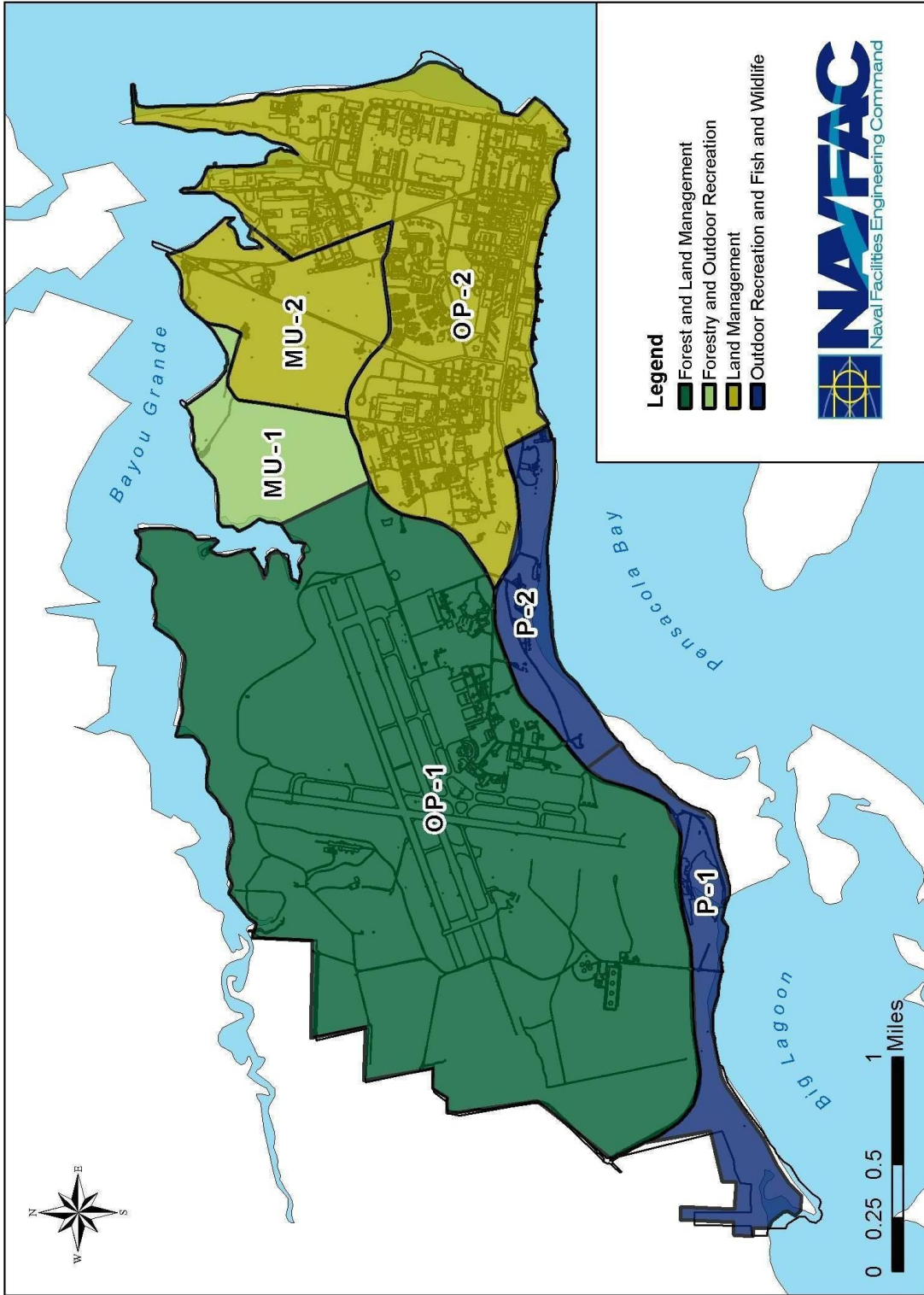


Figure 2-6. Land Use at NAS Pensacola

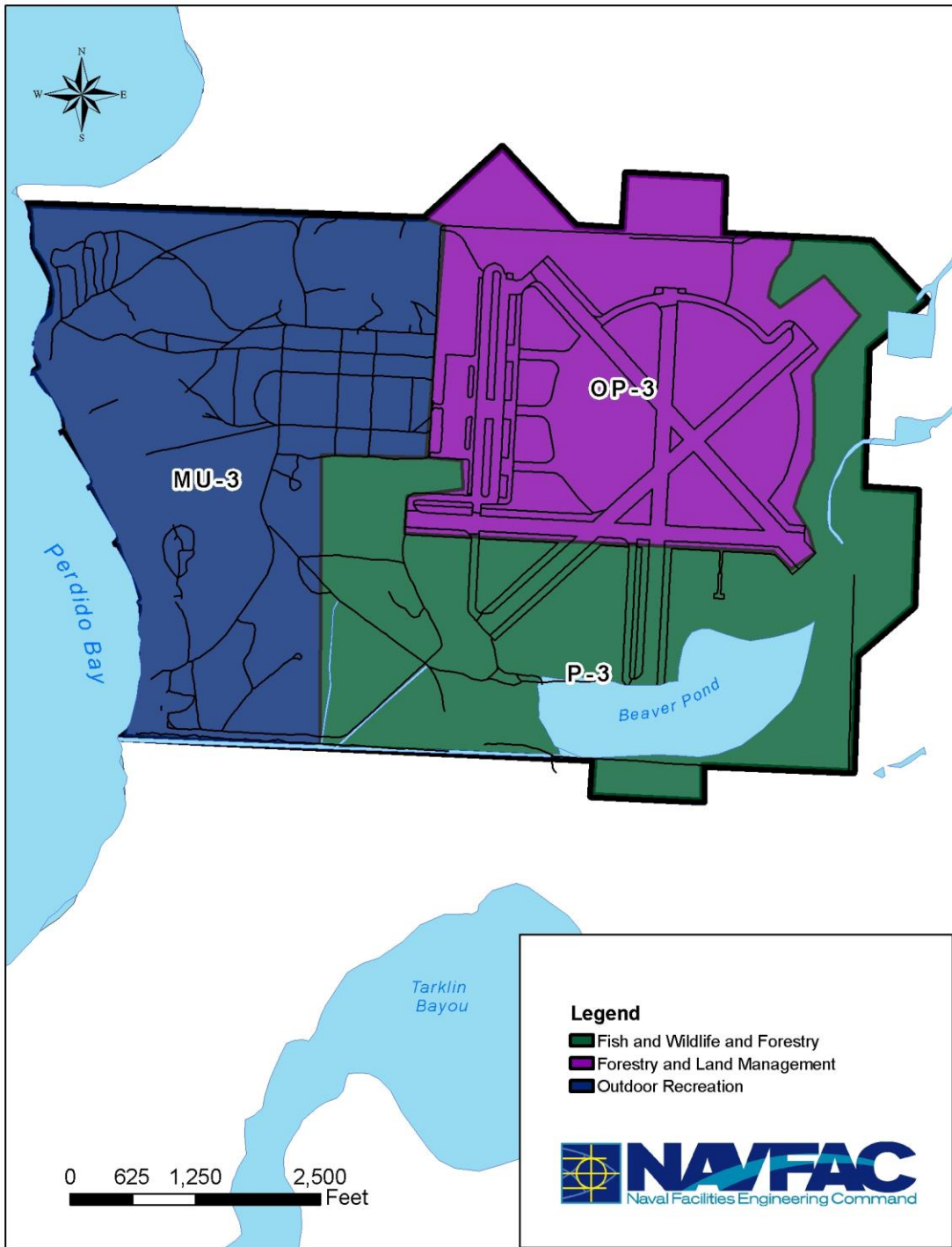


Figure 2-7. Land Use at Bronson Field

Operational Protected Area 3

Operational Protected Area 3 (OP-3) includes the former operational facilities and airfield at Bronson Field (Figure 2-7). This is an Operational Protected Area due to the presence of buildings and runways and the high potential for future operational uses. Although much of this management area is covered by asphalt (approximately 200 acres of abandoned airstrips and taxiways), it presently is not used for flight operations. It does support several military reserve and civic groups through licenses and use agreements, and may be used for military training operations in the future. Slash and longleaf pine stands are present along the northern portions of OP-3, north of the airfield (see Figure 3-6); gopher tortoises have been documented in this area (FNAI 1997a).

Protected Area 3

Protected Area 3 (P-3) is located in the southeastern portion of Bronson Field, along its eastern perimeter (Figure 2-7) and is directly north of the Perdido Pitcher Plant Prairie. This is a Protected Area due to the unique natural resources present. This management area consists of various forest cover types, a 55-acre beaver pond, and wet prairie natural communities. Several protected species have been documented in P-3 including gopher tortoises, snowy egrets, little blue herons, white ibis, and numerous wetland plants. In addition, a great blue heron rookery has been documented near the beaver pond (FNAI 1997a).

2.2.7.3 Corry Station: Land Use

Operational Protected Area 4

Operational Protected Area 4 (OP-4) encompasses CID Corry Station, which includes NH Pensacola, VA JACC, Navy Corry Housing and Navy Exchange Mall and Commissary Corry (Figure 2-8). NH Pensacola and VA JACC occupy the southwestern portion of OP-4, Navy Housing Corry the southeastern portion, and Navy Exchange Mall and Commissary Corry the south central portion. This is an Operational Protected Area due to the presence of buildings and other facilities vital to the military mission. Land management activities such as erosion control, grounds maintenance, and urban forestry are the focus of this area due to its urbanized, developed condition. Management strategies at OP-4 include:

Forest stands at Corry Station will be managed primarily for forestry, but stands closest to housing units may be managed for wildlife. There are 25 small forest stands, totaling approximately 106 acres, scattered throughout Corry Station. These stands are predominantly slash pine ranging in age from 30 to 50 years. Silviculture practices include thinning, fertilization, and herbicide applications. No prescribed burning will occur in forest stands within OP-4 due to smoke sensitive areas surrounding it.

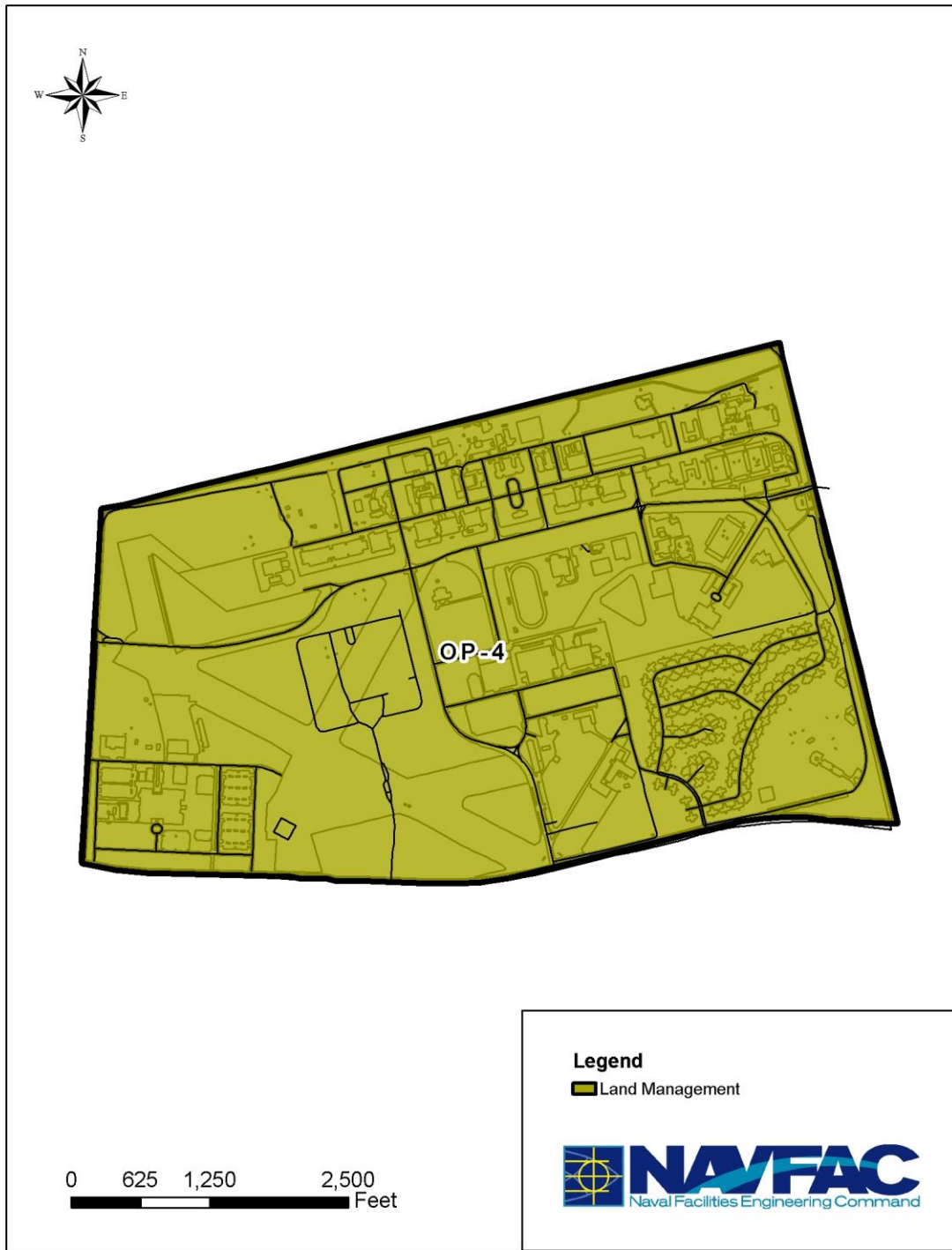


Figure 2-8. Land Use at Corry Station

2.2.7.4 Saufley Field: Land Use

Operational Protected Area 5

Operational Area 5 (OP-5) is located on the south and central portions of Saufley Field and consists primarily of the airfield and support facilities (Figure 2-9). This is an Operational Protected because it is vital to the military mission. Forest stands occur along western edge of OP-5.

Protected Area 4

Protected Area 4 (P-4) is located along Eightmile and Elevenmile Creeks, north of OP-5 at Saufley Field (Figure 2-9). This is a Protected Area due to the unique natural resources present. This area consists of longleaf and mixed pine forests in addition to floodplain forests along the creeks, which provide quality wetland habitat. The Saufley Field Nature Trail has two loops totaling approximately 1.5 miles and winds through pine scrub forest and swampy lowlands. Natural resources management at P-4 focuses on fish and wildlife and forestry.

2.3 BIOLOGICAL ENVIRONMENT

The biological environment of the NASP Complex was considerably different prior to colonization and development. Historically, the area was dominated by natural communities that are, today, only scattered throughout the Complex. Those on NAS Pensacola include estuarine tidal marsh, scrub, mesic flatwoods, scrubby flatwoods, wet flatwoods, beach dune, and baygall. These natural communities are primarily located in the southwest and north segments of the property (FNAI 1997a; FNAI 2007). Bronson Field contains wet prairie natural communities in the northeastern and southeastern segments of the property (FNAI 1997a). Four high quality natural communities occur at Saufley Field; they are blackwater stream, depression marsh, floodplain swamp, and seepage slope areas (FNAI 1997c).

Ecosystems at the NASP Complex have been affected by development to varying degrees. Areas that have been highly developed by the DON (i.e., Corry Station, eastern portion of NAS Pensacola and Forrest Sherman Field, southern portion of Saufley Field) contain little or no natural vegetation and wildlife associated with previous ecosystems. Although approximately 41% of the land area within the NASP Complex remains relatively natural, only approximately 7.5% of land area remains as natural communities. Natural resources management has taken measures, such as planting forest stands in previously cleared areas, to enhance the biological environment throughout the Complex. Prescribed burning and thinning in managed forest stands help regenerate natural communities to maintain and improve ecosystem quality to the extent practicable within the constraints of military mission requirements.

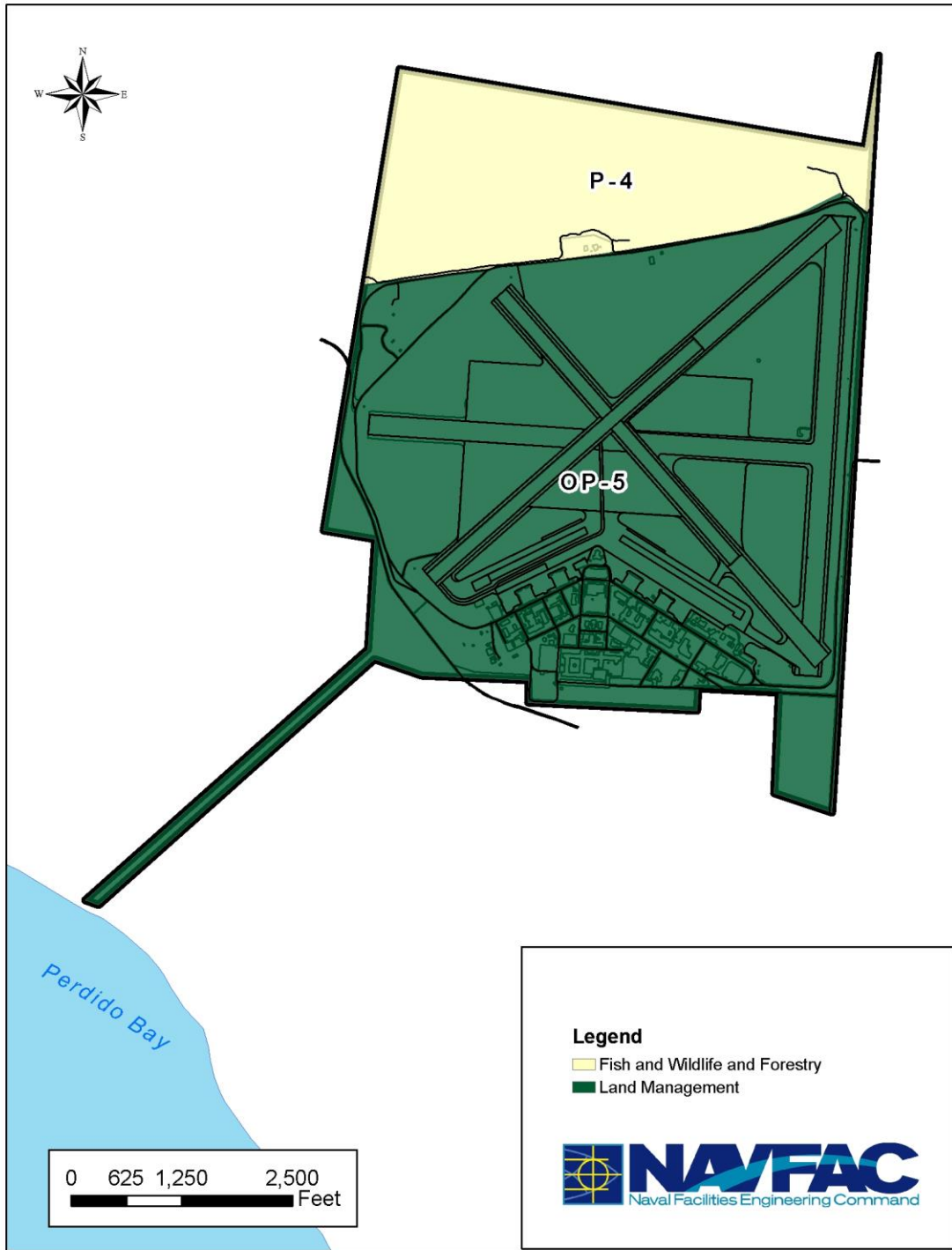


Figure 2-9. Land Use at Saufley Field

2.3.1 Natural Communities

A natural community is a distinct and reoccurring assemblage of populations of plants, animals, fungi, and microorganisms naturally associated with each other and their physical environment (FNAI 1997). FNAI surveyed the natural communities at NAS Pensacola, Bronson Field, NTTTC Corry, and Saufley Field in 1996 and 2006. Assessments of the natural communities identified in the 1996 effort were updated using the 2006 survey. Descriptions of these communities, the changes observed in the communities from 1996 to 2006, and wildlife typical of each community are presented in Table 2-3. Damage resulting from Hurricane Ivan in 2004 and Hurricane Dennis in 2005 was evident in several of the communities. Increased density of understory shrubs and proliferation of exotic species were also common observations in several communities during the 2006 survey.

2.3.1.1 Seagrasses

Seagrasses, a type of submerged aquatic vegetation (SAV), are marine angiosperms that generally grow in the unconsolidated sediments of shallow, subtidal or intertidal estuarine and marine waters. Seagrass beds provide numerous critical functions to coastal environments, such as serving as a sediment trap and stabilizer of bottom sediments, providing primary productivity, serving as a food source, and providing substrate and habitat for various species (Wolf *et al.*, 1988). Various seagrasses occur intermittently in shallow waters along the southern and eastern shores of NAS Pensacola; in particular the area from Sherman Cove westward to Trout Point, along the shoreline of Big Lagoon, a high-use recreational boating area. Seagrasses are susceptible to environmental impacts, such as nutrient loading, due to their high light requirements (Wolfe *et al.*, 1988).

Table 2-3. Descriptions and Typical Wildlife Species of Natural Communities Present Within the NASP Complex

Natural Community/ Location(s)	Description	Changes Observed From 1996 to 2018	Typical Wildlife Species
NAS Pensacola			
Baygall NAS Pensacola (137.5 acres)	Baygalls depend upon seepage flow and a high water table. They are densely forested, peat-filled seepage depressions often found at the base of sandy slopes. The canopy consists of evergreen hardwood trees such as sweetbay and magnolia, and the understory tends to be open and contains shrubs and ferns.	Hurricane damage was evident. The understory in some plots became denser, with greenbriar being prolific.	Mole salamander, southern dusky salamander, southern mud salamander, opossum, short-tailed shrew, marsh rabbit, black bear, raccoon, southern mink, and bobcat.
Beach and Dune NAS Pensacola (89.0 acres)	Beach dunes are found along shorelines subject to high energy waves. They are characterized as wind-deposited foredune and wave-deposited upper beach that are sparsely to densely vegetated with pioneer species, especially sea oats.	Hurricane damage was evident. Weedy herbaceous plant species have colonized this habitat; the exotic <i>Panicum repens</i> was noted and is of particular concern. Beach stabilization projects have been implemented at Lake Frederic and Barrancas beach.	Ghost crab, six-lined racerunner, kestrel, red-winged blackbird, savannah sparrows, beach mouse, raccoon, shorebirds, and marine turtles (nesting habitat).
Estuarine Tidal Marsh NAS Pensacola (40.3 acres)	Estuarine tidal marshes are areas in which seawater is significantly diluted with freshwater. These communities may exhibit freshwater conditions during periods of heavy rainfall.	All areas of estuarine tidal marsh appeared to be stable and unchanged. Hurricane damage to manmade structures, such as gazebos and boardwalks was evident. Several of the boardwalks have been repaired since recent hurricanes.	Marsh snail, periwinkle, mud snail, spiders, fiddler crab, marsh crab, green crab, isopods, amphipods, diamondback terrapin, saltmarsh snake, wading birds, waterfowl, osprey, rails, marsh wrens, seaside sparrows, muskrat, and raccoon.
Mesic Flatwoods NAS Pensacola (24.5 acres)	Mesic flatwoods have open canopy of widely spaced pine trees with little or no understory and dense ground cover of herbs and shrubs. They occur over flat moderately-to-poorly drained terrain.	The community was noted to contain about 5% wiregrass. Some woody encroachment was observed. Hurricane damage was minimal.	Oak toad, narrowmouth toad, black racer, red rat snake, southeastern kestrel, brown-headed nuthatch, pine warbler, Bachman's sparrow, cotton rat, cotton mouse, black bear, raccoon, gray

Table 2-3. Descriptions and Typical Wildlife Species of Natural Communities Present Within the NASP Complex

Natural Community/ Location(s)	Description	Changes Observed From 1996 to 2018	Typical Wildlife Species
	Common plant associations are longleaf pine-wiregrass-runner oak and slash pine-gallberry-saw palmetto.	Vegetation was indicative of relatively frequent fire.	fox, bobcat, and white-tailed deer.
Scrub NAS Pensacola (154.9 acres)	Scrub has an almost open-canopy forest of sand pines with dense thickets of scrub oaks and other shrubs. Ground cover is sparse with patches of barren sand.	Hurricane damage included blown-over and broken trees. Relatively little change from 1996. The southern extent of one plot had been mechanically cleared and is now replanted to longleaf pine.	Red widow spider, scrub wolf spider, oak toad, Florida scrub lizard, blue-tailed mole skink, sand skink, six-lined racerunner, coachwhip, ground dove, scrub jay, loggerhead shrike, yellow-rumped warbler, rufous-sided towhee, and spotted skunk.
Scrubby Flatwoods NAS Pensacola (70.3 acres)	Scrubby flatwoods have open-canopy forest of widely-spaced pine trees, sparse shrubby understory, and numerous areas of barren sand. The vegetation is a combination of scrub and mesic flatwoods species.	This community appeared very stable, even after the hurricane disturbance. Portions of the community that were prescribed burned responded well and had a diverse herbaceous layer of plants.	Oak toad, pine woods tree frog, gopher tortoise, six-line race runner, eastern diamondback, rattlesnake, bobwhite, ground dove, southeastern pocket gopher, and Florida mouse.
Wet Flatwoods NAS Pensacola (42.8 acres)	Wet flatwoods have soils that are less well-drained than in mesic flatwoods. They may be inundated with water for one or more months during the rainy season. Scattered pine trees or cabbage palms compose the canopy, with thick shrubby understory and a sparse ground cover or sparse understory and dense ground cover of hydrophytic herbs and shrubs.	The wet flatwoods have been relatively the same since 1996. Prescribed fire has been used here on a 5-year rotation.	Oak toad, cricket frog, chorus frog, black racer, diamondback rattlesnake, pygmy rattlesnake, red-shouldered hawk, bobwhite, opossum, cottontail rabbit, cotton rat, cotton mouse, raccoon, striped skunk, bobcat, and white-tailed deer.

Table 2-3. Descriptions and Typical Wildlife Species of Natural Communities Present Within the NASP Complex

Natural Community/ Location(s)	Description	Changes Observed From 1996 to 2018	Typical Wildlife Species
Bronson Field			
Wet Prairie Bronson Field (16.3 acres)	Wet prairies are treeless plains with sparse to dense ground cover of grasses and herbs. They occur on low, flat, poorly-drained terrain on the coastal plain. Soils are sandy and often contain a clay or organic component.	Thick and lush wiregrass described in 1996 was not present. Portions of the community are better described as depression marsh succeeding to swamp due to lack of fire. Prescribed fire was used in this area in 2014 but more frequent fire is needed.	Cricket frog, chorus frog, black racer, yellow rat snake, cottonmouth, pygmy rattlesnake, northern harrier, southeastern kestrel, killdeer, long-billed marsh wren, red-winged blackbird, marsh rabbit, cotton rat, and cotton mouse.
Saufley Field			
Depression Marsh Saufley Field (0.7 acres)	Depression marshes are shallow, usually rounded depressions in sandy substrate. They are vegetated by herbaceous species that may grow in concentric bands. Due to its relatively small size and isolation, this community type is considered extremely important in providing breeding and foraging habitat for amphibian species such as the flatwoods salamander, mole salamander, and striped newt.	The center of this community remained herbaceous-dominated and the naturally high water levels prevented surrounding woody species from invading. However, the surrounding area was fire-suppressed, and it appeared no management took place since the 1996 surveys.	Reticulated flatwoods salamander, mole salamander, tiger salamander, dwarf salamander, oak toad, cricket frog, pinewoods treefrog, barking treefrog, squirrel treefrog, southern chorus frog, ornate chorus frog, narrowmouth toad, eastern spadefoot toad, gopher frog, white ibis, wood stork and sandhill crane.
Blackwater Streams Saufley Field (10.6 acres)	Blackwater streams are intermittent seasonal watercourses that are tea-colored due to tannins, particulates, and dissolved organic matter and iron derived from drainage through swamps and marshes. These streams have sandy bottoms overlain by organics and frequently underlain by limestone.	Exotic plant species were extensive along stream banks and adjacent areas. Observations of exotic species were not made during the 1996 survey; it is not known if they established in the interim. Exotic species still exist in the area.	Longnose gar, gizzard shad, threadfin shad, chain pickerel, Ohooppee shiner, blacktail shiner, channel catfish, banded topminnow, pygmy killifish, mosquitofish, redbreast sunfish, dollar sunfish, stump knocker, spotted bass, black crappie, darters, Alabama waterdog, river frog, alligator, alligator snapping turtle, river cooter, stinkpot, brown watersnake, beaver, and river otter.

Table 2-3. Descriptions and Typical Wildlife Species of Natural Communities Present Within the NASP Complex

Natural Community/ Location(s)	Description	Changes Observed From 1996 to 2018	Typical Wildlife Species
Seepage Slope Saufley Field (4.0 acres)	Seepage slopes are shrub thickets or boggy meadows at the base of slopes where moisture is maintained by down-slope seepage. Many plant species in seepage slopes are considered endangered or threatened; among these are the carnivorous pitcher plants.	Pitcher plants were being shaded out by shrub, and many showed low vigor. The community was dominated by shrubs in patchy coverage. Thick and lush wiregrass described in 1996 was no longer present, although it was still present in small percentages. A prescribed burn was conducted in 2014 but more frequent fire intervals are needed.	Pine barrens treefrog, squirrel treefrog, ribbons snake, and cottonmouth.
Floodplain Swamp Saufley Field (42.5 acres)	Floodplain swamps occur on flooded soils along stream channels and in low areas within river floodplains. Dominant vegetation usually includes buttressed trees, such as cypress and tupelo, which are adapted to growing in water or wet environments. The understory and ground cover of floodplain swamps are generally very sparse.	Disturbances included exotic vegetation and hurricane damage. Exotic coverage was quite extensive along stream banks and adjacent areas. Exotic coverage was not observed in 1996, but may have been missed to the large area this community covers. Exotic species are still present in the area.	Marbled salamander, mole salamander, amphiuma, Alabama waterdog, three-lined salamander, dwarf salamander, southern toad, cricket frog, bullfrog, Southern leopard frog, alligator, river cooter, stinkpot, five-lined skink, broadhead skink, rainbow snake, brown water snake, cottonmouth, yellow-crowned night-heron, wood duck, swallowtail kite, Mississippi kite, red-shouldered hawk, woodcock, barred owl, hairy woodpecker, pileated woodpecker, Acadian flycatcher, Carolina wren, white-eyed vireo, red-eyed vireo, parula warbler, hooded warbler, cardinal, towhee, opossum, short-tailed shrew, beaver, wood rat, rice rat, cotton mouse, bear, raccoon, and bobcat.

Sources: FNAI 1997a, 1997b, 1997c, and 2007, and GSRC 2015 and 2017.

2.3.2 Rare, Threatened and Endangered Species

The NASP Complex is within, or approached by, the range of approximately 70 rare vertebrate taxa and approximately 100 rare, threatened, or endangered plant taxa. Rare vertebrate surveys were conducted across the NASP Complex in 1996-97, 2009-10, and 2016. One federally-listed threatened species, one federal candidate species, two state-listed threatened species, and eight state-listed threatened species and species of special concern are known to occur on the NASP Complex (see Table 2-4). The American alligator (*Alligator mississippiensis*) is the only federally-threatened species confirmed present the NASP Complex. The gopher tortoise (*Gopherus polyphemus*) is a candidate for federal listing and is present on NAS Pensacola, Bronson Field, and NETPDTC Saufley. The gopher tortoise and five bird species on the Complex are state-listed threatened species. The Cooper's hawk (*Accipiter cooperii*) and bald eagle (*Haliaeetus leucocephalus*) are rare bird species identified on the Complex during the 2009-10 and 2016 surveys, but not identified in 1996-97. Conversely, the American oyster catcher (*Haematopus palliatus*), big brown bat (*Eptesicus fuscus*), and Southeastern bat (*Myotis austroriparius*) were identified during the 1996-97 surveys, but not identified since. The bats were observed roosting inside the underground storm drain system at Saufley Field in 1996-97. A storm drain manhole was disturbed in 1999, causing the bats to vacate the location.

In addition to species known to occur at the NASP Complex, the following federally protected species potentially occur in adjacent estuarine and marine waters: gulf sturgeon (*Acipenser oxyrinchus desotoi*), loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas mydas*), leatherback sea turtle (*Dermochelys coriacea*), hawksbill sea turtle (*Eretmochelys imbricata imbricata*), Kemp's ridley sea turtle (*Lepidochelys kempii*), and West Indian manatee.

Surveys of rare plants (e.g. state-listed rare, threatened, and endangered plants) were conducted at NAS Pensacola, Corry Station, Bronson Field, and Saufley Field on four separate occasions: in 1996-97, 2006, 2009-10, and 2016. No federally-listed plant species were found on the properties. Eleven state-listed threatened and endangered plant species were identified across the NASP Complex in 1996-97, nine were observed in 2006, ten were identified in 2009-10, and eight in 2016 (Table 2-5). Locations where state-listed plants were identified during one survey were re-visited during subsequent surveys. Southern red lily (*Lilium catesbaei*), Chapman's butterwort (*Pinguicula planifolia*), white-fringed orchid (*Platanthera blephariglottis*), and snowy orchid (*Platanthera nivea*) were all identified during the 1996-97 survey, but not found in subsequent surveys of the same locations. Panhandle lily (*Lilium iridollae*) and yellow-fringeless orchid (*Platanthera integra*) were newly-identified species during the 2006 survey, but not found again. The habitats required by these missing species are still present on the properties, so there remains potential for them to be identified in future surveys.

Table 2-4. Rare, Threatened, and Endangered Vertebrates Occurring at the NASP Complex, 1996, 2009, and 2016.

Year of Survey			Scientific Name Common Name	Community in Which Found	Fed. Status	State Status	Property Where Present		
1996	2009	2016					NASP	Sauf.	Bronson
Reptiles									
X	X ¹	X	<i>Alligator mississippiensis</i> American alligator	aquatic habitats	T(S/A)	N	X	X	X
X	X	X	<i>Gopherus polyphemus</i> Gopher tortoise ²	remnant sand dune, pine plantation	C	T	X	X	X
X	X ¹	X ¹	<i>Macrochelys temminckii</i> Alligator snapping turtle	blackwater stream	P	SSC	X	X	
Birds									
	X	X	<i>Accipiter cooperii</i> ³ Cooper's hawk	coastal, ruderal, sandhill	N	N	X	X	
X	X	X	<i>Egretta caerulea</i> Little blue heron	aquatic habitats	N	T	X	X	X
X	X	X	<i>Egretta thula</i> Snowy egret	aquatic habitats, coastal	N	N	X	X	X
		X	<i>Falco sparverius</i> American Kestrel	Open woodlands and grasslands	N	T	X	X	
X			<i>Haematopus palliatus</i> American oyster catcher	shoreline	N	T	X	X	
	X	X	<i>Haliaeetus leucocephalus</i> ³ Bald eagle	Wet flatwoods	N	N	X	X	X
X	X	X	<i>Pandion haliaetus</i> ³ Osprey	baygall, coastal, ruderal	N	N	X	X	X
X	X	X	<i>Pelecanus occidentalis</i> Brown Pelican	coastal	N	N	X	X	
X	X		<i>Rallus longirostris scottii</i> ² Florida clapper rail	estuarine tidal marshes	N	N	X	X	
X	X	X	<i>Rynchops niger</i> Black skimmer	Shoreline, coastal	N	T	X	X	
X	X	X	<i>Sterna antillarum</i> Least tern	shoreline, nearshore waters	N	T	X		
Mammals									
X			<i>Eptesicus fuscus</i> ³ Big brown bat	drainage tunnel	N	N		X	
X			<i>Myotis austroriparius</i> ³ Southeastern bat	drainage tunnel	N	N		X	
Insects									
		X	<i>Danaus plexippus</i> Monarch butterfly ⁴	Wet flatwoods and beach dunes	N	N	X		

Sources: FNAI 1997a, 1997b, 1997c, 2007, and 2010; NRM, personal communication.

1 = No specific surveys were conducted for American alligators and alligator snapping turtles in these instances, but they were known to be present.

2 = Specific gopher tortoise surveys were conducted in 2004, 2008, 2011, and 2012.

3 = Animals not listed by federal or state governments, but of interest to the NASP Complex natural resources managers.

4 = The monarch butterfly was not surveyed prior to 2016.

KEY: E=Endangered; T=Threatened; T(S/A)=Threatened due to Similarity of Appearance; C=Candidate; P=Petitioned for Listing; SSC=Species of Special Concern; and N=Not listed.

Table 2-5. State-Listed Threatened and Endangered Plant Species Occurring at the NASP Complex, 1996, 2006, 2009, and 2016.

Year of Survey				Scientific Name Common Name	Community in Which Found	State Status	Property Where Present		
1996	2006	2009	2016				NASP	Saufley	Bronson
X	X	X	X	<i>Chrysopsis godfreyi</i> Godfrey's goldenaster	beach dune	E	X		
		X	X	<i>Coelorachis tuberculosa</i> Piedmont jointgrass	wet prairie, depression marsh	T	X		X
X	X	X	X	<i>Drosera intermedia</i> Spoon-leaf sundew	floodplain swamp, bottomland, depression marsh, wet flatwoods, ruderal	T	X	X	X
X				<i>Lilium catesbaei</i> Southern red lily	wet prairie	T			X
	X			<i>Lilium iridollae</i> Panhandle lily	wet prairie	E		X	
			X	<i>Lupinus westianus</i> Gulf Coast lupine	beach dune	T	X		
		X		<i>Pinguicula lutea</i> Yellow-flowered butterwort	wet flatwoods	T	X		
X				<i>Pinguicula planifolia</i> Chapman's butterwort	wet prairie, pine plantation	T		X	X
X	X	X		<i>Pinguicula primulifolia</i> Primrose-flowered butterwort	bottomland, seepage slope	E		X	
X				<i>Platanthera blephariglottis</i> White-fringed orchid	clear zone	T	X		
		X		<i>Platanthera ciliaris</i> Yellow-fringed orchid	bottomland, seepage stream	T		X	
	X			<i>Platanthera integra</i> Yellow fringeless orchid	low flatwoods	E		X	
X				<i>Platanthera nivea</i> Snowy orchid	wet prairie	T			X
X	X	X	X	<i>Polygonella macrophylla</i> Large-leaf jointweed	scrub, sandhill, ruderal	T	X		
X	X	X	X	<i>Sarracenia leucophylla</i> White-top pitcher plant	seepage stream, wet flatwoods, depression marsh, bottomland, wet prairie	E	X	X	X
X	X	X	X	<i>Sarracenia psittacina</i> Parrot pitcher plant	seepage stream, depression marsh	T	X	X	X
X	X	X	X	<i>Sarracenia rosea</i> Purple pitcher plant	bottomland, wet flatwoods, depression marsh	T		X	X

Sources: FNAI 1997a, 1997b, 1997c, 2007, 2010, and GSRC 2017

No federally-listed plant species occur at the NASP Complex.

No state-listed plant species were found to occur at Corry Station (FNAI, 1997c).

KEY: E=Endangered; T=Threatened;

2.3.2.1 Critical Habitat

The ESA requires the conservation of critical habitat, which is defined as the areas of land, water, and air space a threatened or endangered species need for survival. Critical habitat also includes such things as food and water, breeding sites, cover or shelter, and sufficient habitat area to provide for normal population growth and behavior. Section 7 of the ESA restricts destructive or adverse modification of critical habitat by any activity funded, authorized, or carried out by any Federal agency. One of the primary threats to many species is the destruction and modification of essential habitat by uncontrolled land and water development.

Critical habitat was designated in Pensacola Bay, Bayou Grande, and Big Lagoon in 2003 for the ESA-threatened gulf sturgeon (*Acipenser oxyrinchus desotoi*; 68 FR 13370). The gulf sturgeon is commonly found during midwinter in the deep cut located north of the barrier island at Fort Pickens and south of NAS Pensacola. Natural resources management actions described in this INRMP provide for water quality protection to the water bodies surrounding NAS Pensacola, which benefits the continued existence and future recovery of gulf sturgeon. The NASP Complex's stewardship of water quality is exemplified by the Clean Marina designation bestowed upon Bayou Grande Marina and Sherman Cove Marina, which is adjacent to the deep cut described above.

This INRMP describes natural resources management actions that impart benefits to listed species and their habitats on the NASP Complex and provides assurances that those actions will be implemented and will be effective. The NASP Complex NRM and Navy Region Southeast biologists are designated the responsibility to ensure this INRMP continues to perform that function for all ESA-listed species on the Complex and those that utilize waters adjacent to the Complex. Effective communication and partnership with the Federal regulatory agencies are essential to successfully perform this responsibility.

2.3.2.2 Gopher Tortoise

The gopher tortoise is a federal candidate for listing (76 FR 45130). The NASP Complex has taken a proactive cooperative approach to gopher tortoise management on its properties and is a partner in the Gopher Tortoise Candidate Conservation Agreement (CCA). This CCA facilitates a collaboration between state, federal, and non-governmental, and private organizations to collectively implement proactive gopher tortoise conservation measures across its eastern range (East of the Alabama River). The CCA enables all parties involved to leverage knowledge and funding with a common conservation approach and framework to encourage uniform actions and reporting and integrate monitoring and research efforts with region-wide gopher tortoise management.

Gopher tortoise surveys have been conducted at the NASP Complex since 1996, and have been conducted on NAS Pensacola at least every two years since 2004. Survey reports were prepared by Student Conservation Association (SCA) participants in 2004, 2008, 2011, and 2012 (Davis 2004; Hoggard 2008; Belcher 2011; Busam 2012). These surveys focused on NAS Pensacola, with the total number of burrows observed on NAS Pensacola ranging from 124 burrows (41% active) in 2004 to 353 burrows (63% active) in 2012. It is noted, however, that sample effort and area surveyed has increased from 2004 to 2012. The greatest numbers of gopher tortoise burrows have consistently been observed in the clear zone and forests on the southwest portion of Sherman Airfield, particularly along the dirt road connecting the southernmost tip of Runway 01 to Fuel Farm Road. The small forested area directly west of the clear zone was cleared, leaving moderate ground cover and sparse live oaks, and observations suggest recent inhabitation by gopher tortoises. Gopher tortoises have also been observed on the west of the airfield at Bronson Field (Hoggard 2008; Surdick 2010) and four burrows were observed at Saufley Field in 2010 (Surdick 2010).

Active management of the xeric uplands is critical to the long-term viability of gopher tortoises. Gopher tortoise densities are concentrated in small openings and in cleared areas where herbaceous vegetation is more abundant. Prescribed burning and thinning occurs at the NASP Complex and these activities enhance gopher tortoise habitat (Landers 1980; Mushinsky and Gibson 1991). Mowing occurs sporadically in the areas of NAS Pensacola where gopher tortoises are known to be abundant, and this is done with the intention of enhancing habitat and forage for the species. All activities that disturb natural groundcover such as root-raking and windrowing are avoided, when possible, in known gopher tortoise habitat.

2.3.2.3 Reticulated Flatwoods Salamander

Reticulated flatwoods salamanders were not observed during a 2010-11 survey designed to identify the species and its suitable habitat at the NASP Complex (Buhlmann 2011). No wetlands at NAS Pensacola, Bronson Field, and Saufley Field were found to be optimal for reticulated flatwoods salamanders. The most suitable site was the Fairy Shrimp Wetland on the northern portion of NAS Pensacola (Buhlmann 2011). Previous surveys of the natural communities at the NASP Complex also did not detect the presence of reticulated flatwoods salamanders (FNAI 1997; FNAI 2010).

2.3.3 Migratory Birds

The most recent migratory bird inventories of the NASP Complex identified a total of 135 bird species across all four properties (GSRC 2015; GSRC 2017). They are listed in Table 2-6. No Federally-listed species were observed, but four state-listed threatened species were documented: black skimmer (*Rynchops niger*), least tern (*Sterna antillarum*), little blue heron (*Egretta*

caerulea), and American kestrel (*Falco sparverius*). No Federally listed rare, threatened, or endangered species were observed. The NAS Pensacola complex has a diverse avian community that changes seasonally. Diversity of avian species was highest during the breeding season (spring) and summer migration periods.

Table 2-6. Bird Species Observed Seasonally at the NAS Pensacola Complex in 2014 and 2016.

Common Name	Scientific Name	2014	2016	Spring	Summer	Autumn	Winter
American crow	<i>Corvus brachyrhynchos</i>	X	X	B C P S	B C P S	B P S	P S
American kestrel	<i>Falco sparverius</i>	X	X	P S		P	P S
American redstart	<i>Setophaga ruticilla</i>		X	P			
American robin	<i>Turdus migratorius</i>	X	X	C S	B P		B C P S
Bachman's sparrow	<i>Peucaea aestivalis</i>		X	P			
Bald eagle	<i>Haliaeetus leucocephalus</i>	X	X	P		B P	P
Bank swallow	<i>Riparia riparia</i>	X	X		B P S		P
Barn swallow	<i>Hirundo rustica</i>	X	X	P	B P	P	B
Barred owl	<i>Strix varia</i>	X	X	P	P S	P	
Belted kingfisher	<i>Megaceryle alcyon</i>	X	X	B	B	P	B P
Black skimmer	<i>Rynchops niger</i>		X		P		
Black vulture	<i>Coragyps atratus</i>		X		S		
Black-andwhite warbler	<i>Mniotilta varia</i>	X			P	B	
Black-bellied whistling duck	<i>Dendrocygna autumnalis</i>		X		B		
Black-crowned night-heron	<i>Nycticorax nycticorax</i>		X		P		
Blue grosbeak	<i>Passerina caerulea</i>	X	X	P	B S		
Blue jay	<i>Cyanocitta cristata</i>	X	X	B C P S	B C P S	B C P S	B C P S
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>	X	X	B P S	B C P	B P	C P S
Blue-headed vireo	<i>Vireo solitaries</i>		X	B			
Blue-winged teal	<i>Anas discors</i>	X	X			P	B
Blue-winged warbler	<i>Vermivora cyanoptera</i>		X			S	
Brown pelican	<i>Pelecanus occidentalis</i>	X	X	B P	B P	B P	B P
Brown thrasher	<i>Toxostoma rufum</i>	X	X	B C P S	C P S	B C P S	P
Brown-headed cowbird	<i>Molothrus ater</i>	X		P	B C P		P
Brown-headed nuthatch	<i>Sitta pusilla</i>	X	X	C		B P	
Bufflehead	<i>Bucephala albeola</i>		X				P
Carolina chickadee	<i>Poecile carolinensis</i>	X	X	B C P S	B C P S	B C P S	B P S
Carolina wren	<i>Thryothorus ludovicianus</i>	X	X	B C P S	B C P S	B C P S	B C P S
Cedar waxwing	<i>Bombycilla cedrorum</i>	X	X	B C P			P
Chimney swift	<i>Chaetura pelagica</i>	X	X	C P	B C P	P	
Chipping sparrow	<i>Spizella passerine</i>	X	X				B
Clapper rail	<i>Rallus crepitans</i>		X	B P	P		
Common goldeneye	<i>Bucephala clangula</i>	X		P			
Common grackle	<i>Quiscalus quiscula</i>	X			P		
Common ground-dove	<i>Columbina passerina</i>	X	X		P	P	P
Common loon	<i>Gavia immer</i>	X	X	P			B P
Common merganser	<i>Mergus merganser</i>	X		P			P
Common nighthawk	<i>Chordeiles minor</i>	X	X		B P S		
Common tern	<i>Sterna hirundo</i>	X		P			
Common yellowthroat	<i>Geothlypis trichas</i>	X	X	C		B C P	
Cooper's hawk	<i>Accipiter cooperii</i>	X	X		B C P	C P S	

Table 2-6. Bird Species Observed Seasonally at the NAS Pensacola Complex in 2014 and 2016.

Common Name	Scientific Name	2014	2016	Spring	Summer	Autumn	Winter
Double-crested cormorant	<i>Phalacrocorax auritus</i>	X	X	BP		P	BP
Downy woodpecker	<i>Picooides pubescens</i>	X	X	BCP	BCPS	BCP	BCPS
Eastern bluebird	<i>Sialia sialis</i>	X	X	BCPS	CPS	BCPS	CPS
Eastern kingbird	<i>Tyrannus tyrannus</i>	X	X	PS	P	CP	
Eastern meadowlark	<i>Sturnella magna</i>		X		PS		
Eastern phoebe	<i>Sayornis phoebe</i>	X	X	P		BP	PS
Eastern towhee	<i>Pipilo erythrophthalmus</i>	X	X	BCPS	BCPS	BCPS	CPS
Eastern whip-poor-will	<i>Antrostomus vociferous</i>		X	P			
Eastern wood-pewee	<i>Contopus sordidulus</i>	X	X	P		P	
Eurasian collared-dove	<i>Streptopelia decaocto</i>	X	X	P	C	CP	
European starling	<i>Sturnus vulgaris</i>	X	X	CPS	CPS	P	CP
Field sparrow	<i>Spizella pusilla</i>	X		C		C	
Fish crow	<i>Corvus ossifragus</i>	X	X	CPS	CPS	B	P
Forster's tern	<i>Sterna forsteri</i>	X	X	P		BP	P
Franklin's gull	<i>Leucophaeus pipixcan</i>	X		P			
Gray catbird	<i>Dumetella carolinensis</i>	X	X	S	CP	BCPS	BP
Great blue heron	<i>Ardea herodias</i>	X	X	BP	BPS	BCP	BCP
Great egret	<i>Ardea alba</i>	X	X	BP	BPS	BP	P
Great-crested flycatcher	<i>Myiarchus crinitus</i>	X	X		BCPS		
Great-horned owl	<i>Bubo virginianus</i>		X	P	P		
Green-winged teal	<i>Anas crecca</i>	X	X	P			B
Hairy woodpecker	<i>Picooides villosus</i>	X	X	BCP	BCPS	BCPS	BCPS
Herring gull	<i>Larus argentatus</i>	X	X	P		BP	CP
Hooded merganser	<i>Lophodytes cucullatus</i>	X	X				P
Hooded warbler	<i>Setophaga citrina</i>		X	BP			
Horned grebe	<i>Podiceps auritus</i>	X	X				P
House finch	<i>Haemorhous mexicanus</i>	X	X		CP		B
House sparrow	<i>Passer domesticus</i>	X			C		
Killdeer	<i>Charadrius vociferus</i>	X	X	BCPS	CP	BS	BPS
Laughing gull	<i>Leucophaeus atricilla</i>	X	X	BCP	BP	BCP	CP
Least flycatcher	<i>Empidonax minimus</i>		X			CP	
Least sandpiper	<i>Calidris minutilla</i>	X	X	B			P
Least tern	<i>Sternula antillarum</i>	X	X	B	BP	P	
Little blue heron	<i>Egretta caerulea</i>		X	BP	B		P
Loggerhead shrike	<i>Lanius ludovicianus</i>	X	X		CP	P	
Louisiana waterthrush	<i>Parkesia motacilla</i>		X	B	S		
Mallard	<i>Anas platyrhynchos</i>	X	X	BP	P	P	P
Marsh wren	<i>Cistothorus palustris</i>	X	X	P		P	P
Mississippi kite	<i>Ictinia mississippiensis</i>	X	X		BCPS		
Mourning dove	<i>Zenaidura macroura</i>	X	X	BCPS	BCPS	BCPS	BCPS
Neotropic cormorant	<i>Phalacrocorax brasilianus</i>	X		BCP			
Northern cardinal	<i>Cardinalis cardinalis</i>	X	X	BCPS	BCPS	BCPS	BCPS
Northern flicker	<i>Colaptes auratus</i>	X	X	BCP	BCPS	P	B
Northern harrier	<i>Circus cyaneus</i>	X				S	
Northern mockingbird	<i>Mimus polyglottos</i>	X	X	BCPS	BCPS	BCPS	BCP
Northern parula	<i>Setophaga americana</i>	X	X	B	B		
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	X		CPS	P	P	

Table 2-6. Bird Species Observed Seasonally at the NAS Pensacola Complex in 2014 and 2016.

Common Name	Scientific Name	2014	2016	Spring	Summer	Autumn	Winter
Orange-crowned warbler	<i>Vermivora celata</i>	X	X			P	B
Osprey	<i>Pandion haliaetus</i>	X	X	B P	B P	B P	P
Palm warbler	<i>Setophaga palmarum</i>	X	X	C P S		P	B C P
Peregrine falcon	<i>Falco peregrinus</i>	X					P
Pied-billed grebe	<i>Podilymbus podices</i>	X	X	C P		P	P
Pileated woodpecker	<i>Hylatomus pileatus</i>		X	B P	B C	B	P
Pine warbler	<i>Setophaga pinus</i>	X	X	P	B C P	B C P S	B C P S
Prairie warbler	<i>Setophaga pinus</i>		X				P
Prothonotary warbler	<i>Protonotaria citrea</i>		X	B			
Purple finch	<i>Haemorhous purpureus</i>		X		B		
Purple martin	<i>Progne subis</i>	X	X	S	B P		P
Red-bellied woodpecker	<i>Melanerpes carolinus</i>	X	X	B C P S	B C P S	B C P S	B C P S
Red-breasted merganser	<i>Mergus serrator</i>	X		P			B
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	X	X		C		
Red-shouldered hawk	<i>Buteo lineatus</i>	X	X	B	C P	C P S	P S
Red-tailed hawk	<i>Buteo jamaicensis</i>	X	X	C P S	B C P	C P	
Red-winged blackbird	<i>Agelaius phoeniceus</i>	X	X	B C P	B C P S	C P	
Redhead	<i>Aythya american</i>	X		P			
Ring-billed gull	<i>Larus delawarensis</i>	X	X	P			B P
Ring-necked duck	<i>Aythya collaris</i>		X				C
Rock pigeon	<i>Columba livia</i>	X				P	
Royal tern	<i>Thalasseus maximus</i>	X	X	P	B P	B P	P
Ruby-crowned kinglet	<i>Regulus calendula</i>	X	X	P			B
Ruby-throated hummingbird	<i>Archilochus colubris</i>	X				C	
Sanderling	<i>Calidris alba</i>		X				B P
Sandwich tern	<i>Thalasseus sandvicensis</i>	X	X		P	B	B P
Savannah sparrow	<i>Passerculus sandwichensis</i>	X	X	C P S		B P	C P S
Scarlet tanager	<i>Piranga olivacea</i>		X	S			
Sharp-shinned hawk	<i>Accipiter striatus</i>	X		P			
Snowy egret	<i>Egretta thula</i>	X	X	B C P	B C P	P	C P
Song sparrow	<i>Melospiza melodia</i>	X					P
Tree swallow	<i>Tachycineta bicolor</i>		X		B		
Tufted titmouse	<i>Baeolophus bicolor</i>	X	X	B C P S	B P S	B C P S	P S
Turkey vulture	<i>Cathartes aura</i>	X	X	S	B P S	P S	P S
Western sandpiper	<i>Calidris mauri</i>		X				P
White ibis	<i>Eudocimus albus</i>	X			S		
White-crowned sparrow	<i>Zonotrichia leucophrys</i>	X	X				B
White-eyed vireo	<i>Vireo griseus</i>	X	X	B C P S	C P S	S	
White-throated sparrow	<i>Zonotrichia albicollis</i>	X	X				B
Willet	<i>Tringa semipalmata</i>	X	X	P		P	P
Wilson's plover	<i>Charadrius wilsonia</i>	X			P		
Wood duck	<i>Aix sponsa</i>	X					C
Yellow warbler	<i>Setophaga petechia</i>	X				B	
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	X			B P S		
Yellow-breasted chat	<i>Icteria virens</i>		X		P		
Yellow-rumped warbler	<i>Setophaga coronata</i>	X	X	B C P S			B C P S

Table 2-6. Bird Species Observed Seasonally at the NAS Pensacola Complex in 2014 and 2016.

Common Name	Scientific Name	2014	2016	Spring	Summer	Autumn	Winter
Yellow-throated warbler	<i>Setophaga dominica</i>		X	P			

B=observed at Bronson Field, C=observed at Corry Station, P=observed at NAS Pensacola Main Station, S=observed at Saufley Field

2.3.4 Forest Resources

The NASP Complex manages approximately 2,487 acres of forestland. This includes forest stands at NAS Pensacola (Figure 2-10), Bronson Field (Figure 2-11), Corry Station (Figure 2-12), and Saufley Field (Figure 2-13). Basic stand data and prescription information is stored as a database for use in the computer program FMIS. The NASP Complex uses this database in its Forest Management Program. The predominant forest cover at the NASP Complex includes slash, sand, and longleaf pine. Inventory data for each forest stand is located in Table B-1 (see Appendix B).

The commercial market for forest products in the region is relatively good. There are pulp mills in Escambia County, Florida, and Mobile and Escambia Counties, Alabama; sawmills in Escambia and Baldwin Counties, Alabama; and pole mills in Escambia County, Alabama.

2.4 RECREATIONAL ACTIVITIES

The Morale, Welfare, and Recreation Division (MWR) promotes and maintains the morale and welfare of military personnel and their dependents, both active and retired, in addition to DOD civilians when possible. This is accomplished through the programming and operation of recreation and club facilities. The division maintains branches for NAS Pensacola, Corry Station, Bronson Field, and NAS Whiting Field. The MWR maintains outdoor recreational programs and facilities such as the marinas, picnic pavilions, campgrounds, cabins, golf course, and ball fields. The Complex also offers equipment rentals, trips (e.g., rafting, canoeing, hiking, biking, horseback riding), camper rentals, and cabin rentals. The NRM reviews and provides natural resources recommendations and guidance for all new projects proposed by MWR.

The general public is allowed access to several natural and cultural resources at the NASP Complex. The CO authorizes access for educational and outdoor natural resources recreational activities consistent with the military mission and security levels. Currently, public access is granted for all NPS areas; cultural resources areas, such as the Presidio Santa Maria de Galvé and the Pensacola Lighthouse; the Sunec-ke Nature Trail, Bayou Grande Nature Trail, and Trout Point Nature Trail at NAS Pensacola; and the Saufley Field Nature Trail at Saufley Field. In addition, the public has limited access to the MWR jogging/fitness trail and to Bayou Grande and Saufley Field primitive camping areas on a reservation basis. Currently, Bronson Field is open to

the public by special request, and scout groups are allowed access to the primitive camping areas at BARP.

Outdoor recreation programs at the NASP Complex include a wide variety of outdoor recreation opportunities, which take advantage of physical resources found on the properties. The NASP Complex is located in southern Escambia County, in an area of the Florida Panhandle where an abundance of recreational and potential recreational opportunities exist. NAS Pensacola is bordered on three sides by large bodies of water including Pensacola Bay, Bayou Grande, and Big Lagoon. Bronson Field borders Perdido Bay.

The outdoor recreation program at the NASP Complex derives numerous benefits from the attractive natural settings in and around the Complex and from the temperate marine climate associated with the upper Gulf Coast. The warm climate and proximity of the Complex to several large bodies of water affords such opportunities as swimming, fishing, canoeing, sailing, and motorized boating on a year-round basis. The MWR operates and manages two marinas and a family picnic area at NAS Pensacola with access to water-related recreational opportunities. Bayou Grande Sailing Marina and Sherman Cove Marina offer opportunities for renting boats, canoes, and fishing equipment. They also provide boat ramps and storage facilities for private watercrafts. In addition, BARP offers boat rentals and access to Perdido Bay.

In addition to aquatic recreational opportunities, the Complex offers several other outdoor recreation activities. Additional concentrated outdoor recreation activities include camping, fishing, picnicking, fitness/jogging, and outdoor education/interpretation. Dispersed outdoor recreation activities consist of hiking, bicycling, and nature study. Hunting and the use of off-road vehicles are prohibited at the NASP Complex. There are also numerous significant historical and archeological sites at the Complex including the Pensacola Lighthouse, which is managed by the USCG and the Pensacola Lighthouse Association, and two NPS-managed areas, Fort Barrancas, and Advanced Redoubt, which are operated and managed by GINS. Outdoor recreational opportunities available at the NASP Complex are summarized in Appendix C. NPS maps showing recreational areas within the NASP Complex may be obtained from the Natural Resources Manager.

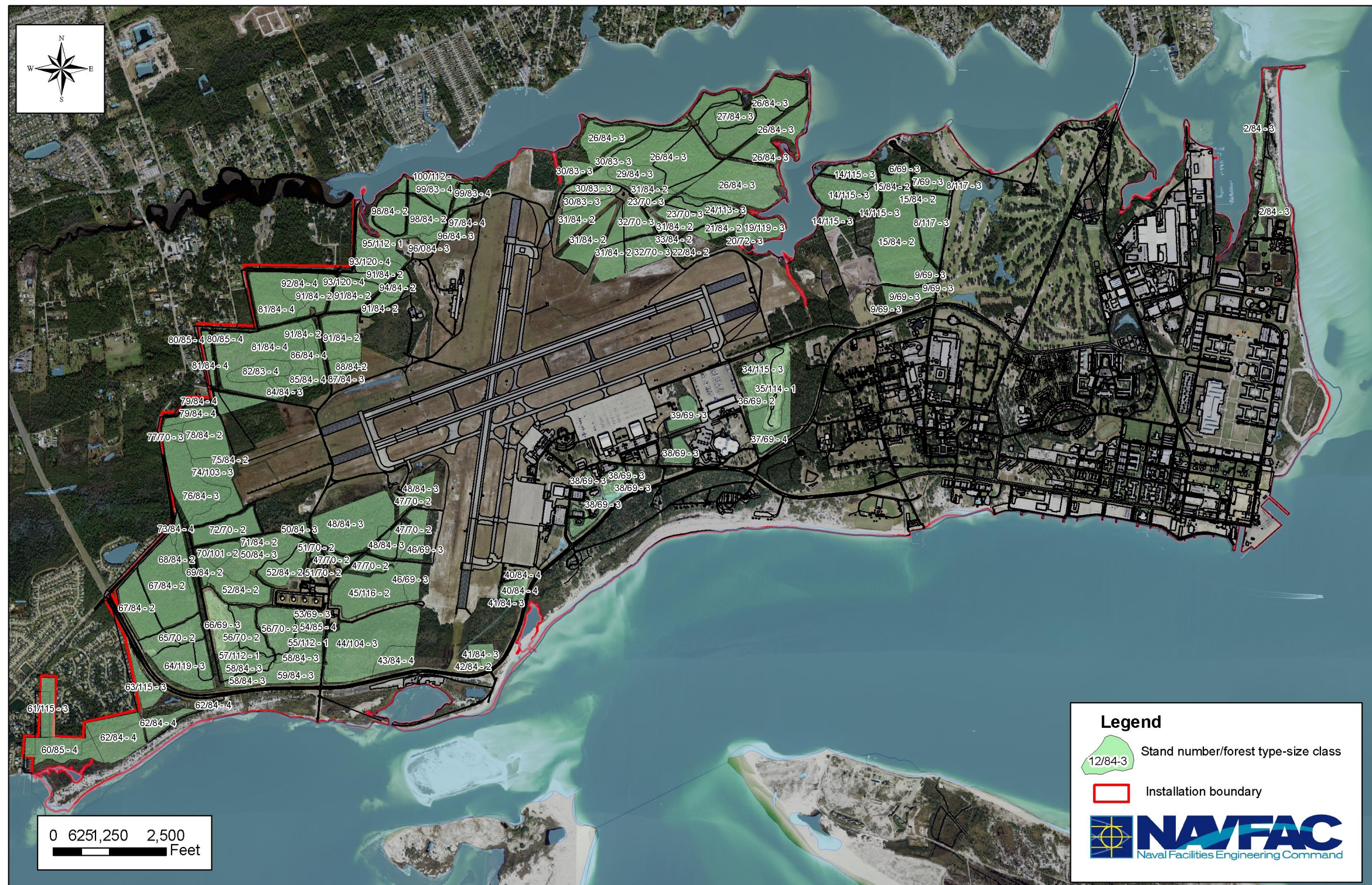


Figure 2-10. Forest Stands at NAS Pensacola

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FIGURE 2-10 Summary Table
Forest Stand Map Codes for NAS Pensacola

Forest Cover Type	Code	Acres
Sand Pine	69	113
Longleaf Pine	70	81
Southern Scrub Oak	72	3
Longleaf Pine / Slash Pine	83	52
Slash Pine	84	912
Slash Pine / Hardwood	85	36
Bald Cypress	101	6
Water Tupelo / Swamp Tupelo	103	25
Sweetbay / Swamp Tupelo / Redbay	104	52
Titi Swamp	112	39
Sand pine / Longleaf Pine / Live Oak	113	5
Brush	114	16
Sand Pine / Hardwood	115	107
Sand / Slash Pine	116	34
Sand / Longleaf Pine	117	76
Slash Pine / Eastern Redcedar	118	3
Sand Pine / Live Oak	119	35
<u>Slash Pine / Longleaf Pine / Hardwood</u>	<u>120</u>	<u>12</u>
Total		1,607
Size Class	Code	Acres
Non-Stocked	1	39
Seedling / Sapling	2	205
Poletimber	3	1,041
<u>Sawtimber</u>	<u>4</u>	<u>322</u>
Total		1,607

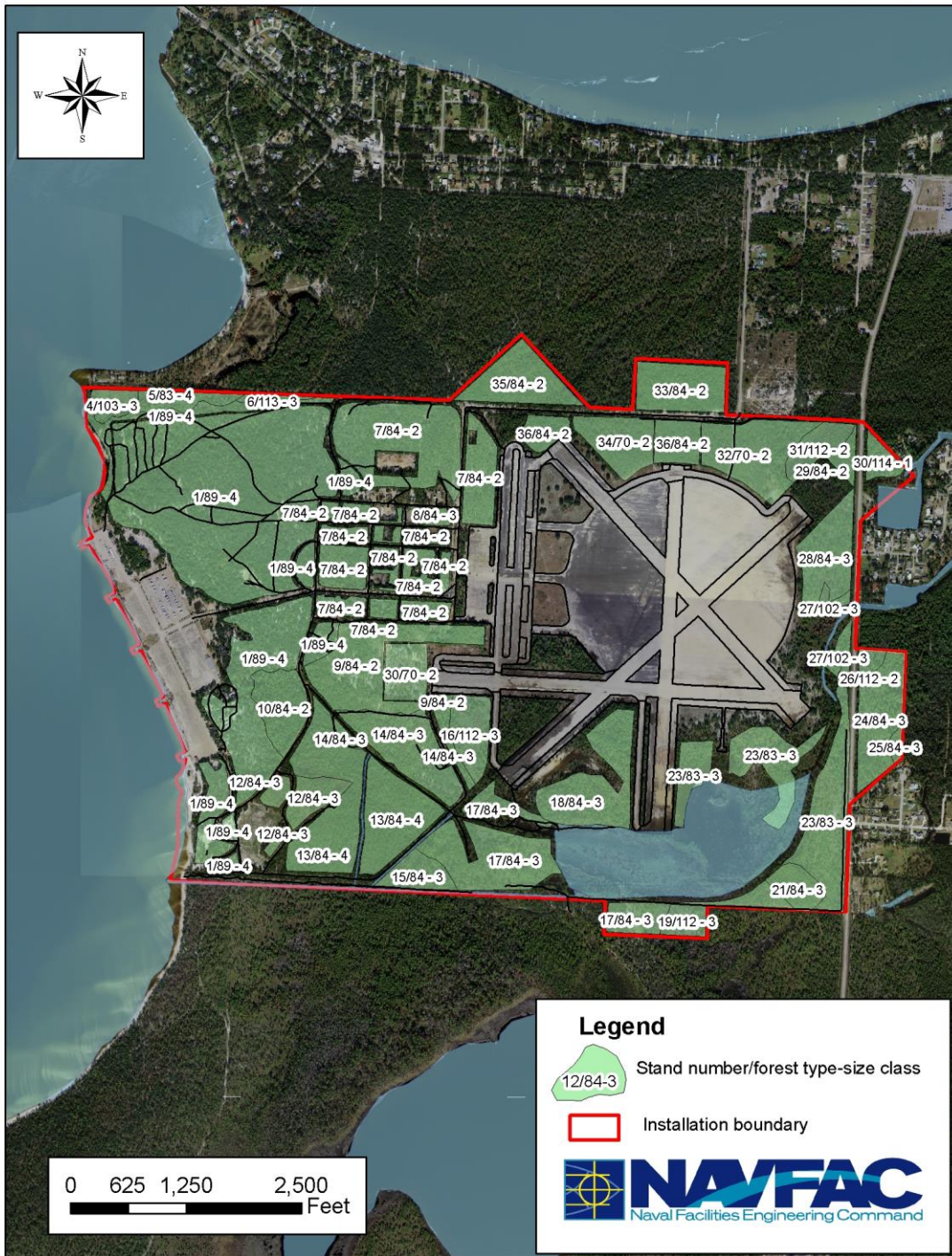


Figure 2-11. Forest Stands at Bronson Field

FIGURE 2-11 Summary Table
Forest Stand Map Codes for Bronson Field

Forest Cover Type	Code	Acres
Longleaf Pine	70	33
Longleaf Pine / Slash Pine	83	55
Slash Pine	84	309
Live Oak	89	146
Bald Cypress / Water Tupelo	102	7
Water Tupelo / Swamp Tupelo	103	2
Sweetbay / Swamp Tupelo / Redbay	104	52
Titi Swamp	112	29
<u>Sand pine / Longleaf Pine / Live Oak</u>	<u>113</u>	<u>2</u>
Total		583

Size Class	Code	Acres
Non-Stocked	1	29
Seedling / Sapling	2	148
Poletimber	3	254
<u>Sawtimber</u>	<u>4</u>	<u>152</u>
Total		583



Figure 2-12. Forest Stands at Corry Station

FIGURE 2-12 Summary Table
Forest Stand Map Codes for Corry Station

Forest Cover Type	Code	Acres
Slash Pine	84	106
Total		106

Size Class	Code	Acres
Non-Stocked	1	0
Seedling / Sapling	2	0
Poletimber	3	68
Sawtimber	4	38
Total		106

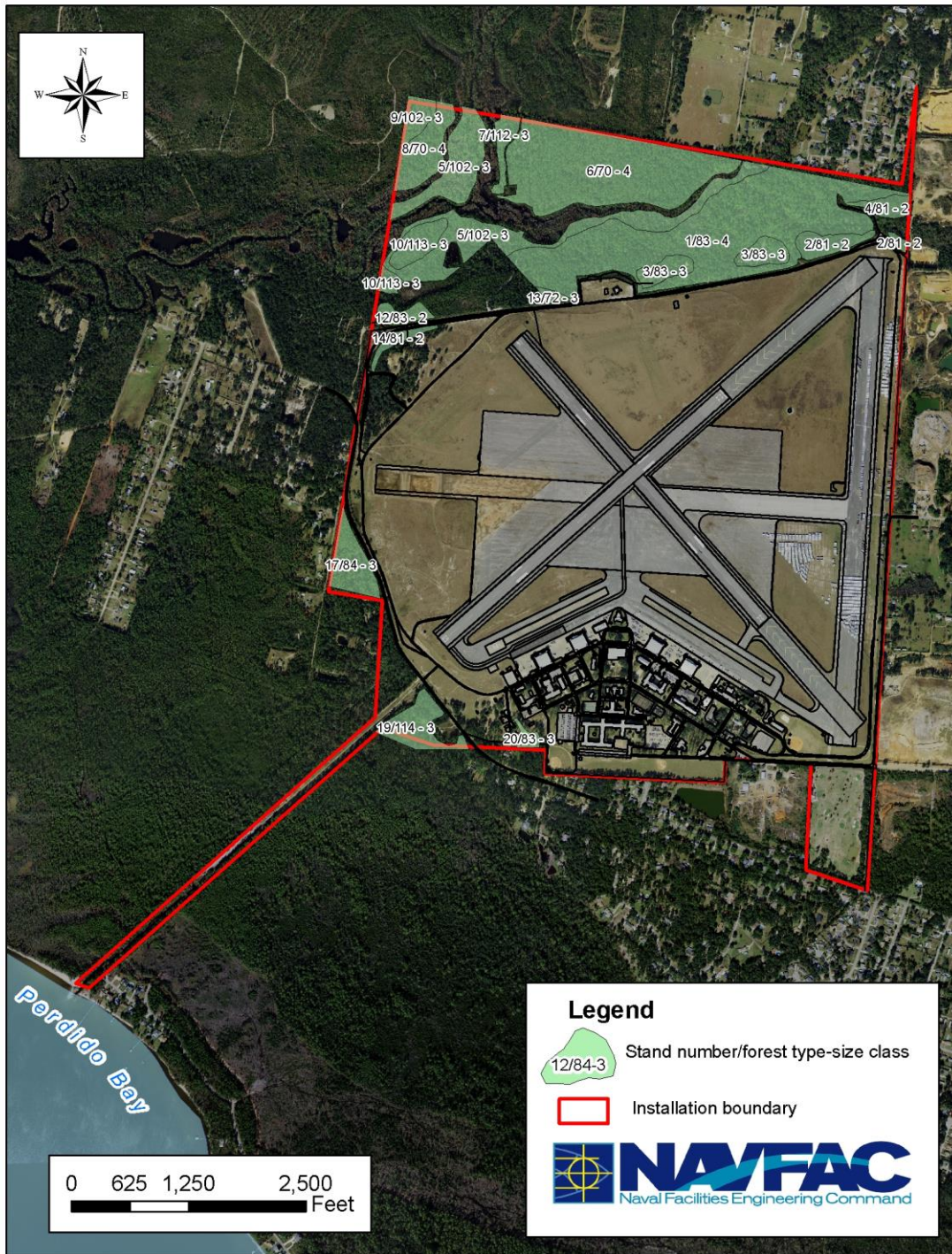


Figure 2-13. Forest Stands at Saufley Field

FIGURE 2-13 Summary Table
Forest Stand Map Codes for Saufley Field

Forest Cover Type	Code	Acres
Longleaf Pine	70	51
Longleaf Pine / Scrub Oak	71	1
Loblolly Pine	81	11
Longleaf Pine / Slash Pine	83	66
Slash Pine	84	5
Bald Cypress / Water Tupelo	102	46
Titi Swamp	112	3
Sand pine / Longleaf Pine / Live Oak	113	3
<u>Brush</u>	<u>114</u>	<u>2</u>
Total		191

Size Class	Code	Acres
Non-Stocked	1	3
Seedling / Sapling	2	11
Poletimber	3	67
<u>Sawtimber</u>	<u>4</u>	<u>110</u>
Total		191

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3

Environmental Management Strategy and Mission Sustainability

3.1 SUPPORTING SUSTAINABILITY OF THE MILITARY MISSION AND THE NATURAL ENVIRONMENT

Sustainability is the ability to provide for the needs of the current mission without damaging the ability of future missions to maintain their needs in coordination with natural resources adaptive management. A sustainable process can be carried out over and over without substantial negative environmental impacts, increased operational costs or a decrease in mission readiness and training.

Training and management activities detrimental to the functional values of the natural communities on the NASP Complex, Pensacola Bay, Bayou Grande, or Perdido Bay can affect the Navy's military mission. For example, improper timber management around the airfields could result in encroachment of trees and shrubs into the runway clear zones, dead and dying trees that create perches for large bird species, and heavy wildland fire fuel loads. These consequences would pose visibility, BASH, and smoke issues that would negatively impact aviation training. Conversely, properly managed timber provides open canopy and herbaceous forage to the benefit of imperiled species such as the gopher tortoise, improves visibility, and reduces potential for wildland fires. Reforestation of harvested timber also prevents erosion and increased sediment loading in stormwater runoff, which may increase turbidity and reduce water quality in the surrounding embayments, jeopardizing vital aquatic habitat, including critical habitat for the gulf sturgeon. Environmental conditions detrimental to the habitat of federally or state-protected species could result in enforcement action by the responsible regulatory agency, possibly threatening the mission of the NASP Complex.

Nuisance wildlife and outbreak of disease on the Complex could pose a threat to implementation of the military mission through the infection of military personnel and the consequent limitation of access to areas of the installation to control a problem.

Outdoor recreational use by the public can affect the security and safety of the military mission. Outdoor recreational opportunities must be planned, developed, and used consistently with the constraints of the military mission, so as not to affect security or safety on the NASP Complex.

Unplanned and uncontrollable use of natural recreational areas by the general public may also affect the military mission.

Monitoring and measurement is fundamental to adaptive natural resources management and mission sustainability. The NASP Complex will follow legal mandates and requirements to ensure the effectiveness of management, plans, controls, and training is monitored. Furthermore, the use of Best Management Practices (BMPs) and established monitoring protocols will enable the NASP Complex natural resources program to identify its progress toward achieving goals and objectives. Without effective monitoring and measurement it would be difficult for natural resources management to continually improve, which is the basis of sustainability.

3.1.1 Military Mission and Sustainable Land Use

The primary military mission on the NASP Complex is to fully support the operational and training missions of assigned tenants, enhancing the readiness of the U.S. Navy, its sister armed services and other customers, especially with regard to aviation training. Merging the military mission with sustainable land use can be achieved through the maintenance of forestland to prevent encroachment onto the airfields and sustaining native environments such as low-lying scrubs and wet prairies. Maintenance of natural environments also better simulates “real world” conditions for trainees. Sustaining protected species habitat and air and water quality keeps the NASP Complex in compliance with environmental laws, preventing regulatory consequences that can lead to financial penalties and mission delays. Effective partnering with adjacent landholders such as the Tarkiln Bayou State Preserve, GINS, and Escambia County will help limit urban encroachment, thereby limiting effects of aircraft noise on the surrounding populace. This INRMP creates a framework for sustainable land use that is compatible with the military training requirements while encouraging native and natural species abundance. Through the Commander Navy Region Southeast (CNRSE) and its constituent elements, the NASP Complex integrates its land use to meet the current and future military mission and ensuring the conservation of the natural resources upon which effective training rely.

3.1.2 Defining Impact on the Military Mission

The military mission at the NASP Complex requires safe, natural-state land and environments for the training of naval aviators and other tenants. The NASP Complex will comply with environmental regulations and strive to conserve the natural resources while also conducting effective training. Through the coordination of the various environmental programs (i.e., Forest Management, Fish and Wildlife Management), the NASP Complex ensures the availability of quality training opportunities and the protection of the natural resources on its properties. The

NASP Complex NRM and installation mission leadership and operations should coordinate with each other during the planning phase of natural resources projects and training missions to ensure compatibility between the military mission and natural resources management. Resolutions should be established to ensure environmental regulations (e.g., ESA, Clean Water Act [CWA], etc.) are being satisfied while improving land and water resources and meeting the military mission.

3.1.3 Relationship to the Gulf of Mexico Range Complex and Pensacola Operational Area Management Plans

The Gulf of Mexico (GOMEX) Range Complex represents an essential combination of air, land, and sea space that provides realistic training areas for Navy personnel. The GOMEX Range Complex includes air, land, and offshore areas Florida, Alabama, Mississippi, Louisiana, and Texas. An Operating Area (OPAREA) is a designated area of the ocean organized and managed to provide a safe and controlled surface and underwater military training and testing environment. The Pensacola OPAREA is one of four OPAREAs in the GOMEX Range. An Environmental Impact Statement / Overseas Environmental Impact Statement (EIS/OEIS) was prepared for Navy operations within the GOMEX Range and its associated OPAREAs in 2010 and was completed in cooperation with the National Marine Fisheries Service (NMFS) Office of Protected Resources. Potential impacts to the physical, environmental, and manmade environments from aircraft that take off and land at the NASP Complex as part of training on the Range are evaluated in the GOMEX Range Complex Final EIS/OEIS, Volumes 1 and 2. No natural resources management actions described in this INRMP are compromised to accommodate training on the GOMEX Range or within the Pensacola OPAREA.

3.2 NATURAL RESOURCE CONSULTATION REQUIREMENTS

All Federal agencies are required to implement protection programs for designated species and to use their authorities to further the purposes of the ESA. Furthermore, if a Federal action of any kind is found to potentially impact any species protected by the ESA, the responsible Federal agency must enter into Section 7 consultation with the USFWS or NMFS. The USFWS is the primary agency responsible for implementing the ESA, except for actions involving marine animals or anadromous fish, such as the gulf sturgeon, for which the NMFS is the responsible agency. Several federally-listed species have the potential to occur on the NASP Complex and portions of Pensacola Bay are designated critical habitat for the gulf sturgeon, a federally-threatened species. Section 7 consultation could be required for future military projects that have a potential to impact federally-listed species or designated critical habitat.

The CO of the NASP Complex or his environmental agent coordinates with the appropriate regulatory agency on any actions that have the potential to impact rare, threatened, or

endangered (RTE) species. Early informal consultation with the acting ESA agency helps resolve potential problems and address issues in a proactive and positive manner, and is the preferred method of consultation. Informal consultation includes all discussions and correspondence with the regulatory agency, and occurs prior to formal consultation to determine whether a proposed Federal action may affect listed species or critical habitat. A flow chart of the informal consultation process is provided in Figure 3-1.

The NASP Complex may determine, through the informal consultation process or simply by the nature of the proposed action, that formal consultation is required for an action. If the NASP Complex determines an activity may have an adverse effect upon a federally-listed species and/or critical habitat, the NASP Complex will enter into formal consultation with USFWS or NMFS to determine whether a proposed action is likely to jeopardize the continued existence of listed species, destroy or adversely modify designated critical habitats, or potentially result in the incidental take of a species. The formal consultation process begins with a NASP Complex written request and submittal of a complete initiation package and concludes with USFWS's or NMFS's issuance of a biological opinion and "incidental take" statement, if applicable. A flow chart detailing the steps of the formal consultation process is presented as Figure 3-2.

Essential marine and anadromous fish habitats (EFHs) are identified and protected by the NMFS, regional fishery management councils (FMC), and other federal agencies under the auspices of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), as amended in 1996. Areas designated as EFH are defined as "...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" according to the Magnuson-Stevens Act. An EFH Assessment will be prepared by the NASP Complex if EFH will be affected by any project on the Complex. This assessment will serve as a supplemental technical report to be incorporated into consultation, as appropriate.

Marine mammals, including the ubiquitous bottlenose dolphin (*Tursiops truncatus*), are protected under the Marine Mammal Protection Act (MMPA). There are two levels of "take" under the MMPA: Level A take encompasses injury or death of the animal. Level B take includes many forms of harassment, which has been interpreted to include sound-in-the-water from activities such as pile driving. NOAA Fisheries has provided criteria for mathematically determining the maximum distance to which sound-in-the-water may travel and constitute a Level B take. Installations may be able to mitigate these takes to zero by implementing a marine mammal observer plan that ensures a shut-down of relevant activities if a marine mammal comes within that distance. Alternatively, the action proponent may pursue an

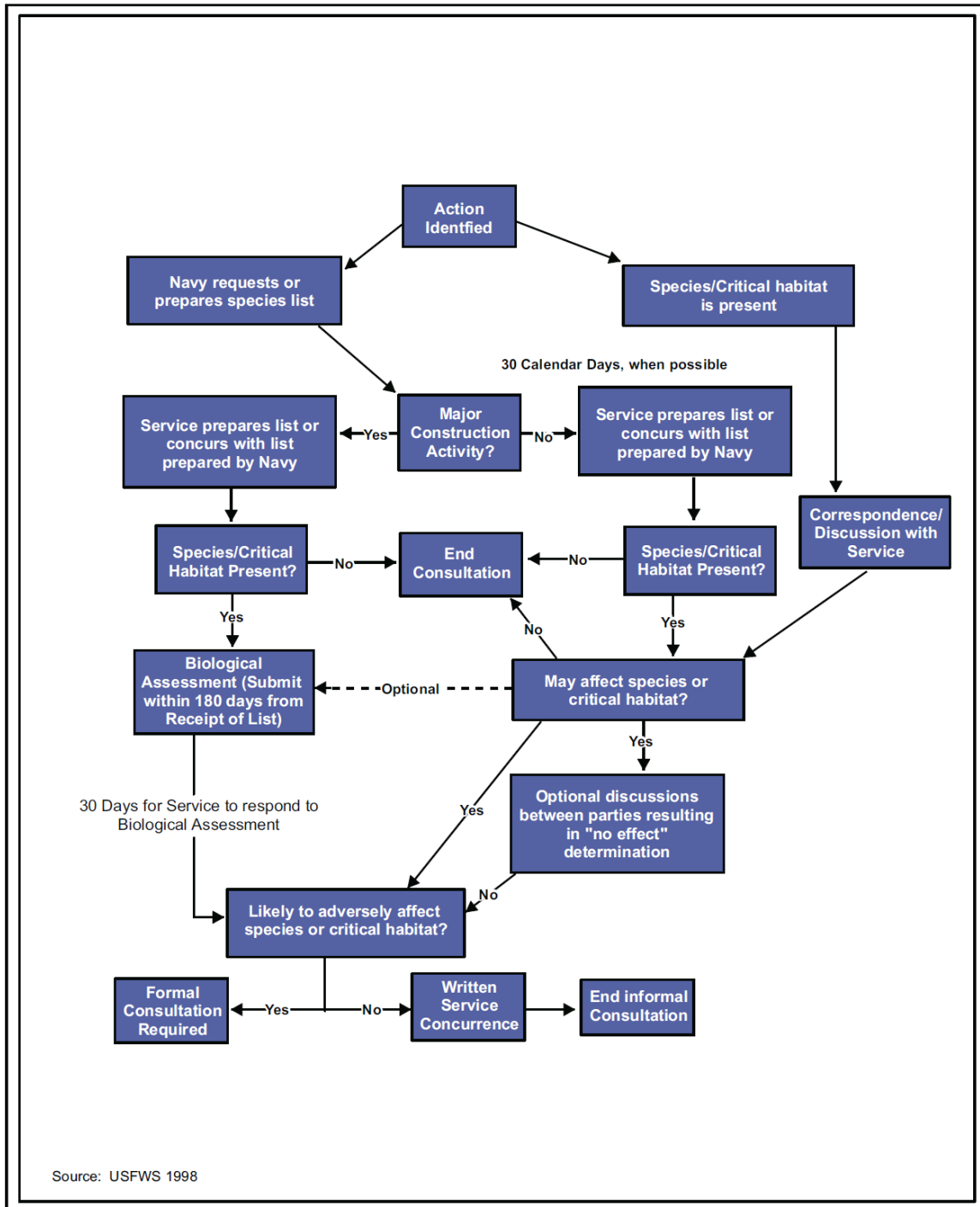


Figure 3-1. Flow Chart for the Informal Consultation Process

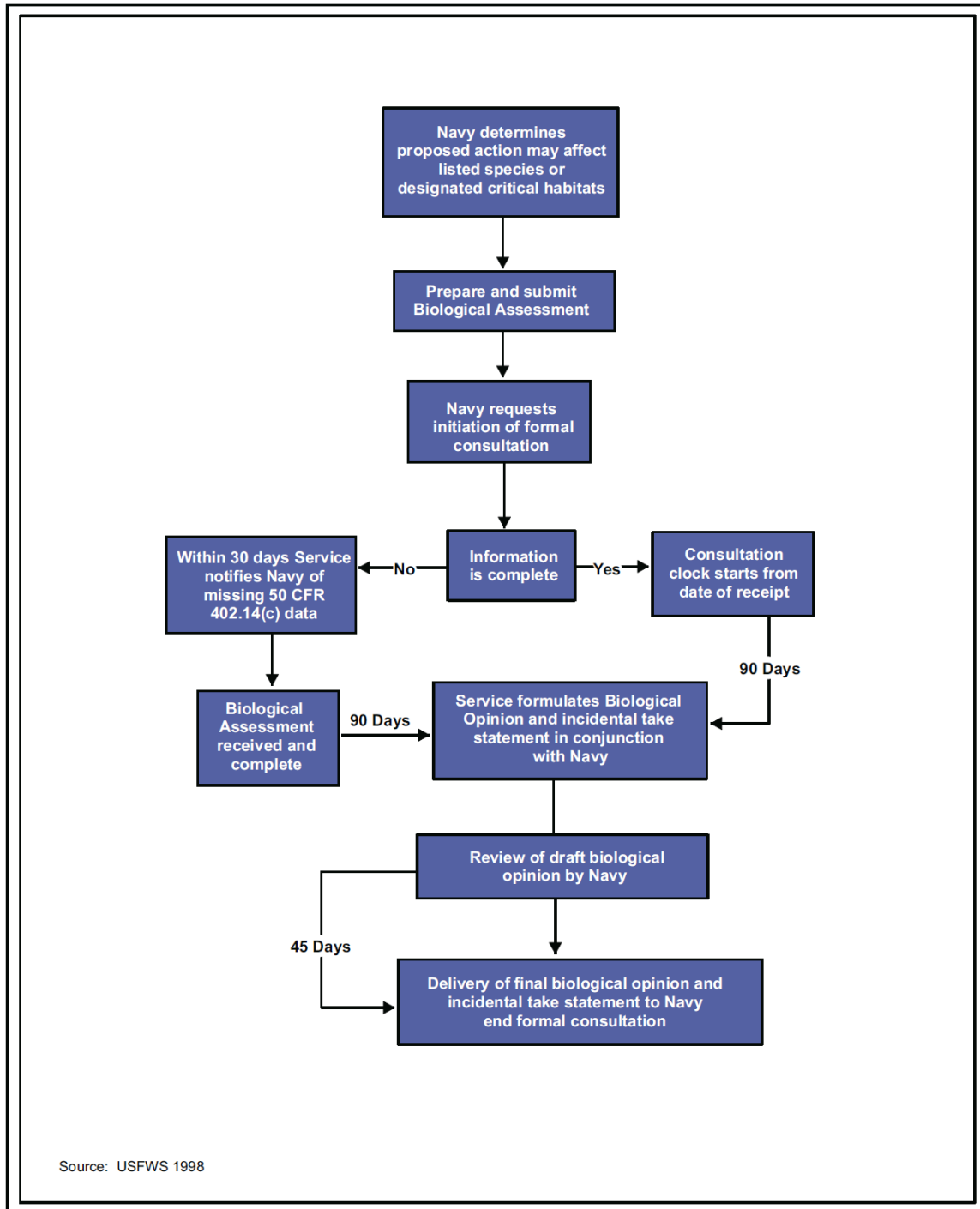


Figure 3-2. Flow Chart for the Formal Consultation Process

incidental harassment authorization (IHA) for the required number of Level B takes, but an IHA cannot be issued unless an Environmental Assessment (EA) is prepared.

The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, or possessing of migratory birds unless permitted by the USFWS. Section 315 of the 2003 National Defense Authorization Act (NDAA) provides as exemption to the Navy for the incidental taking of migratory birds during military readiness activities authorized by the Secretary of Defense or the Secretary of the Navy. However, the Navy must still assess through the NEPA process, or other environmental requirements, the expected impact of proposed or ongoing military readiness activities on migratory bird species likely to occur in the action areas. Military readiness activities are defined under the NDAA as all training and operations of the Armed Forces that relate to combat, and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use. This does not include the routine operation of installation operating support functions, such as administrative offices, military exchanges, commissaries, water treatment facilities, storage facilities, motor pools, morale, welfare, and recreation activities, and mess halls; the operation of industrial activities; or the construction or demolition of facilities listed above.

Current MBTA regulations authorize permits for direct take of migratory birds for activities such as scientific research, education, and depredation control. However, the MBTA does not expressly address the issuance of permits for incidental take, so the Navy is compelled to exercise due diligence for activities requiring NEPA analysis and must develop appropriate and reasonable conservation measures to avoid, minimize, and mitigate identified significant adverse effects to migratory birds and their nests resulting from such activities.

3.3 PLANNING FOR NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE

NEPA requires an environmental analysis of major Federal actions, including actions that occur with Federal funding or on Federal lands. NEPA requires the evaluation of the environmental effects of proposed land use, development, and military training activities. Some Navy actions fall under existing categorical exclusion (CATEX) and require no further analysis. For those actions not covered by an existing CATEX, the initial environmental document, the Environmental Assessment (EA) determines the potential for significant project impacts and the feasibility of proposed actions. The NEPA process requires coordination with appropriate Federal and state agencies and the general public. The public review process scopes or identifies significant issues to develop and evaluate alternatives. The preparation of an Environmental Impact Statement (EIS) occurs only if significant impacts are identified. If the EA finds “no significant impacts”, the Navy would complete the preparation of a formal Finding of No Significant Impact and make it available for public review.

An EA and FONSI were prepared and finalized in 2001 for implementation of this INRMP. The EA evaluated potential environmental impacts that could result from the implementation of various levels of management intensity, with all levels being in compliance with the Sikes Act. The Navy found, based upon the information gathered during preparation of the EA, that the implementation of the INRMP at the NASP Complex would not significantly impact the environment.

3.4 BENEFICIAL PARTNERSHIPS AND COLLABORATIVE RESOURCE PLANNING

The current staffing level of natural resource personnel at the NASP Complex and the need for outside expertise increases the importance of developing cooperative projects with other agencies, universities, contractors, other installations, local residents, conservation organizations, and the Navy command. Cooperating Federal and state agencies, universities, and non-governmental organizations (NGO) can provide a beneficial exchange of technical information, natural resources services, and field assistance.

Stakeholders are those organizations or individuals who have a vested interest in land management on the NASP Complex. Stakeholders include FWC, FDEP, West Florida Regional Planning Council, Gulf Coastal Plain Ecosystem Partnership, Friends of the Prairie, Francis M. Weston Audubon Society, Gulf Coast Environmental Defense, Escambia County Citizens Coalition, and Escambia County Department of Environmental Resources Management. The NASP Complex may also seek guidance from other agencies such as NRCS, the USFS, Florida Forest Service, and the USFWS. The NASP Complex has a diversity of natural resources and has developed partnerships and cooperative agreements for technical assistance in managing its natural resources. The NASP Complex values open communication between the Complex and the surrounding community, which enhances its philosophy of sharing information and resources with other resources management agencies and organizations, including federal, state, and local governmental agencies, and other non-governmental organizations and groups. The development of partnerships with state and federal natural resources agencies, local conservation groups, and academic institutions makes expertise available to natural resources managers, and fosters productive community relationships.

Partnerships, cooperative agreements, and community programs that affect natural resources management at the NASP Complex are discussed below.

- **Gopher Tortoise Candidate Conservation Agreement (GTCCA)** - The GTCCA involves 15 federal, state, and private partners who work together to manage the gopher tortoise across the landscape in an effort to recover its population and reestablish its historic distribution. The NASP installation NRM, as assigned by

CNRSE, manages the Navy Southeast Region GTCCA annual report involving five regional Navy installations.

- **Cooperative Agreement between the DON and the USFWS and the Florida GFWFC, 1979** – In accordance with this Agreement, biologists are able to make visits to review fish and wildlife management practices, which also allows them the opportunity to provide written recommendations for future management.
- **Tri-partite agreement between the DON, the NPS and the Florida Division of Recreation and Parks** –This agreement provides the Installation with professional and technical information and assistance necessary to coordinate actions pertaining to the operation, development, management, and protection of outdoor recreation resources. The NPS and the State of Florida act in an advisory capacity on matters pertaining to the management of outdoor recreation resources on lands administered by the Complex.
- **Bureau of Prisons** – The FPC Pensacola located at Saufley Field was established in April 1988 and provides inmate manpower to various components of the NASP Complex. Inmate labor is primarily used for grounds maintenance and MWR programs.
- **SCA Program** – SCA is a non-profit organization that provides Americorps interns to government agencies for support in natural resources under a Cooperative Agreement between NAVFAC HQ and the SCA in New Hampshire. Twenty-nine students have been employed by the NASP Complex since 1993 and have provided over 18,000 work-hours of natural resources support. The SCA program is a primary support method for conducting regulatory natural resources management. SCA students gain valuable experience in many facets of natural resources management.
- **Tree City USA Program** – This program is administered by the National Arbor Day Foundation in cooperation with the USFS and the National Association of State Foresters. This program promotes effective management of public urban forest resources. NAS Pensacola has been recognized as a Tree City USA Program for its effective management since 1995.
- **Audubon Christmas Bird Count** – The Florida Audubon Society conducts an annual Christmas bird count through a partnership of cooperating agencies. This survey adds to the database of natural resources information for NAS Pensacola.
- **Scouts** – Scouting programs are active at the NASP Complex. Areas at Bronson, Saufley Field, and at NAS Pensacola are regularly used for primitive camping. The Complex also offers opportunities for scouts to participate in projects that could lead to rank advancements. Projects have included maintenance of installation nature trails and installing bird boxes in housing areas.
- **International Coastal Cleanup** – The International Coastal Cleanup is a global project of the Center for Marine Conservation (CMC) and is supported by an international network of environmental and civic organizations, government agencies, industries, and individuals who remove debris and collect valuable information on the amount and types of debris. NAS Pensacola has been a part of this program, which occurs on the third Saturday of September, for over 20 consecutive years.
- **NAS Pensacola and US Forest Service Prescribed Fire Training Center** – This multi-year agreement allows cooperative work and training for prescribed fire management between the NASP Complex and USFS.
- **NAS Pensacola and Gulf Coastal Plain Ecosystem Partnership (GCPEP)** – This multi-year agreement allows for cooperative ecosystem management and natural resources work in the GCPEP partnership area.

- **NAS Pensacola and Florida Forest Service Mutual Aid Agreement** – This multi-year agreement allows for mutual assistance for wildland fire management and control under the Incident Command System.

3.5 PUBLIC ACCESS AND OUTREACH

The Morale, Welfare, and Recreation Division (MWR) promotes and maintains the morale and welfare of military personnel and their dependents, both active and retired, in addition to DOD civilians when possible. This is accomplished through the programming and operation of recreation and club facilities. The MWR has branches at NAS Pensacola, Corry Station, and Blue Angel Recreation Park at Bronson Field. The MWR maintains outdoor recreational programs and facilities such as the marinas, picnic pavilions, campgrounds, cabins, golf course, and ball fields. The MWR also offers equipment rentals, trips (e.g., rafting, canoeing, hiking, biking, horseback riding), camper rentals, and cabin rentals. The NRM reviews and provides natural resources recommendations and guidance for all new projects proposed by MWR.

The general public is allowed access to several natural and cultural resources at the NASP Complex. The CO authorizes access for educational and outdoor natural resources recreational activities consistent with the military mission and security levels. Currently, public access is granted for all NPS areas; cultural resources areas, such as the Presidio Santa Maria de Galvé and the Pensacola Lighthouse; the Sunec-ke Nature Trail, Bayou Grande Nature Trail, and Trout Point Nature Trail at NAS Pensacola; and the Saufley Field Nature Trail at Saufley Field. In addition, the public has limited access to the MWR jogging and fitness trail and to Bayou Grande and Saufley Field primitive camping areas on a reservation basis. Bronson Field is open to the public by special request, and scout groups are allowed access to the primitive camping areas at BARP.

Outdoor recreational opportunities available at the NASP Complex are summarized in Appendix C. The outdoor recreational program at the NASP Complex derives numerous benefits from the attractive natural settings and from the temperate marine climate associated with the northern Gulf of Mexico Coast. The warm climate and proximity to several large bodies of water affords such opportunities as swimming, fishing, canoeing, sailing, and motorized boating on a year-round basis. The MWR operates and manages two marinas and a family picnic area at NAS Pensacola with access to water-related recreational opportunities. Bayou Grande Sailing Marina and Sherman Cove Marina offer opportunities for renting boats, canoes, and fishing equipment. They also provide boat ramps and storage facilities for private watercrafts. In addition, BARP at Bronson Field offers boat rentals and access to Perdido Bay.

The Complex offers several other outdoor recreation activities in addition to aquatic recreational opportunities. Additional concentrated outdoor recreation activities include camping, picnicking,

fitness and jogging, and outdoor education and interpretation. Dispersed outdoor recreation activities consist of hiking, bicycling, and nature study. Hunting and the use of off-road vehicles are prohibited at the NASP Complex.

There are numerous significant historical and archeological sites at the NASP Complex including two National Park Service managed areas, Fort Barrancas, and Advanced Redoubt, operated and managed by Gulf Islands National Seashore. National Park Service maps and information may be obtained from the Natural Resources Office in the Environmental Division and depict recreational areas at the NASP Complex.

3.6 ENCROACHMENT PARTNERING

Encroachment is any issue external to military operations that inhibits, curtails, or has the potential to impede the performance of the military mission. Continued and rapid growth in the area of Pensacola has added to the encroachment concerns at the NASP Complex and can limit operational capability. Complaints about noise, dust, and smoke from aircraft and vehicles can force the curtailment of certain types of training and available hours. As development destroys or displaces native species of plants and animals, military posts become their refuge. This, too, can restrict the military mission and so it is in the DoD's interest to help protect habitat, wildlife corridors, biodiversity, ecosystems, and water quality off base, and help educate local governments and communities about the need for ecosystem protection and management.

Escambia County passed an Airport/Airfield Environs Overlay ordinance in April 2006 that requires all development within the NASP Complex's Accident Potential Zones (APZs) and Noise Zones to be submitted to the NASP Complex for review. Escambia County's GIS department maintains a searchable, interactive online mapping program that includes these areas and the NASP Complex hosts an Air Installations Compatible Use Zones (AICUZ) website that includes basic information about military noise and operations at the Complex. The website also posts a Noise Hotline phone number to contact the Complex directly with questions or complaints.

The NASP Complex is a member of the Gulf Coastal Plain Ecosystem Partnership (GCPEP), which was formed in 1996 and now covers more than one million acres in the northwestern Florida and southern Alabama region. The GCPEP is part of the Longleaf Alliance (LLA), a regional cooperative established in 1995 with the express purpose of coordinating a partnership between private landowners, forest industries, state and federal agencies, conservation groups, researchers, and other enthusiasts interested in managing and restoring longleaf pine forests for their ecological and economic benefits. The GCPEP is working to increase buffers around

military installations, improve biodiversity management, and assure green space and recreation opportunities for the region. Partners include Eglin Air Force Base, NAS Whiting Field, Nokuse Plantation, The Nature Conservancy, Florida Division of Forestry, FDEP, FWC, Northwest Florida Water Management District, USDA Forest Service, Conecuh National Forest, and the Gulf Islands National Seashore.

Tarkiln Bayou State Preserve State Park encompasses more than 4,200 acres located directly south of Bronson Field. The Preserve provides protection for many rare and endangered plant species, including some of the larger stands of white-top pitcher plants in Florida. These remnant wet prairies also support approximately 100 other wetland species and enhances the water quality of Perdido Bay.

The Jones Swamp Wetland Preserve is located immediately south of Corry Station and Highway 98. It encompasses 1,300 acres, including Jones Creek, forested wetlands, and associated uplands. The wetland preserve is part of a 2,700-acre watershed that feeds into Bayou Chico and is the primary watershed in the Bayou Chico BMAP.

Fort Barrancas and Advanced Redoubt are within the boundaries of NAS Pensacola and are managed by the National Park Service. Fort Barrancas sits on a bluff overlooking the entrance to Pensacola Bay. The park is on Taylor Road approximately a half mile east from the Museum of Naval Aviation, and includes the historic Water Battery, Fort Barrancas, trails, visitor center, picnic areas, and the Advanced Redoubt.

The Fort Pickens Aquatic Preserve, one of 41 aquatic preserves in the State of Florida, encompasses 34,000 acres of sovereign submerged lands below the mean high water line in Santa Rosa Sound, Pensacola Bay, Big Lagoon, and the Gulf of Mexico. It surrounds the western end of Santa Rosa Island, immediately east of NAS Pensacola, and the eastern end of Perdido Key. The uplands adjacent to the Preserve are federally owned and are known as the Gulf Island National Seashore. The Preserve was designated for the purpose of preserving the biological resources in the area and maintaining these resources in a natural condition. The islands and adjacent submerged lands are some of the only undeveloped coastal areas in the region. Due to the proximity of the Gulf Intracoastal Waterway and the Pensacola Ship Channel, the Preserve experiences some of the heaviest boat traffic in northern Florida, so the State developed the Fort Pickens Aquatic Preserve Management Plan to protect the Preserve's natural resources for the benefit of future generations. Management activities were discontinued at the Fort Pickens Aquatic Preserve in 2011 due to budget cuts by the Florida Legislature, but will resume when revenue streams improve.

3.7 FLORIDA'S STATE WILDLIFE ACTION PLAN

The U.S. Congress mandated each state to develop a comprehensive wildlife conservation plan. Each plan was required to include the species and habitats to be conserved, the conservation actions proposed, procedures to review the plan, and coordination with the public and other agencies. Florida completed the State Wildlife Action Plan (Action Plan; previously the Comprehensive Wildlife Conservation Strategy) in 2005 in response to this mandate and it is updated every five years. The most recent Action Plan provides a list of 1,036 Species of Greatest Conservation Need (SGCN) as well as the status and trends of each species. The Action Plan also contains detailed information on each of 45 habitat categories, including location and status information, associated SGCN, threats to the habitat, and recommended actions. The entire Action Plan can be downloaded at <http://myfwc.com/media/2663010/StateWildlifeActionPlan.pdf>.

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Natural Resources Goals, Objectives, and Strategies

This section presents the goals, objectives, and strategies for natural resources management at the NASP Complex over the next 10-year period (2012-2021) and reviewed annually. Five goals have been identified for the NASP Complex:

- Goal 1 Protect and maintain natural resources within the NASP Complex by continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission.
- Goal 2 Protect and enhance forest resources by practicing ecologically sound forest management leading to sustained yield of quality forest products, watershed protection, and wildlife habitat.
- Goal 3 Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission.
- Goal 4 Provide facilities and develop policies that allow for recreational and educational uses of natural resources, and result in positive effects to these natural resources while improving the quality of life.
- Goal 5 Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management.

Goal 1 primarily pertains to Land Management issues (see Section 5.1), Goal 2 to Forestry issues (see Section 5.2), Goal 3 to Fish and Wildlife issues (see Section 5.3), Goal 4 to Outdoor Recreation issues (see Section 5.4), and Goal 5 to the general implementation of adaptive ecosystem management. Through these goals, the NASP Complex will create and maintain a balance between the Complex's natural resources and military operations. To ensure success in achieving these goals at the NASP Complex, a framework or "road map" of objectives, strategies, projects, and management initiatives is provided in this section. The goals, objectives, strategies, projects, and initiatives are referenced throughout the INRMP where appropriate and relevant.

Definitions

Goals: Goals are general expressions of desired future conditions that represent the long-range aim of management. For this INRMP, goals are compatible with the military mission of the NASP Complex and provide conservation and ecosystem management targets and direction.

Issues: Issues may include the presence, abundance, distribution, function, condition, and sensitivity of a particular natural resources feature, resources-based human function or other attribute on the Installation, or a broader ecological or community setting. Issues may also include the effectiveness or ineffectiveness of existing or past practices regarding management and use of resources on the Installation, and the requirements for regulatory compliance regarding the management and use of these natural resources. Section 5 addresses issues that have been identified to establish objectives for achieving the stated INRMP goals at the NASP Complex.

Objectives: Objectives are defensible targets or specific components of a goal, the achievement of which represent measurable progress toward that goal. Objectives help focus management activities and provide a yardstick against which to evaluate and communicate results. One or more objectives may be identified for successfully achieving a particular goal.

Strategies: Strategies establish the approach and expected end result for the actions that are necessary to accomplish stated objectives. One or more strategies may be identified for accomplishing a particular objective. Strategies define certain actions to be taken by the DoN, such as the completion of specific projects and the implementation of other management initiatives at the NASP Complex. Strategies usually specify timeframes for completion of various actions.

Projects: Projects are discrete actions for fulfilling a particular strategy. Projects may be required to fulfill obligations by the NASP Complex in meeting regulatory requirements regarding natural resources management, or may enhance existing measures for ensuring compliance. Other projects are not compliance-driven, but may allow for more effective and efficient management of natural resources and provide for sound natural resources stewardship. Projects require labor resources and funding in addition to the day-to-day requirements of the Installation.

Initiatives: Initiatives are fundamental, non-measurable actions necessary for successful implementation of a strategy. Some strategies identify the need for incorporating sound natural resources management principles into the day-to-day decision-making process, and other actions of the various departments at the NASP Complex. These types of initiatives typically strive to elevate awareness throughout the organization, avoid potentially reactive approaches to natural resources issues, and facilitate a proactive approach to addressing

natural resources within the mission of the Installations. Initiatives attempt to solve problems that preclude meeting specific strategies.

GOAL 1: PROTECT AND MAINTAIN NATURAL RESOURCES WITHIN THE NASP COMPLEX THROUGH THE CONTINUATION AND ENHANCEMENT OF ECOLOGICALLY APPROPRIATE AND BENEFICIAL LAND USE AND MANAGEMENT PRACTICES, WHILE ENSURING THE CONTINUATION OF THE MILITARY MISSION.

Issue: Land management decisions and practices will become increasingly important aspects of ecosystem management as development and training activities have a significant potential to affect land area at the NASP Complex. The use and management of lands for military mission needs, and the decision-making process regarding such land use, directly affect the sustainability of the ecosystem. Specific components of land management include wetlands (Section 5.1), invasive and exotic species (Section 5.2), soil conservation and erosion control (Section 5.3), stormwater and water quality control (Section 5.4), landscaping and grounds maintenance (Section 5.5), floodplain management (Section 5.6), and urban forestry (Section 5.7). To protect and maintain natural resources while ensuring the continuation of the military mission, the NASP Complex needs to implement programs to meet the following objectives:

Objective 1.1: Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;

Objective 1.2: Reduce and control invasive and exotic species;

Objective 1.3: Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;

Objective 1.4: Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;

Objective 1.5: Protect and enhance shorelines through existing and new programs; and

Objective 1.6: Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices.

Objective 1.1: Continue existing, and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality.

Wetland and water quality may be improved through the proper management of stormwater runoff, soil erosion, and pesticide and fertilizer use at the NASP Complex. The following strategies were developed to accomplish Objective 1.1. Projects and initiatives pertaining to each strategy are also listed.

Strategy 1.1.1: NASP Complex continues to evaluate its stormwater management program and activities contributing to stormwater runoff and pollutant loading in stormwater runoff, and implement BMPs to minimize stormwater pollution (FDACS 2003; FDOT and FDEP 2007; FDEP 2008; NASP 2013).

Projects: Project No. 1 – Species Protection and Habitat Development; see Appendix A.
Project No. 6 – Natural Resources GIS and Mapping; see Appendix A.

Project No. 13 – Timber Stand Improvement; see Appendix A.

Initiatives:

- (1) The NASP Complex will continue to manage stormwater in accordance with applicable permits.

Action shall be undertaken by the Environmental Engineer in the Environmental Division of the Public Works Department, in concert with the NRM. Action will include consultation with environmental engineers and professionals from NAVFAC SE's The NASP Complex will, as part of its oil and hazardous material Spill Prevention Control and Countermeasures (SPCC) Plan, establish a natural resources damage assessment program for assessing damage, or potential damage, from the release of oil or hazardous substance (HS) that may injure, or threaten to injure, the natural resources of the United States.

Action shall be undertaken by the Environmental Engineer in the Environmental Division, in concert with the NRM. Action will include consultation with environmental engineers from NAVFAC SE.

- (2) The NASP Complex should form a stormwater pollution prevention (P2) team to complete and implement a Complex-wide Stormwater Pollution Prevention Plan (SWPPP). The team should:

- Monitor stormwater at the NASP Complex and identify sources of stormwater pollution;
- Assess sites, determine pollutant sources and risks, determine and direct implementation of appropriate BMPs; and
- Ensure that stormwater issues are addressed for all “ground-breaking” activities and projects.

- (3) Create a GIS layer depicting watershed boundaries, stormwater piping schematics, IRP sites, and other sources of pollution.

- (4) The Environmental Division should review stormwater discharge into wetlands and water bodies to address the protection of water quality and ensure that:

- Stormwater runoff is subjected to BMPs prior to discharging into wetlands and water bodies (FDACS 2003; FDOT and FDEP 2007; FDEP 2008; NASP 2013). BMPs shall prevent or reduce the amount of pollution in water to a level compatible with Florida Surface Water Quality Standards;
- Stormwater discharge onto the NASP Complex from external sources does not adversely impact water quality on the NASP Complex (consult FDEP and Escambia County in the event that incoming water does not meet Florida Surface Water Quality Standards);
- No site activities on the NASP Complex result in violation of state water quality standards associated with the siltation of wetlands, or reduction in the natural retention or filtering capability of wetlands;
- Adequate soil erosion measures are implemented. Cross Reference: Strategy 1.1.2; and
- No site activities allow water to become a health hazard or contribute to the breeding of mosquitoes.

Strategy 1.1.2: The NASP Complex continues to develop a soil erosion control management plan, and reduce the rate of soil erosion through the implementation of long-term measures and projects.

Projects: Project No. 1 – Species Protection and Habitat Development; see Appendix A.
Project No. 4 – Erosion Control for Coastal Zone Protection; see Appendix A.
Project No. 5 – Establish Shoreline Vegetation; see Appendix A.
Project No. 6 – Natural Resources GIS and Mapping; see Appendix A.

Initiatives: Determine areas where soil type presents a threat of erosion. Cross Reference: Strategy 5.2.3 (GIS maps).

- (1) Establish BMPs to prevent soil erosion problems at the NASP Complex.
 - It will be the responsibility of a Natural Resources Program representative to work with facility and environmental personnel to ensure implementation of soil erosion control measures.
- (2) Train and educate all contract and department personnel on actions that may directly or indirectly contribute to soil erosion problems, and measures that can be employed to avoid or lessen these conditions. Cross Reference: Strategy 5.3.1.
 - Consult with soil conservation experts from the NAVFAC SE's as well as with the USDA Natural Resource Conservation Service (NRCS) on the training program development. Cross Reference: Section 5.1.3 – Additional Sources of Information.

Strategy 1.1.3: Continue to implement recommendations from the Pest Management Program Review (see Section 2.5.4), including the following:

- Continue to use Integrated Pest Management (IPM) techniques in pest management programs and emphasize the use of pesticides with low toxicity and low application rates; and

Projects: Project No. 3 – Invasive Species Control; see Appendix A.
Project No. 6 – Natural Resources GIS and Mapping; see Appendix A.
Project No. 13 – Timber Stand Improvement; see Appendix A.

Initiatives:

- (1) Ensure that grounds maintenance personnel receive pest management education, and verify that they understand the procedures they are allowed to perform, and require certification.
- (2) Inventory current pesticide and fertilizer use and consult the NAS Complex PMP.
- (3) Consider non-pesticide removal methods or removal using pesticides with lower toxicity applied at reduced rates. Cross References: Strategy 2.1.1, and Sections 5.1.2 and 5.1.5.

- (4) Consult with foresters, fish and wildlife biologists, and soil conservationists at NAVFAC SE, as well as with federal, state, and county wildlife biologists, foresters, and land managers.
- (5) Consult with Installation Facility Managers and NAVFAC SE to consolidate individual plans and provide input to a PMP for the NASP Complex.

Strategy 1.1.4: The NASP Complex will inventory wetlands and assess their function and quality as warranted, promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources.

Projects: Project No. 1 – Species Protection and Habitat Development; see Appendix A.
Project No. 6 – Natural Resources GIS and Mapping; see Appendix A.

Initiatives:

- (1) As warranted, monitor the quality and function of wetlands on the NASP Complex using the Uniform Mitigation Assessment Method (UMAM) and establishing a baseline from which to evaluate *no net loss* of wetlands. Cross Reference: Section 5.1.1.
- (2) Continue to implement management practices (e.g., prescribed burning) to enhance wetland habitat, where appropriate (see Section 5.3.2).
- (3) Continually promote and monitor 50-foot vegetative buffers around all wetlands.
 - Inventory wetlands to identify areas with insufficient or inadequate buffering. List any areas with insufficient or inadequate buffering, identified by the survey, as projects in subsequent INRMP updates.
 - Encourage the use of volunteers (e.g., Scout troops, Student Conservation Association [SCA]) to improve native vegetation buffers.
 - Use native species and xeriscaping principles when creating buffers. Cross Reference: Section 5.1.5 – Additional Sources of Information (for xeriscaping).
- (4) Create a GIS layer for wetland quality.

Strategy 1.1.5: Continue using BMPs for forest management activities to ensure watershed protection (FDACS 2003).

Projects: Project No. 11 – Forest Administration; see Appendix A.
Project No. 12 – Forest Product Sales; see Appendix A.
Project No. 13 – Timber Stand Improvement; see Appendix A.
Project No. 14 – Construction and Maintenance of Forest Roads; see Appendix A.
Project No. 15 – Fire Management; see Appendix A.

Initiatives:

- (1) Consult with foresters and soil conservationists at NAVFAC SE, as well as with federal, state, and county foresters, soil scientists, and land managers.

Objective 1.2: Reduce and control invasive and exotic species.

This objective will ensure that invasive and exotic species do not interfere with military and recreational activities or the quality and functions of wildlife habitats, forests, wetlands, and other resources and processes. The following strategies have been developed to address invasive and exotic species. Projects and initiatives pertaining to each strategy are also listed.

Strategy 1.2.1: The NASP Complex will continue its implementation strategy for the removal of invasive and exotic species. In 2006, the Complex began control work for invasive and exotic species.

Project: Project No. 3 – Invasive Species Control; see Appendix A.
Project No. 6 – Natural Resources GIS and Mapping; see Appendix A.

- Initiatives:**
- (1) Develop an invasive and exotic species management strategy that involves a survey of the NASP Complex to determine extent of exotic and invasive species, control methods - including time of year for removal, and pesticide application rates.
 - Consult the PMP to determine removal methods. Consider non-pesticide removal methods and removal using pesticides with lower toxicity and applied at reduced rates. Cross References: Strategy 1.1.3 and Section 5.1.2.
 - Consult with foresters and fish and wildlife biologists at NAVFAC SE, as well as with federal, state, and county wildlife biologists, foresters, and land managers, for identification of invasive and exotic species, and for appropriate, effective measures to protect fish and wildlife. Cross Reference: Section 5.1.2 – Additional Sources of Information for invasive and exotic species control.
 - (2) Identify individuals and groups that could contribute to the control effort.
 - NASP Complex natural resources staff members.
 - Contractor and Installation personnel. Cross Reference: Strategy 5.3.1.
 - Volunteer groups (e.g., Scout troops, SCA). Cross Reference: Strategy 5.3.4.
 - Special Interest Groups (e.g., The Nature Conservancy [TNC] and Six Rivers CISMA).
 - (3) Ensure adequate training of removal teams. Cross Reference: Strategy 5.3.2.
 - (4) Maintain a program for the eradication and control of invasive and exotic species and prohibit the planting of such species as part of NASP Complex's Grounds Maintenance Plan. Develop a monitoring and re-removal program for problem areas. Cross Reference: Section 5.1.2.

Objective 1.3: Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain.

Most of the ecological functions of the floodplain, such as the transport and cycling of nutrients and provision of productive and essential habitat, have been lost. Only fragments of the original

floodplain community remain. The following strategies have been developed to address development of, and impacts to, the 100-year floodplain.

Strategy 1.3.1: NASP Complex will continue reviewing and monitoring proposed activities for impact avoidance to the attenuation capacity of the 100-year floodplain. If it is determined that development is necessary within the 100-year floodplain to support the military mission, development shall first be located in the previously disturbed areas of the floodplain.

Projects: Project No. 6 – Natural Resources GIS and Mapping; see Appendix A.

Initiatives:

- (1) It will be the responsibility of the Natural Resources Program representative to work with facility and environmental personnel to ensure implementation of the floodplain management strategy. Cross Reference: Strategy 5.2.3.
- (2) Map undisturbed and disturbed areas of the 100-year floodplain for use in the decision-making process. Cross Reference: Strategy 5.2.3.
- (3) Where there is no practical alternative to development within the 100-year floodplain, construction methods at the NASP Complex should be such that damage will be minimized in the event of flooding, thus avoiding contamination of waters. The NASP Complex will evaluate the county's floodplain regulation, which addresses construction and building codes, as guidance for development in the floodplain.
- (4) Retain the natural attenuation and filtering capacity of wetlands within the 100-year floodplain.
 - Ensure *no net loss* of wetlands. Cross Reference: Strategy 1.1.4 (1).
 - Ensure adequate buffers around, and prescribed burns through, wetland areas to maintain wetland attenuation capacity. Cross Reference: Strategy 1.1.4.

Objective 1.4: **Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized.**

This objective may be accomplished through appropriate site selection and development to avoid impacts associated with randomly-located human-made linear and nonlinear features. The arbitrary location of features undermines ecological processes by separating and isolating wildlife and plant populations, which can render the fragmented parcels unsustainable for wildlife. An arbitrary method of locating features also increases costs associated with daily land management practices and infrastructure improvements. The following strategy has been developed to accomplish this objective.

Strategy 1.4.1: Throughout the course of this INRMP, the NASP Complex will ensure implementation of policies that minimize adverse impacts to ecosystem resources from land disturbance activities (e.g., clearing, training).

Projects: Project No. 1 – Species Protection and Habitat Development; see Appendix A.

Project No. 2 – Pensacola INRMP; see Appendix A.

Project No. 13 – Timber Stand Improvement; see Appendix A.

- Initiatives:**
- (1) The Site Plan Activity Guidelines in Section 5.5 will be followed to minimize and avoid adverse impacts to resources.
 - (2) It will be the primary responsibility of NRM to work with facility managers and environmental personnel to ensure the use of site selection and site plan development criteria to minimize impacts to the NASP Complex's environmental and ecological resources.
 - (3) Use natural resources maps as a tool for minimizing impacts. Cross References: Strategy 5.2.3.

Objective 1.5: Protect and enhance existing shorelines through existing and new programs.

Approximately 17 miles of shoreline occur at NAS Pensacola and one mile occurs at Bronson Field. The following strategy has been developed to accomplish shoreline protection and enhancement.

Strategy 1.5.1: Continue to establish a program to prevent further degradation of shorelines.

Projects: Project No. 4 – Erosion Control for Coastal Zone Protection; see Appendix A.
Project No. 5 – Establish Shoreline Vegetation; see Appendix A.

- Initiatives:**
- (1) Continue to establish a natural shoreline buffer along undeveloped areas adjacent to water bodies. A natural vegetated buffer will be maintained from the normal high water line to 50 feet landward. Allowances may be made for essential military mission requirements.
 - (2) Ensure consistency with the Florida Coastal Management Program (FCMP), and FDEP regulations for shoreline development.
 - (3) Identify areas of beach erosion.

Objective 1.6: Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices.

The DON will reduce the need for irrigation, pesticides, and fertilizers by using native species and xeriscaping concepts. Urban forests provide numerous quality of life benefits to both humans and wildlife (see Section 5.1.7). The following strategies were developed to accomplish Objective 1.6.

Strategy 1.6.1: NASP Complex continues to implement general landscape management practices consistent with the concepts presented in this INRMP.

Projects: Project No. 3 – Invasive Species Control.

- Initiatives:**
- (1) Educate grounds maintenance personnel on the principles of landscaping discussed in this INRMP (see Section 5.1.5). Cross Reference: Strategy 5.3.1.
 - (2) Evaluate the use of combined organic and mineral fertilizers. Slow release fertilizers will be preferred over other mineral fertilizers.

Strategy 1.6.2: NASP Complex continues to apply xeriscaping principles using native species for new landscaping, and phase in these principles for existing landscapes.

Projects: Project No. 3 – Invasive Species Control; see Appendix A.

- Initiatives:**
- (1) Educate grounds maintenance personnel on the principles of xeriscaping. Cross References: Strategy 5.3.1 and Section 5.1.1.
 - (2) Use volunteer groups and interested installation personnel to assist in plantings.
 - (3) Integrate the concept of xeriscaping into the Grounds Maintenance Plan. Cross Reference: Section 5.1.5.
 - (4) Develop a xeriscaping program; enlist the services of foresters, fish and wildlife biologists, and soil conservationists at NAVFAC SE, as well as federal, state, and county wildlife biologists, foresters, and land managers. Cross Reference: Section 5.1.5.
 - (5) Remove invasive and exotic species. Cross Reference: Strategy 1.2.1.

Strategy 1.6.3: The NASP Complex will continue to follow its working Urban Forestry Plan and implement projects to enhance wildlife habitat and aesthetics in developed areas.

Projects: None.

- Initiatives:**
- (1) Produce a formal Urban Forestry Plan for distribution.
 - (2) Use volunteers (e.g., Scout troops, SCA) for planting. Cross Reference: Strategy 5.3.2 (1).
 - (3) Train and educate grounds maintenance personnel on the principles of urban forestry management.
 - (4) Ensure that the NRM reviews all planned maintenance for effects on urban forests. Additional duties include oversight and management of inventories, plantings, removals, pruning, fertilization, and protection practices. Construction and facility managers shall coordinate with the NRM concerning replacement of trees removed for any reason, except due to natural causes.
 - (5) Ensure that Facilities Management personnel coordinate Installation planning, construction, and maintenance with the natural resources program to ensure a positive effect on the installation urban forest.
 - (6) Ensure that the Urban Forestry Management Program conforms to technical and professional recommendations as provided NAVFAC SE or cooperating agencies.

- (7) Observe the first week of December as “Tree Awareness Week,” and conduct educational programs and tree planting projects.

GOAL 2: PROTECT AND ENHANCE FOREST RESOURCES BY PRACTICING ECOLOGICALLY SOUND FOREST MANAGEMENT LEADING TO SUSTAINED YIELD OF QUALITY FOREST PRODUCTS, WATERSHED PROTECTION, AND WILDLIFE HABITAT.

Issue: The NASP Complex manages approximately 2,486 acres of commercial forestland. Ecologically sound stewardship involves managing forestland for various components including forest products (i.e., timber), wildlife habitat, aesthetic value, and recreational potential. Components of the annual work plan generally include firebreak management, prescribed burning, timber sales, timber inventory management, site preparation and reforestation, forest roadwork, and equipment operation and maintenance of forestry transport truck, tractor-plow unit, and other equipment. To protect and enhance forest resources, the NASP Complex needs to implement programs to address the following objectives:

Objective 2.1: Practice the ecosystem management concept for sustained yield of forest products and forest health;

Objective 2.2: Manage forests in an ecologically sound way to provide habitat for wildlife; and

Objective 2.3: Manage forest stands for watershed protection.

Objective 2.1: Practice the ecosystem management concept for sustained yield of forest products and forest health.

Sustained yield is the management of forest resources for continuous production, with the aim of achieving an approximate balance between net growth and harvest. Healthy forests may be maintained through silvicultural activities (see Section 5.2.1). Silvicultural activities that will be used at the NASP Complex include harvesting, herbicide applications, and prescribed burns. The following strategies were developed to accomplish Objective 2.1.

Strategy 2.1.1: Continue managing forest stands through harvesting, herbicide applications, and prescribed burning as outlined in the Forest Management Plan (see Appendix B)

Projects:

- Project No. 6 – Natural Resources GIS and Mapping; see Appendix A.
- Project No. 11 – Forest Administration; see Appendix A.
- Project No. 12 – Forest Product Sales; see Appendix A.
- Project No. 13 – Timber Stand Improvement; see Appendix A.
- Project No. 15 – Fire Management; see Appendix A.

Initiatives:

- (1) Using competitive timber sales contracts, sell timber to private logging contractors for removal. Awards will be made based on the highest return to the Navy.
- (2) Complete Society of American Foresters certification for all staff foresters.

- (3) Identify certified prescribed burn training programs. Ensure that the program and its duration are compatible with the timeframe of the implementation strategy.
 - Training will be conducted through Florida's Interagency Prescribed Fire Course administered through Hillsborough Community College. This course is offered at various locations throughout the state, but requires the participant to complete three supervised prescribed burns to become a Certified Burn Manager.
- (4) Identify training programs for Federal Wildland Firefighting and complete S-130 and S-190 federal wildland fire training courses, at a minimum.
- (5) Consult with foresters at NAVFAC SE, as well as state and federal foresters.

Strategy 2.1.2: NASP Complex continues to support the training and certification of one additional individual in prescribed burn management in addition to the NRM. NASP Complex has a minimum of three installation personnel trained and certified in prescribed burn management.

Projects: Project No. 13 – Timber Stand Improvement; see Appendix A.
Project No. 15 – Fire Management; see Appendix A.

Initiatives: Cross References: Strategies 2.1.1 (2) and (3).

Strategy 2.1.3: Perpetuate the prevailing pine forest while giving equal emphasis to hardwoods in those areas best suited to such species.

Projects: Project No. 11 – Forest Administration; see Appendix A.
Project No. 12 – Forest Product Sales; see Appendix A.
Project No. 13 – Timber Stand Improvement; see Appendix A.
Project No. 15 – Fire Management; see Appendix A.

Initiatives: (1) Update the Florida Management Information System (FMIS) regularly.
(2) Monitor for insect and disease outbreaks.

Objective 2.2: **Manage forests in an ecologically sound manner to provide habitat for wildlife.**

Strategy 2.2.1: Continually evaluate forest management practices and their effects on ecosystems and wildlife habitat, and continue programs to protect rare, threatened, and endangered plant and animal species.

Projects: Project No. 1 – Species Protection and Habitat Development; see Appendix A.
Project No. 6 – Natural Resources GIS and Mapping; see Appendix A.
Project No. 7 – Gopher Tortoise Conservation.
Project No. 10 – Update Biological Inventory; see Appendix A.

Project No. 13 – Timber Stand Improvement; see Appendix A.

Project No. 15 – Fire Management; see Appendix A.

- Initiatives:**
- (1) Review management recommendations outlined in the rare plant, rare vertebrate, and natural community surveys conducted in 2006, and 2009-10 by FNAI (see Section 2.5.6)
 - (2) Review findings of plant survey (for *Chrysopsis godfreyi* and *Polygonella macrophylla*) performed in 2009-10 by FNAI (see Section 2.5.6).
 - (3) Seek additional management suggestions from foresters, fish and wildlife biologists, and soil conservationists at NAVFAC SE, as well as federal, state, and county wildlife biologists, foresters, and land managers.

Objective 2.3: Manage forest stands for watershed protection.

Strategy 2.3.1: Cross Reference: Strategy 1.1.5.

- Projects:**
- Project No. 1 – Species Protection and Habitat Development; see Appendix A.
 - Project No. 6 – Natural Resources GIS and Mapping; see Appendix A.
 - Project No. 11 – Forest Administration; see Appendix A.
 - Project No. 12 – Forest Product Sales; see Appendix A.
 - Project No. 13 – Timber Stand Improvement; see Appendix A.
 - Project No. 15 – Fire Management; see Appendix A.

Initiatives: Cross Reference: Strategy 1.1.4.

GOAL 3: PROTECT, MAINTAIN, AND RESTORE NATIVE COMMUNITIES FOR PLANT AND ANIMAL LIFE, WHILE IMPROVING THE QUALITY OF LIFE AND ENSURING THE CONTINUATION OF THE MILITARY MISSION.

Issue: Little of the native communities that originally occurred at the NASP Complex remain today. The natural communities that remain suggest the diversity of habitats that once covered the NASP Complex. Areas representing the following communities remain in relatively small patches within the NASP Complex: wet prairie, estuarine tidal marsh, scrub, mesic flatwoods, scrubby flatwoods, wet flatwoods, beach dune, baygall, blackwater stream, depression marsh, floodplain swamp, and seepage slope areas (see Section 3.8.1). These remaining natural communities provide good quality habitat for both plant and animal life and should be protected and enhanced.

Often, nuisance wildlife species such as rodents and some birds become overpopulated or congregate in areas creating a threat to human health and the military mission. In such cases, these wildlife species must be controlled to prevent problems. To protect, maintain, and restore native communities for plant and animal life, while preventing nuisance wildlife from negatively impacting quality of life and the military mission, the NASP Complex needs to implement programs to address the following objectives:

Objective 3.1: Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including federally-listed and state-listed species.

Objective 3.2: Preserve and protect threatened and endangered species and species of special concern to ensure no reduction in species numbers or population sizes.

Objective 3.3: Control nuisance wildlife and wildlife diseases that may adversely affect human health and welfare, the health of the ecosystem, and the military mission.

Objective 3.1: Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species.

Strategy 3.1.1: NASP Complex will continue to establish a habitat development and protection program using prescribed burns and thinnings to improve habitat quality, reduce the potential for wildfires, control diseases and insect pests, and ensure the continuation of fire-dependent plant and wildlife communities.

Projects: Project No. 1 – Species Protection and Habitat Development; see Appendix A.
Project No. 13 – Timber Stand Improvement; see Appendix A.
Project No. 15 – Fire Management; see Appendix A.

Initiatives:

- (1) The NASP Complex will, in consultation with foresters and wildlife biologists from NAVFAC SE, as well as federal, state, and county wildlife biologists and foresters, prepare harvesting and prescribed burn prescriptions using existing data from the FMIS.
 - Develop and implement a prescribed burn regime that will adequately address safety and smoke concerns. Burns will be conducted by trained personnel. The prescribed burn schedule may be adjusted to accommodate fuel-reduction burns and site safety constraints.
- (2) Certify additional personnel in prescribed burning and wildland firefighting. Cross References: Strategies 2.1.1 (2) and (3).
- (3) Review management recommendations outlined in the rare plant, rare vertebrate, and natural community surveys conducted in 2006, and 2009-10 by FNAI (see Section 2.5.6).
- (4) Review findings of plant survey (for *Chrysopsis godfreyi* and *Polygonella macrophylla*) performed in 2006, and 2009-10 by FNAI (see Section 2.5.6).
- (5) Seek additional management suggestions from foresters, fish and wildlife biologists, and soil conservationists at NAVFAC SE, as well as federal, state, and county wildlife biologists, foresters, and land managers.

Strategy 3.1.2: Continue biological monitoring program and rare, threatened and endangered species surveys, and implement programs to enhance wildlife habitat.

Projects: Project No. 1 – Species Protection and Habitat Conservation; see Appendix A.
Project No. 6 – Natural Resources GIS and Mapping; see Appendix A.
Project No. 7 – Gopher Tortoise Conservation; see Appendix A.
Project No. 9 – Neotropical Migratory Bird Survey; see Appendix A.
Project No. 10 – Update Biological Inventory; see Appendix A.
Project No. 15 – Fire Management; see Appendix A.

Initiatives: Cross References:

- Objective 1.1 – wetland buffers, stormwater runoff, soil erosion, and pesticide and fertilizer use;
- Objective 1.2 – invasive and exotic species control;
- Objective 1.3 – 100-year floodplain;
- Objective 1.4 – land management and land use decisions;
- Objective 1.5 – shoreline protection; and
- Objective 1.6 – environmentally beneficial landscaping practices.

Objective 3.2: **Preserve and protect threatened and endangered species, and species of special concern, to prevent reduction of individuals or populations.**

Strategy 3.2.1: The NASP Complex will continue to survey for Neotropical migratory birds. In addition, the NASP Complex will update rare, threatened, and endangered species surveys.

Projects: Project No. 1 – Species Protection and Habitat Conservation; see Appendix A.
Project No. 6 – Natural Resources GIS and Mapping; see Appendix A.
Project No. 7 – Gopher Tortoise Conservation; see Appendix A.
Project No. 9 – Neotropical Migratory Bird Survey; see Appendix A.
Project No. 10 – Update Biological Inventory; see Appendix A.
Project No. 15 – Fire Management; see Appendix A.
Project No. 16 – Marine Species Monitoring; see Appendix A.

Initiatives:

- (1) Contract consultant to conduct the surveys; or
- (2) Develop a team of experts from within the DON with sufficient technical knowledge to conduct the surveys.
- (3) Pursue services provided for in cooperative agreements between the NASP Complex and the USFWS, the FWC, and TNC.

Strategy 3.2.2: NASP Complex will continue to implement programs and activities for the protection and enhancement of habitat for threatened and endangered animal and plant species.

Projects: Project No. 1 – Species Protection and Habitat Conservation; see Appendix A.

Project No. 3 – Invasive Species Control; see Appendix A.

Project No. 6 – Natural Resources GIS and Mapping; see Appendix A.

Project No. 7 – Gopher Tortoise Conservation; see Appendix A.

Project No. 9 – Neotropical Migratory Bird Survey; see Appendix A.

Project No. 10 – Update Biological Inventory; see Appendix A.

Project No. 15 – Fire Management; see Appendix A.

Project No. 16 – Marine Species Monitoring; see Appendix A.

Initiatives:

(1) Cross References:

- Strategy 3.3.1 – Wildlife damage and disease control.
- Strategy 2.2.1 – Forest management practices.
- Strategy 3.2.1 – Rare, threatened, and endangered species surveys.
- Strategy 1.6.3 – Urban forestry.

(2) The NASP Complex will use FWC guidelines for the protection of listed species from proposed development or land clearing impacts. The NASP Complex will consult with FWC, USFWS, and NAVFAC SE's wildlife biologists to implement this initiative.

(3) Use volunteers (e.g., Scout troops, SCA) for implementation/construction of habitat enhancement projects.

(4) The NASP Complex will institute wildlife education and stewardship programs. Cross References:

- Strategy 5.3.1 – NASP Complex personnel education and participation.
- Strategy 5.3.1 – Training for contract and NASP Complex-employed maintenance personnel.
- Strategy 5.3.1 – Citizen education and participation.

(5) Work with adjacent land-owning agencies (e.g., Gulf Islands National Seashore [GINS]) to minimize impacts (e.g., disorientation) to nesting and hatchling sea turtles caused by outdoor lighting at NASP Complex.

Objective 3.3: **Control nuisance wildlife and wildlife diseases that may adversely affect human health or welfare, the health of the ecosystem, and/or the military mission.**

Strategy 3.3.1: The NASP Complex will continue to monitor the health and size of animal populations, and control populations as needed.

Projects: Project No. 1 – Species Protection and Habitat Conservation; see Appendix A.
Project No. 6 – Natural Resources GIS and Mapping; see Appendix A.

Initiatives: (1) The NASP Complex will establish an awareness program to educate the public on indicators of wildlife population problems and diseases. NASP

Complex will use pamphlets, flyers, and command units to disseminate information. Cross Reference: Section 5.3.2.

- (2) Continue to use Integrated Pest management (IPM) techniques in the Pest Management Program and emphasize the use of pesticides with low toxicity and low application rates.
- (3) Repair perimeter fence at NASP, and develop management strategies for clear zones to keep deer from interfering with flight operations.

Strategy 3.3.2: The NASP Complex revised its BASH Plan which will be routinely updated and monitored. NASP Complex is currently implementing grounds maintenance practices consistent with the BASH Plan.

Projects: Project No. 6 – Natural Resources GIS and Mapping; see Appendix A.
Project No. 9 – Neotropical Migratory Bird Survey; see Appendix A.

Initiatives: (1) Educate grounds-maintenance personnel on practices that will minimize BASH-related incidents.
(2) Ensure that the grounds maintenance personnel receive a copy of the BASH plan and are aware of the locations in which to manage in accordance with the plan.

GOAL 4: PROVIDE FACILITIES AND DEVELOP POLICIES THAT ALLOW FOR RECREATIONAL AND EDUCATIONAL USES OF NATURAL RESOURCES, AND RESULT IN POSITIVE EFFECTS TO THESE NATURAL RESOURCES WHILE IMPROVING THE QUALITY OF LIFE.

Issue: The Sikes Act Improvement Act (SAIA) requires that military installations evaluate the potential for providing outdoor recreational resources to the general public. Current access to the NASP Complex's existing recreational resources is limited to installation DOD civilians, uniformed military personnel and dependents, and retired military personnel. However, the general public is allowed access to several natural and cultural resources at the NASP Complex. The CO authorizes access for educational and outdoor natural resources recreational activities consistent with the military mission and security levels. Currently, public access is granted for NPS Areas; cultural resources areas such as the Presidio Santa Maria de Galvé and the Pensacola Lighthouse, the Sunec-ke Nature Trail, Bayou Grande Nature Trail, Trout Point Nature Trail at NAS Pensacola, and the Saufley Field Nature Trail. In addition, the public has limited access to the MWR jogging/fitness trail and to Bayou Grande and Saufley Field primitive camping areas, on a reservation basis. The following objective was developed to address Goal 4.

Objective 4.1: **To develop additional recreational facilities, trails, and interpretive centers to support present and future natural resources-based outdoor recreation at the NASP Complex.**

Strategy 4.1.1: The NRM will continue to develop baseline information pertaining to present usage of natural resources-based outdoor recreation activities.

Projects: Project No. 6 – Natural Resources GIS and Mapping; see Appendix A.
Project No. 8 – Fishery Conservation and Management; see Appendix A.

- Initiatives:**
- (1) Monitor existing use of outdoor recreational facilities and trails by placing sign-in sheets at convenient locations.
 - (2) Survey base personnel to determine types and locations of desired natural resources-based outdoor recreational activities.

Strategy 4.1.2: The NASP Complex will continue to develop recreational trails and interpretive centers in areas exhibiting unique cultural, natural, historical, or archeological resources.

Projects: None.

- Initiatives:**
- (1) Use GIS data coverages for preliminary site assessments. Cross Reference: Strategy 5.2.3.
 - (2) Use volunteers and interested installation personnel for construction of facilities. Cross Reference: Strategy 5.3.4.
 - (3) Identify potential natural resources conflicts that could arise from increased outdoor recreational facilities.
 - (4) Investigate facility use agreements with other providers of educational, cultural, and recreational opportunities in the area.
 - (5) Review issues that currently prohibit public access.
 - (6) Identify the types of outdoor recreational and educational opportunities compatible with the NASP Complex's mission.

Strategy 4.1.3: Expand, improve, and provide additional facilities for outdoor recreational opportunities.

Projects: None.

Initiatives: Cross Reference: Section 5.4, Long-term Management.

GOAL 5: PROTECT AND CONSERVE THE ECOLOGICAL VALUE AND DIVERSITY OF NATURAL RESOURCES BY FOSTERING KNOWLEDGE OF, AND PARTICIPATION IN, ADAPTIVE ECOSYSTEM MANAGEMENT.

Issue: Existing installation programs and plans to maintain and manage natural resources within the NASP Complex are limited in their consideration of inter-relationships among resources on the installation and regionally. Instead, existing programs and plans have focused on the management of individual resources in accordance with federal and state laws.

Ecosystem management cannot be accomplished solely through the implementation of programs and plans focused on individual resources. A coordinated effort among all programs and personnel from tenant commands, as well as decision-making authorities on the installations, is necessary to protect the interdependent components of communities that define an ecosystem. The coordinated effort will address the consequences of actions on related resources, and will resolve conflicts between competing programs and plans for use of the installation's natural resources.

Ecosystem management is a holistic, adaptive management concept that transcends human-made boundaries both internal and external to the NASP Complex. Management for a sustainable ecosystem requires awareness, education and training, and responsible participation of all individuals potentially affecting the ecosystem, as well as adjustments in management principles and practices to respond to new knowledge and dynamic conditions. To participate in adaptive ecosystem management, the NASP Complex needs to implement programs to meet the following objectives:

Objective 5.1: Provide adequate staffing, equipment, technology, and training for the Natural Resources Program to ensure proper implementation of this INRMP;

Objective 5.2: Incorporate the concept of ecosystem management into all planning and management processes;

Objective 5.3: Implement training, education, and stewardship initiatives for ecosystem management; and

Objective 5.4: Establish a planning team to review and update the INRMP in accordance with OPNAVINST 5090.1D, 12-3.4(c)(4) and 12-3.4(c)(12).

Objective 5.1: Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP.

The NRM is unable to conduct the level of management required at the NASP Complex due to inadequate staffing and resources. Non-compliance with laws and instructions, such as the Sikes Act, could lead to violation of federal laws such as NEPA, CWA, and ESA.

Strategy 5.1.1: Staffing needs shall be continuously reviewed for adequacy and filled to meet those needs.

Projects: None.

Initiatives:

- (1) Review staffing annually to determine adequacy.
- (2) Submit staffing recommendations to chain of command.

Strategy 5.1.2: Continually verify that natural resources personnel obtain proper training and certifications for the following:

- Fire Management;
- Threatened and Endangered Species Management;
- Wetlands Management;
- Ecosystem Management;
- Technology (GIS/GPS);
- Natural Resources Legal Requirements;
- Forest Management;
- Professional Training;

- Department of Transportation (DOT) Requirements;
- HW Training;
- Safety Training; and
- Pest Management;

Projects: None.

Initiatives: (1) Identify training programs.
(2) Cross Reference: Strategy 2.1.1 (2).

Objective 5.2: **Incorporate the concept of ecosystem management into all planning and management processes.**

Strategy 5.2.1: The NASP Complex will continue to utilize the review board within the Facilities Maintenance Department to review all projects that potentially affect natural resources, including soil and water quality. A representative of the Natural Resources Program will continue to be a part of the review board.

Projects: Project No. 2 – Pensacola INRMP; see Appendix A.

Initiatives: Brief the CO annually, in conjunction with INRMP metric developments, on the importance of the formation of a review board to ensure that natural resources are considered when making planning decisions. Cross References: Military Mission discussions throughout Section 5.

Strategy 5.2.2: Continue to integrate the management concepts of the INRMP into all working programs and department plans (i.e., HCP, PMP, Urban Forestry Plan, and Grounds Maintenance Plan).

Projects: None.

Initiatives: Continue the working team that integrates the concepts of the INRMP into the ICRMP, HCP, PMP, Urban Forestry Plan, and Grounds Maintenance Plan. The team consists of a representative from each department who is tasked with the responsibility of implementing programs, plans, and policies related to ecosystem management. The NRM is involved in the team selection process, and the team meets monthly.

Strategy 5.2.3: The NASP Complex uses Computer-Aided Drafting and GIS for construction, engineering, and natural resources mapping. The NASP Complex will continue building and acquiring appropriate Installation- and region-wide data coverages. The GIS allows environmental professionals to produce custom maps for preliminary environmental site assessments and to facilitate analysis of environmental issues.

Projects: Project No. 6 – Natural Resources GIS and Mapping; see Appendix A.

Initiatives: Compile GIS data coverages and maintain and update data coverages, as needed. GIS data coverages should include:

- Wetlands, water bodies, water courses, and appropriate buffers;
- Forest stands;
- Natural communities;
- Undisturbed and undeveloped 100-year floodplain;
- Military constraint areas;
- Map soil units and areas where soil type presents a threat of erosion;
- Populations and habitats of endangered and threatened species and species of special concern;
- HW sites;
- Land use;
- Infrastructure and utilities;
- NASP Complex boundaries and buildings;
- Roads;
- Cultural, natural, historical, or archeological resources;
- Surface water quality monitoring stations;
- Stormwater outfalls and monitoring stations; and
- Shoreline areas, submerged aquatic vegetation, and essential fish habitat.

Strategy 5.2.4: NASP Complex continues to ensure that all cooperative agreements, memoranda, and other agreements between the installation and federal and state agencies that oversee and regulate natural resources protection, are current, and those agreements have been established with all necessary agencies.

Projects: None.

Initiatives: It will be the responsibility of the NRM to ensure that the NASP Complex has up-to-date agreements. The NRM will consult with foresters and fish and wildlife biologists at NAVFAC SE, as well as with federal, state, and county wildlife biologists, foresters, and land managers for assistance. The NRM will also consult with Installation commands and departments, such as MWR.

Objective 5.3: **Implement training, education, and stewardship initiatives for ecosystem management.**

Strategy 5.3.1: The NASP Complex will continue with the ecosystem management awareness and training/education program available to all interested NASP Complex personnel. In addition, the NASP Complex will continue the technical education and training program for all contract and Installation personnel involved in activities on the installation that may directly or indirectly affect ecosystem management success. Individuals required to attend will be those involved in or associated with activities and departments

including, but not limited to: stormwater management, landscaping, forest management, HW response, MWR, Public Works, volunteers, operations, and trainers.

Projects: None.

- Initiatives:**
- (1) Enlist the services of foresters, fish and wildlife biologists, and soil conservationists at NAVFAC SE, as well as federal, state, and county wildlife biologists, foresters, and land managers for program development.
 - (2) Encourage participation by providing information about installation natural resources and communicating each individual's important contributions to ensuring a viable ecosystem. Use pamphlets, flyers, command units, and the Internet to disseminate information. Initiate an annual environmental awareness achievement award for project suggestions and participation.
 - (3) Offer hands-on training and individual participation in activities to better demonstrate the concept, application, and importance of ecosystem management. Cross References: Activities such as landscaping (Section 5.1.5), wetland enhancement (Section 5.1.1), prescribed burning (5.2.1), urban forestry (Section 5.1.7), and habitat improvements (Section 5.3.2).
 - (4) Brief the CO annually on the importance of training and education to ensure cooperation among participating departments. Communicate to the CO the importance of all contract and Installation personnel receiving education in relevant environmental laws, regulations, directives, and mandates that have the potential to affect the military mission. The CO should require, at a minimum, that one representative from each of the tenant commands participate in the training.
 - (5) Encourage participants in the technical education and training program to conduct training and education classes for the tenant commands and departments they represent.
 - (6) Provide information about natural resources at the NASP Complex to visiting commands (e.g., training groups) prior to the command initiating actions.

Strategy 5.3.2: The NASP Complex will continue to implement programs and initiatives that foster citizen participation in ecosystem education and stewardship.

Projects: None.

- Initiatives:**
- (1) Encourage the use of volunteer groups (e.g., Scout troops, SCA) on the installation. Offer hands-on training and activity participation to better demonstrate the concept, application, and importance of ecosystem management. Cross References: Strategy 5.3.1 and activities such as landscaping (Section 5.1.5), wetland enhancement (Section 5.1.1), prescribed burning (5.2.1), urban forestry (Section 5.1.7), and habitat improvements (Section 5.3.1).
 - (2) Actively pursue suggestions from NASP Complex personnel for environmental enhancement projects.

- (3) Continue participation in Earth Day activities, field trips, and other environmental stewardship opportunities.
- (4) Maintain "Tree City USA" designation.
- (5) Continue participation in the Coastal America Program.
- (6) Participate in regional ecosystem management initiatives.
- (7) Continue to develop a Watchable Wildlife Program.
- (8) Maintain Clean Marina Status at Bayou Grande and Sherman Grove Marina.

Objective 5.4: Establish a planning team to review and update the INRMP in accordance with OPNAVINST 5090.1D, 12-3.4(c)(4) and 12-3.4(c)(12).

The INRMP is intended as a dynamic, evolving planning document; updates are required to ensure compliance with regulations and to initiate requests for project funding. The following strategy has been developed to accomplish this objective.

Strategy 5.4.1: The NASP Complex will develop a team of experts with sufficient technical knowledge to evaluate the effectiveness of INRMP implementation and to recommend improvements.

Projects: Project No. 2 – Pensacola INRMP; see Appendix A.

Initiatives: Review NASP Complex staffing, including assistance from NAVFAC SE and federal, state, and county agencies, to identify whether there are adequate staffing and expertise to update the INRMP. If not, list private contracting as a compliance project for implementation of Project 2. Cross Reference: Section 1.5.3.

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Program Elements

This section discusses natural resources management at the NASP Complex by dividing it into four components: land management, forestry, fish and wildlife, and outdoor recreation. These components are further divided into sub-components (for example, land management addresses wetlands, invasive and exotic species, soil conservation and erosion control, stormwater and water quality control, landscaping and grounds maintenance, floodplain management, and urban forestry).

Sub-components constitute natural resources management actions and are defined in this section. For each management action, this section discusses the issues, long-term management of the issues, the relationship of issues to ecosystem management within the NASP Complex, the relationships among ecosystem management actions, legal requirements, and sources for additional management information. This section also correlates the goals, objectives, and strategies (see Section 4) pertaining to ecosystem management issues. In addition, Section 5.5 discusses land impact guidelines.

The management actions described in this INRMP (Table 5-1) benefit the plants, animals, and ecosystems occurring on this installation. Special attention is given to rare, threatened, and endangered (RTE) species, and their habitats. The management actions are long-term conservation measures that provide benefits for terrestrial and aquatic habitats on the installation. Management actions such as soil conservation and storm water control, for example, limit sediment and pollutant runoff to protect water quality for species such as alligators, shorebirds, and fish. Forestry actions such as prescribed burning, thinning, and reforestation help to establish longleaf pine stands and herbaceous low-lying vegetation that provide habitat and resources for gopher tortoises, as another example.

The “Wildlife Habitat Management and Threatened and Endangered Species” section of this INRMP (Section 5.3.3) includes additional goals, objectives, strategies, and projects for the benefit and long-term conservation of RTE species found, or potentially found, on the installation. Animal and plant species explicitly accounted for in this INRMP are:

- Alligator Snapping Turtle
- American Alligator
- American Oyster Catcher (bird)
- American Swallow-tailed Kite (bird)
- Black Skimmer (bird)
- Caribbean Electric Ray (fish)
- Carolina Lily (plant)
- Chapman’s Butterwort (plant)
- Drummond’s Yellow-eyed Grass
- Dwarf Seahorse
- Eastern Diamondback Rattlesnake
- Florida Pine Snake
- Giant Manta Ray (fish)
- Godfrey’s Golden Aster (plant)
- Gopher Frog
- Gopher Tortoise
- Gulf Rock Rose (plant)
- Gulf Sturgeon (fish)
- Large-leaf Jointweed (plant)
- Least Tern (bird)
- Little Blue Heron (bird)
- Marian’s Marsh Wren (bird)
- Monarch Butterfly
- Osprey (bird)
- Parrot Pitcherplant
- Primrose-flowered Butterwort (plant)
- Purple Pitcher Plant
- Rufa Red Knot (bird)
- Reddish Egret (bird)
- Saltmarsh Topminnow (fish)
- Sea Turtles
 - Green Sea Turtle
 - Hawksbill Sea Turtle
 - Kemp’s Ridley Sea Turtle
 - Leatherback Sea Turtle
 - Loggerhead Sea Turtle
- Snowy Orchid (plant)
- Snowy Plover (bird)
- Southern Hog-nosed Snake
- Southern Red Lily (plant)
- Spoonflower
- Spoon-leaf Sundew (plant)
- Tricolored Heron (bird)
- West Indian Manatee
- White-fringed Orchid (plant)
- White-top Pitcher Plant

Table 5-1. Habitat Management Actions at the NAS Pensacola Complex

Habitat Management Actions	Section
Wetland Management	5.1.1
Soil Conservation and Erosion Control	5.1.2
Stormwater and Water Quality Control	5.1.3
Floodplain Management	5.1.4
Marine Coastal Management	5.1.5
Landscaping and Grounds Maintenance	5.1.6
Invasive, Exotic, and Noxious Species	5.1.7
Urban Forestry	5.1.8
Silvicultural Activities (i.e. Thinning, Prescribed Burns)	5.2.1
Forest Protection (i.e. Wildfire Protection)	5.2.2
Fisheries Management	5.3.1
Migratory Birds	5.3.2
Threatened and Endangered Species	5.3.3
Nuisance Wildlife and BASH	5.3.4

5.1 LAND MANAGEMENT

Land management is the development of programs and techniques for managing lands. The land management issues of this INRMP are wetlands, invasive and exotic species, soil conservation and erosion control, stormwater, landscaping and grounds maintenance, floodplains protection, and urban forestry. Agricultural outleasing does not occur at the NASP Complex, and, therefore, is not addressed in this INRMP. Opportunities for outleasing may be pursued in the future as market and other conditions permit. Currently, the majority of land area at the NASP Complex is within the urban area, is forested, or is preserved for wildlife habitat, or used for outdoor recreation.

The land management issues in this plan are not intended for directing land use activity (i.e., what buildings or activities should go where), but rather to provide managers with directions and general techniques (e.g., regarding soil conservation, stormwater management) to protect and enhance the natural environment, while continuing to provide for the needs associated with the military mission of the NASP Complex.

5.1.1 Wetlands

Wetlands are lands on which water covers the soil or is present either at or near the surface of the soil or within the root zone all year or for varying periods of time during the year, including during the growing season. The USACE (33 CFR 328.3(b), 1991) and the EPA (40 CFR 230.3(t), 1991) jointly define wetlands as "...those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (USACE 1982). The USACE and FDEP define wetlands based upon the presence of hydrophytic vegetation, hydric soil characteristics, and hydrologic indicators, which must all occur and meet the defined characteristics in order for a location to be classified as a wetland.

The NASP Complex has 1000 acres of wetland areas including 650 acres at NAS Pensacola, 250 acres at Bronson Field, 100 acres at Saufley Field, and 0.5 acre at Corry Station (see Figures 2-2, 2-3, 2-4, and 2-5 in Chapter 2). Managed ponds comprise the open water wetlands at the Complex. Some of the wetlands within the NASP Complex have been hydrologically altered by past ditching.

Issues

Wetlands at the NASP Complex provide habitat for birds, fish, wildlife, and plants, store and purify water, and provide open space and aesthetic value. Development constraints within the NASP

Complex and the need for future development of lands require the NASP Complex to balance the wetland protection with support of the military mission.

Goals and Objectives

- Protect and maintain resources within the NASP Complex through the continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Continue existing and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASP 2013);
- Inventory wetlands and assess their function and quality as warranted;
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Protect and enhance shorelines through existing and new programs;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Manage forests in an ecologically sound manner to provide habitat for wildlife.
- Manage forest stands for watershed protection (FDACS 2003);
- Preserve and protect threatened and endangered species, and species of special concern, to prevent reduction of individuals or populations.

Projects

- Species Protection and Habitat Development (Project 1 in Appendix A);
- Invasive Species Control (Project 3 in Appendix A);
- Erosion Control for Coastal Zone Protection (Project 4 in Appendix A);
- Establish Shoreline Vegetation (Project 5 in Appendix A);
- Natural Resources GIS and Mapping (Project 6 in Appendix A);
- Timber Stand Improvement (Project 13 in Appendix A); and
- Fire Management (Project 15 in Appendix A)

Management Strategies

- Continue to evaluate the stormwater management program and activities contributing to stormwater runoff and pollutant loading in stormwater runoff, and implement BMPs to minimize stormwater pollution (FDACS 2003; FDOT and FDEP 2007; FDEP 2008; NASP 2013);
- Continue to develop a soil erosion control management plan, and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Continue to use Integrated Pest Management (IPM) techniques in pest management programs and emphasize the use of pesticides with low toxicity and low application rates;
- Inventory wetlands and assess their function and quality as warranted, promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue using BMPs for forest management activities (FDACS 2003) to ensure watershed protection;
- Review and monitor proposed activities for impact avoidance to the attenuation capacity of the 100-year floodplain. If it is determined that development is necessary within the 100-year floodplain to support the military mission, development shall first be located in the previously disturbed areas of the floodplain;
- Ensure implementation of policies that minimize adverse impacts to ecosystem resources from land disturbance activities;
- Continue to establish a program to prevent further degradation of shorelines;
- Continue to implement programs and activities for the protection and enhancement of habitat for threatened and endangered animal and plant species; and
- Continually verify that natural resources personnel obtain proper training and certifications.

Long-Term Management

The long-term management concept for the protection and enhancement of wetlands on the NASP Complex will include DON's policy of *no net loss* of wetlands, and will be to maintain and develop vegetative buffers extending 50 feet around wetland areas, except where sufficient acreage is not available as determined by the NRM. A minimum buffer width of 50 feet is required to provide the basic physical and chemical buffering needed to reduce siltation into the wetland, retain the natural attenuation and filtering capacity of the wetland, and maintain the wetland's biological communities. Buffers will not be removed if any portion of the buffer is less than 50 feet wide or if the result would be a buffer width less than 50 feet.

The NASP Complex will adhere to best management practices to protect wetlands and water quality from sedimentation and erosion during activities on installation properties. These include the *Stormwater Management Action Plan, Naval Air Station Pensacola, Revised December 2013* (NASP 2013), *Florida Erosion and Sediment Control Designer and Reviewer Manual* (FDOT and FDEP 2007), *Florida Stormwater Erosion and Sedimentation Inspector's Manual* (FDEP 2008), and *Silviculture Best Management Practices, Revised 2003* (FDACS 2003).

In wetlands areas where insufficient acreage is available for buffering or greater protection is needed, other appropriate measures will be employed, including (1) redirecting, discouraging, or prohibiting pedestrian and pet access to the wetland or buffer area by the placement of hedges, fences, or signs; and (2) planting vegetated filter strips (swaths of land planted with grasses and trees) to intercept uniform sheet flows of runoff before the runoff reaches a wetland. The NASP Complex will use these methods individually or in combination along the perimeters of wetlands.

Integration with Other Natural Resources Management Activities

- Soil Conservation and Erosion, Section 5.1.2 – sedimentation into wetlands;
- Stormwater and Water Quality, Section 5.1.3 – stormwater runoff into wetlands;
- Floodplains, Section 5.1.4 – maintain wetlands to reduce flood impacts;
- Marine Coastal, Section 5.1.5 – maintain wetlands to sustain coastal ecosystem;
- Landscaping and Grounds Maintenance, Section 5.1.6 – maintain wetland buffer;
- Invasive, Exotic, and Noxious Species, Section 5.1.7 – potential pesticide contamination of wetlands;
- Urban Forestry, Section 5.1.8 – consider wetland buffers and water quality during urban forestry;
- Silviculture, Section 5.2.1 – consider effects of burns and soil erosion on wetlands;
- Forest Protection, Section 5.2.2 – maintain regular burn cycles to ensure natural wetland conditions;
- Fisheries Management, Section 5.3.1 – wetland nursery habitat for juvenile fishes;
- Migratory Birds, Section 5.3.2 – wetlands are vital forage habitat for birds, particularly wading birds;
- Threatened and Endangered Species, Section 5.3.3 – wetlands provide vital habitat for many protected species;
- Nuisance Wildlife and BASH, Section 5.3.4 – consider propensity for wetlands to attract BASH animals;
- Outdoor Recreation, Section 5.4 – restricted uses within wetlands;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on wetland laws, regulations, and management practices; and
- GIS, Section 5.5.2 – utilize GIS tools to improve wetland management.

Ecosystem Management

Proper wetlands management is an essential component of ecosystem management because it preserves, enhances, and creates habitat for a variety of wildlife species, while providing aesthetic and educational values. Changes to hydrology, geochemistry, substrate, and species composition may impair the ability of a wetland to function properly. Such alterations can affect the ability of the wetland to filter excess sedimentation and nutrients from surface water, resulting in deteriorated surface water quality. Vegetative buffers between wetland and upland vegetative

communities will help maintain and improve water quality by filtering sediments and other pollutants from runoff prior to discharge into the wetland. Vegetative buffers also will provide habitat for a diversity of wetland and upland species.

Military Mission

NASP Complex activities detrimental to wetland functions can affect the military mission by placing Complex at odds with Florida DEP. Proper wetland management improves water quality for MWR and outdoor recreational activities, which helps maintain the morale of personnel assigned to the Complex. Proper wetland management also helps mitigate the effects of flooding, which could pose a threat to the continuation and location of training activities.

Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Wetlands

- Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, 33 U.S.C. 1251, prohibits the discharge of dredged or filled materials into waters of the United States, including wetlands, without first obtaining a permit from USACE (Section 404 of the CWA).
- Executive Order 11990, 24 May 1977, as amended, requires government agencies, in carrying out agency actions and programs affecting land use, to provide leadership and take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.
- Clean Water Act: Section 401 Water Quality Certification, 1986, 33 U.S.C. 1341, requires that states certify compliance of federal permits or licenses with state water quality requirements and other applicable state laws. Under Section 401, states have authority to review any federal permit or license that may result in a discharge to wetlands or other waters under state jurisdiction to ensure that the actions would be consistent with the state's water quality requirements.
- Executive Order 13751, 5 December 2016, requires federal agencies prevent the introduction, establishment, and spread of invasive species, detect and respond rapidly to eradicate or control populations of invasive species in a manner that is cost-effective and minimizes human, animal, plant, and environmental health risks, monitor invasive species populations accurately and reliably, and provide for the restoration of native species and ecosystems that have been impacted by invasive species, among other requirements.
- OPNAVINST 5090.1D, 12-3.8(b) discusses natural resources management relating to wetland management.
- Coastal Zone Management Act, 16 U.S.C. 1451, Establishes goals and a mechanism for states to control use and development of their coastal zone. Authorizes states to administer approved coastal non-point source pollution programs.

Additional Sources of Information

USACE, Jacksonville Division, Pensacola Section
<http://www.saj.usace.army.mil/>

USFWS, National Wetlands Inventory, Regional Wetlands Coordinator, Region 4
<https://www.fws.gov/wetlands/nwi/rwc4.html>

EPA, Water: Wetlands

<http://water.epa.gov/type/wetlands/index.cfm>

FDEP, Submitting an Environmental Resource Permit

<http://www.dep.state.fl.us/water/wetlands/delineation/>

FDEP, Water Programs

<http://www.dep.state.fl.us/water/>

Northwest Florida Water Management District (NFWFMD)

<https://www.nfwwater.com/>

University of Florida, Howard T. Odum Center for Wetlands

<http://www.cfw.ufl.edu/>

Environmental Law Institute

<http://www.eli.org/>

5.1.2 Soil Conservation and Erosion Control

Soil conservation involves the identification (e.g., type, location, and amount) and appropriate use of soils in accordance within the limits of its physical characteristics while protecting it from uncontrolled stormwater runoff to prevent and control soil erosion. This information will be used to plan the use and management of soils for construction, forestry practices, recreation facilities, and wildlife habitat. More fragile soil types require modifications to the timing, intensity and frequency of forestry and wildlife management practices. Knowing where soil types are located on a particular tract, and understanding the capabilities and limitations of the soils are prerequisites to selecting the most appropriate wildlife habitat or forestry improvement practices.

Erosion is the detachment and movement of soil, usually by water, which results in sedimentation and physical damage. Water quality is diminished by increased sedimentation, which is a form of water pollution. Sedimentation is particularly detrimental to benthic organisms and many fish species; it can eliminate habitat by covering food sources and spawning sites, smother bottom-dwelling organisms, and increase turbidity to the point that photosynthesis is hindered or prevented. Reductions in photosynthesis decrease dissolved oxygen levels to the detriment of fish and benthic invertebrates. Soil erosion also undermines roadways, shoreline facilities, and other military structures, and increases maintenance costs associated with stormwater facilities.

Issues

Soil erosion can undermine roadways, shoreline facilities, and other military structures, and often results in water quality problems (e.g., increased turbidity). It also increases maintenance costs associated with stormwater facilities. Actions contributing to the susceptibility of the soil to erosion include:

- Pedestrian traffic on grassy areas of low sustainability due to poor soil conditions, resulting in a turf of thin grass interspersed with bare sandy areas;
- Excessive and improper mowing activities and practices;

- Human-made alterations to the natural vegetative cover and topography, including the channeling of water flow (e.g., ditches) which decreases infiltration and increases the quantity and rate of flow, the exposure of soils and increased soil slopes, and the creation of impervious surfaces;
- Forestry practices (e.g., prescribed burns, thinning, and reforestation) that expose soils to rainfall and stormwater runoff;
- Wave and wake action along shoreline areas of NAS Pensacola and BARP; and
- Combination of sandy soils, drought, and rainfall events that occur at the NASP Complex.

Areas at the NASP Complex that are either susceptible to erosion or have an erosion problem include road shoulders, shorelines, and areas adjacent to runways that receive airfield surface runoff. Proper grounds maintenance, which emphasizes vigorous growth of vegetation, is the best and most economical means of erosion control.

Goals and Objectives

- Protect and maintain natural resources within the NASP Complex by continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Continue existing and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Protect and enhance shorelines through existing and new programs;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Manage forests in an ecologically sound manner to provide habitat for wildlife;
- Manage forest stands for watershed protection (FDACS 2003); and
- Preserve and protect threatened and endangered species, and species of special concern, to prevent reduction of individuals or populations.

Projects

- Invasive Species Control (Project 3 in Appendix A);
- Erosion Control for Coastal Zone Protection (Project 4 in Appendix A);
- Establish Shoreline Vegetation (Project 5 in Appendix A);

- Natural Resources GIS and Mapping (Project 6 in Appendix A); and
- Timber Stand Improvement (Project 13 in Appendix A).

Management Strategies

- Continue to evaluate the stormwater management program and activities contributing to stormwater runoff and pollutant loading in stormwater runoff, and implement BMPs to minimize stormwater pollution and erosion (FDACS 2003; FDOT and FDEP 2007; FDEP 2008; NASP 2013);
- Continue to develop a soil erosion control management plan, and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Continue to use Integrated Pest Management (IPM) techniques in pest management programs and emphasize the use of pesticides with low toxicity and low application rates;
- Inventory wetlands and assess their function and quality as warranted, promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASP 2013);
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue using BMPs for forest management activities to ensure watershed protection (FDACS 2003);
- Review and monitor proposed activities for impact avoidance to the attenuation capacity of the 100-year floodplain. If it is determined that development is necessary within the 100-year floodplain to support the military mission, development shall first be located in the previously disturbed areas of the floodplain;
- Ensure implementation of policies that minimize adverse impacts to ecosystem resources from land disturbance activities;
- Continue to establish a program to prevent further degradation of shorelines;
- Continue to implement programs and activities for the protection and enhancement of habitat for threatened and endangered animal and plant species; and
- Continually verify that natural resources personnel obtain proper training and certifications.

Long-Term Management

The long-term management concept for soil conservation is to identify and understand the suitability and sustainability of a soil unit for a proposed action. The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil surveys may be used to identify the potential applicability and limitations of each soil unit for land use activities. Land uses include forestry, building construction, recreational, and wildlife habitat. The USDA soil survey for Escambia County, *Soil Survey of Escambia County, Florida* (1960), also provides information about potential erosion hazards; groundwater contamination; productivity of cultivated crops, trees, and grass; and the protection of water quality, wetlands, and wildlife habitat. Soils maps for Escambia County have been updated (1999) and are available through the USGS Soil

Surface Geographic Database (SSURGO) website (see Additional Sources of Information at the end of this section). Soil survey information can be obtained from the NRCS. To minimize soil erosion, the NASP Complex will adhere to best management practices to protect wetlands and water quality from sedimentation and erosion during activities on installation properties. These include the *Stormwater Management Action Plan, Naval Air Station Pensacola, Revised December 2013* (NASP 2013), *Florida Erosion and Sediment Control Designer and Reviewer Manual* (FDOT and FDEP 2007), *Florida Stormwater Erosion and Sedimentation Inspector's Manual* (FDEP 2008), and *Silviculture Best Management Practices, Revised 2003* (FDACS 2003).

In addition, the NASP Complex will:

- Implement the six principles for soil conservation and erosion management presented in Smoot and Smith (1999):
 1. Minimize areas of disturbance;
 2. Stabilize and protect disturbed areas from raindrop and runoff energies as soon as practicable;
 3. Minimize runoff velocities;
 4. Protect disturbed areas from adjacent area runoff;
 5. Retain sediment within construction sites; and
 6. Reduce exposure time.
- Take into account erosion control measures for forest and shoreline areas and for forestry reforestation and timber stand improvement (TSI) actions in determining the need for an SWPPP;
- Evaluate areas on the Complex for erosion control problems;
- Reduce mowing and increase grass height and coverage;
- Maintain good ground cover through proper fertilization to prevent weed invasion and erosion; and
- Control potential erosion control problems using the following methods:
 1. Use vegetative and structural protective covers (e.g., permanent seeding, groundcover);
 2. Use sediment barriers (e.g., straw bales, silt fence, brush);
 3. Create sediment detention ponds and basins (e.g., sediment traps and basins);
 4. Implement stream and shore bank protection (e.g., riprap);
 5. Construct pervious surface walkways in areas of high pedestrian traffic;
 6. Construct water conveyances (e.g., slope drains, check dam inlet and outlet protection); and
 7. Implement temporary construction and road stabilization practices (e.g., placement of stone and geotextile fabrics [Smoot and Smith 1999]).

Integration with Other Natural Resources Management Activities

- Wetlands, Section 5.1.1 – control sedimentation into wetlands;
- Stormwater and Water Quality, Section 5.1.3 – control stormwater to reduce erosion;
- Floodplains, Section 5.1.4 – identify soil types to reduce flood damage;
- Marine Coastal, Section 5.1.5 – conserve soil in coastal environments;
- Landscaping and Grounds Maintenance, Section 5.1.6 – ensure mowing plans and landscaping do not compromise soil conservation;
- Invasive, Exotic, and Noxious Species, Section 5.1.7 – ensure removal of undesired plants does not enhance erosion;
- Urban Forestry, Section 5.1.8 – consider soil conservation during urban forestry planning;
- Silviculture, Section 5.2.1 – consider effects of soil erosion;
- Forest Protection, Section 5.2.2 – burns promote the health of herbaceous ground cover to prevent erosion;
- Fisheries Management, Section 5.3.1 – control erosion into fishing areas;
- Migratory Birds, Section 5.3.2 – control erosion into wading areas;
- Threatened and Endangered Species, Section 5.3.3 – control erosion to maintain habitat and water quality for protected species;
- Nuisance Wildlife and BASH, Section 5.3.4 – controlling nuisance species that root (e.g. feral pigs) enhances erosion control;
- Outdoor Recreation, Section 5.4 – educate resource users to minimize erosion;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on BMPs; and
- GIS, Section 5.5.2 – utilize GIS tools to improve soil mapping and management.

Ecosystem Management

Soil conservation is an essential component of the ecosystem management concept. Soils are particularly susceptible to erosion from uncontrolled stormwater runoff and may discharge into water bodies from point and nonpoint sources. Sediments in stormwater runoff have the capacity to obstruct drainage infrastructure and to reduce the volume capacity of wetlands, potentially resulting in damaging flood conditions. Turbidity pollution, derived from soil erosion, may also affect surface water quality in adjacent freshwater, estuarine, and marine environments.

Military Mission

Erosion can undermine roads and runways, potentially affecting the military mission. It can also increase sediment loading in stormwater runoff, which increases turbidity and reduces water quality in surrounding waters, violating environmental laws and placing the Complex at odds with Florida FDEP.

Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Soil Conservation

- Soil Conservation Act, 16 U.S.C. 590(a) et seq., provides for soil conservation practices on federal lands.
- Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, 33 U.S.C. 1251, regulates the dredging and filling of wetlands and establishes procedures for identifying and regulating nonpoint sources of polluted discharge, including turbidity, into waterways.
- Clean Water Act (CWA), Section 402: National Pollutant Discharge Elimination System (NPDES) Program, 2002, 33 USC 1251, controls direct discharges into navigable waters. NPDES permits, issued by either the EPA or an authorized state or tribe, contain industry-specific technology-based limits and establish pollutant monitoring and reporting requirements.
- CWA Section, Section 401, requires an applicant for a federal license or permit to provide a certification that any discharges from the facility will comply with the CWA, including water quality standard requirements.
- CWA Section, Section 404, establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands.
- Rivers and Harbors Act, requires authorization from the USACE for the construction of any structure in or over any navigable water of the United States and the excavation, dredging, and deposition of material in these waters or any obstruction or alteration in a navigable water.
- Executive Orders 11989 and 12608, close areas to off-road vehicles where soil, wildlife, or other natural resources may be adversely affected.
- Executive Order 13751, 5 December 2016, requires federal agencies prevent the introduction, establishment, and spread of invasive species, detect and respond rapidly to eradicate or control populations of invasive species in a manner that is cost-effective and minimizes human, animal, plant, and environmental health risks, monitor invasive species populations accurately and reliably, and provide for the restoration of native species and ecosystems that have been impacted by invasive species, among other requirements.
- OPNAVINST 5090.1D, 12-3.8(d), discusses natural resources management relating to soil conservation management.
- Florida Statutes, Chapter 582.05, provides for control and prevention of soil erosion and damage from floodwater and sediments, and for the conservation of soil and water resources.

Additional Sources of Information

USDA Natural Resources Conservation Service in Florida
<http://www.fl.nrcs.usda.gov/>

NPDES Stormwater Pollution Prevention Plans
<https://www.epa.gov/npdes/developing-stormwater-pollution-prevention-plan-swppp>

FDEP Stormwater, Erosion, and Sediment Control
<http://www.dep.state.fl.us/water/nonpoint/erosion.htm>

USDA Soil Survey Geographic (SSURGO) Database
<https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/survey/geo/>

The National Soil Erosion Research Laboratory
http://www.ars.usda.gov/main/site_main.htm?modecode=36-02-15-00

5.1.3 Stormwater and Water Quality Control

Stormwater runoff is precipitation that falls onto surfaces such as roofs, streets, the ground, etc., and is not absorbed or retained by that surface, but collects volume and velocity as it flows off. Stormwater runoff management addresses measures to reduce stormwater runoff and pollutants in stormwater runoff, and to control discharge from point and nonpoint sources. Nonpoint source pollution is the polluting of surface water and groundwater resources by diffuse sources, rather than by discrete, identifiable point sources. Point and nonpoint source pollutants are commonly associated with land use. These pollutants routinely include sediments from land disturbance, pesticides and nutrients from urban lawns and landscaping, and oil, grease, heavy metals, and other toxic materials from streets, rooftops, and parking lots. Stormwater runoff is the most common transport mechanism for nonpoint source pollution. The majority of pollutant loading occurs during and immediately after storm events.

Stormwater at the NAS Pensacola is channeled through various-sized gravity piped systems, ditches, and concrete-lined channels that discharge directly into Bayou Grande and Pensacola Bay. There is no stormwater infrastructure at Bronson Field. Stormwater at Corry Station flows from roads and parking lots, building roofs, and other impervious surfaces to an underground stormwater sewer system and discharges directly into Jones Creek and Bayou Chico. Stormwater at Saufley Field is channeled by means of open grass-lined swales from the airfield and an underground storm sewer system from the developed area; drainage flows into Perdido Bay by means of a concrete-lined trapezoidal ditch equipped with an oil and water separator.

Issues

As development increases at the NASP Complex, the control of stormwater drainage is an increasingly important aspect of water quality control. More impermeable surface area (less land available for absorption and filtration) translates to faster runoff rates and increased pollution loads. More development means more land clearing and landscaping activities that require appropriate stormwater management practices. It is especially important to have proper stormwater management when developed areas are in close proximity to surface water bodies as they are at NASP, Bronson Field, Corry Station, and Saufley Field.

Goals and Objectives

- Protect and maintain natural resources within the NASP Complex by continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;

- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Continue existing and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Protect and enhance shorelines through existing and new programs;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Manage forests in an ecologically sound manner to provide habitat for wildlife;
- Manage forest stands for watershed protection; and
- Preserve and protect threatened and endangered species, and species of special concern, to prevent reduction of individuals or populations.

Projects

- Erosion Control for Coastal Zone Protection (Project 4 in Appendix A);
- Establish Shoreline Vegetation (Project 5 in Appendix A);
- Natural Resources GIS and Mapping (Project 6 in Appendix A); and
- Timber Stand Improvement (Project 13 in Appendix A).

Management Strategies

- Continue to evaluate the stormwater management program and activities contributing to stormwater runoff and pollutant loading in stormwater runoff, and implement BMPs to minimize stormwater pollution and erosion (FDACS 2003; FDOT and FDEP 2007; FDEP 2008; NASP 2013);
- Continue to develop a soil erosion control management plan, and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Continue to use Integrated Pest Management (IPM) techniques in pest management programs and emphasize the use of pesticides with low toxicity and low application rates;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASP 2013);
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue using BMPs for forest management activities to ensure watershed protection (FDACS 2003);
- Review and monitor proposed activities for impact avoidance to the attenuation capacity of the 100-year floodplain. If it is determined that development is necessary within the

100-year floodplain to support the military mission, development shall first be located in the previously disturbed areas of the floodplain;

- Ensure implementation of policies that minimize adverse impacts to ecosystem resources from land disturbance activities;
- Continue to establish a program to prevent further degradation of shorelines;
- Continue to implement programs and activities for the protection and enhancement of habitat for threatened and endangered animal and plant species; and
- Continually verify that natural resources personnel obtain proper training and certifications.

Long-Term Management

The NASP Complex will implement programs to reduce pollutant loading and stormwater runoff into wetlands and water bodies. Wetland quality and wildlife habitat will benefit from the reduction of stormwater and pollutant loading. In addition, seagrass beds found along the southwestern shoreline of NASP, which are particularly susceptible to increased turbidity and pollutant loading, would benefit from reduced stormwater flow. The NASP Complex will adhere to best management practices to protect wetlands and water quality from sedimentation and erosion during activities on installation properties. These include the *Stormwater Management Action Plan, Naval Air Station Pensacola, Revised December 2013* (NASP 2013), *Florida Erosion and Sediment Control Designer and Reviewer Manual* (FDOT and FDEP 2007), *Florida Stormwater Erosion and Sedimentation Inspector's Manual* (FDEP 2008), and *Silviculture Best Management Practices, Revised 2003* (FDACS 2003). The NASP Complex will also operate under the following management guidelines for stormwater runoff and water quality control:

1. The NASP Complex will establish a shoreline buffer along developed and undeveloped areas adjacent to Bayou Grande, Pensacola Bay, Big Lagoon, and Perdido Bay, where feasible. A natural vegetated buffer will be maintained from the normal high water line 50 feet landward. Allowances may be made for essential military mission requirements;
2. The NASP Complex will prevent pollutant loading in stormwater by operating under its Facility Response Plan, HW Management Program, and SPCC Plan;
3. The NASP Complex will manage stormwater runoff from new development to achieve *no net increase* in stormwater discharge volume from the Installation, unless there are no means to do so that will meet the military mission;
4. The NASP Complex will continue to provide stormwater retention by developing and enhancing stormwater ponds. Stormwater ponds often function as wetlands and can provide ideal growing conditions for emergent wetland vegetation, which may be useful in pollutant removal;
5. The NASP Complex will consider, where feasible, retrofitting stormwater infrastructure to provide natural infiltration of stormwater (e.g., grass swales, shallow retention ponds adjacent to intakes), or to increase detention time prior to discharge;
6. The NASP Complex will use natural and created buffers around new stormwater ponds to provide wildlife habitat, reduce impacts associated with runoff, filter sediments and sediment-bound pollutants, and facilitate infiltration prior to discharge

into water bodies. Reducing sediment loading will increase the longevity of the retention ponds and further reduce maintenance costs;

7. The NASP Complex will use permeable alternatives to impervious surfaces; for example, wood decks instead of concrete patios, grass swales instead of concrete;
8. To help protect water quality, the NASP Complex continues to inventory its use of pesticides and fertilizers and assess alternatives to reduce the use of mineral fertilizers and pesticides. The NASP Complex will continue to use a combination of organic and mineral fertilizers to minimize the potential for nutrient loading in stormwater runoff while ensuring the growth of landscaping and grass cover on the Installations. The NASP Complex will continue to use pesticides with lower toxicity levels and to apply them at reduced rates;
 - The use of organic matter to provide nutrient material will be considered. Organic matter consists of the wastes and remains of plants and animals. Organic matter is the nutrient of choice because it improves soil composition and structure by making soil more resistant to erosion by stormwater runoff. Other benefits from increasing the organic matter content of soil include better soil aeration and temperature control, increased water holding and nutrient retaining capacities, and a steady supply of nutrients to plants;
 - Mineral fertilizers are materials, either natural or manufactured, containing nutrients essential for the normal growth and development of the plants. Mineral fertilizers include both fast and slow-release fertilizers, and will be used as a supplement to organic matter for the growth and development of landscaping and grass cover;
 - Where feasible, slow-release fertilizers will be the mineral fertilizer of choice, and will be used, after consultation with the NRM, in combination with organic matter when it is impractical to only use organic matter. Slow-release mineral fertilizers are released at slow rate throughout the season, thereby reducing the amount of waste by leaching and reducing the potential for surface water contamination. Other benefits of using slow-release fertilizers are the reduced application frequency and the minimization of fertilizer burn;
 - A blended fast and slow-release mineral fertilizer will be used in areas where the following conditions are met: (1) areas of size where the use of organic material is impractical, and (2) areas where there is no potential for the discharge of fertilizer into surface water bodies;
 - Fertilizers and pesticides will not be applied before or during rain events due to the strong likelihood of runoff. Fertilizers and pesticides will be applied during maximum plant uptake periods to minimize leaching; and
 - The NASP Complex will work with the NAVFAC ABD and the FDACS Pesticide Division to ensure appropriate fertilizer and pesticide applications.

Integration with Other Natural Resources Management Activities

- Wetlands, Section 5.1.1 – control runoff and sedimentation into wetlands;
- Soil Conservation and Erosion, Section 5.1.2 – stormwater control will reduce erosion;
- Floodplains, Section 5.1.4 – proper stormwater drainage helps reduce flood damage;
- Marine Coastal, Section 5.1.5 – ensure runoff does not accelerate coastal erosion;
- Landscaping and Grounds Maintenance, Section 5.1.6 – landscape to reduce runoff velocity and maximize absorption;

- Invasive, Exotic, and Noxious Species, Section 5.1.7 – ensure removal of undesired plants does not accentuate the effects of runoff;
- Urban Forestry, Section 5.1.8 – consider runoff during urban forestry planning;
- Silviculture, Section 5.2.1 – consider effects of stormwater runoff and water quality;
- Forest Protection, Section 5.2.2 – burns promote the health of herbaceous ground cover to prevent erosion from stormwater;
- Fisheries Management, Section 5.3.1 – control water quality in fishing areas;
- Migratory Birds, Section 5.3.2 – control water quality in wading areas;
- Threatened and Endangered Species, Section 5.3.3 – maintain water quality for protected species;
- Nuisance Wildlife and BASH, Section 5.3.4 – control pesticide to reduce runoff in stormwater;
- Outdoor Recreation, Section 5.4 – educate resource not to accentuate the effects of runoff;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on stormwater and water quality BMPs; and
- GIS, Section 5.5.2 – utilize GIS tools to improve management of stormwater runoff.

Ecosystem Management

The effective management of stormwater and water quality is essential to realize the ecosystem management concept. Implementation of BMPs in developed, semi-developed, and unimproved areas will help protect water quality and habitat for aquatic life (FDACS 2003; FDOT and FDEP 2007; FDEP 2008; NASP 2013). BMPs address the reduction of sedimentation, nutrient overloading, bacterial and parasitic pests, and harmful chemicals in stormwater. Construction of any new stormwater ponds in accordance with the stormwater and water quality management concept will increase wildlife habitat and reduce the potential for additional discharge from new development into Pensacola Bay, Bayou Grande, Big Lagoon, and Perdido Bay.

Military Mission

Improper stormwater management could lead to increased flooding on the NASP Complex properties, altering the timing and location of training. It can also lead to increased erosion, and sedimentation into water bodies, which increases turbidity and reduces water quality in surrounding waters, violating environmental laws and placing the Complex at odds with Florida FDEP.

Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Stormwater and Water Quality

- Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, 33 U.S.C. 1251, regulates the dredging and filling of wetlands and establishes procedures for identifying and regulating nonpoint sources of polluted discharge, including turbidity, into waterways.

- Coastal Zone Management Act of 1972, 16 U.S.C. 1451 et seq., establishes authority (Section 6217) for states to administer coastal nonpoint pollution programs when approved by NOAA and EPA. The NASP Complex will coordinate with the State of Florida for nonpoint source compliance with the Florida Coastal Nonpoint Source Pollution Control Program.
- Executive Order 11990, 24 May 1977, as amended, directs the preservation and enhancement of wetlands.
- Oil Pollution Act of 1990 (OPA 90), 33 U.S.C. 2701, requires planning for, rescue of, minimization of injury to, and assessment of damages or injury to fish and wildlife resources from the discharge of oil.
- Comprehensive, Environmental Response, Compensation and Liability Act, 42 U.S.C. 9601 et seq., authorizes Natural Resources Trustees to recover damages for injury to, destruction of or loss of natural resources resulting from the release of a hazardous substance.
- CWA, Section 402 NPDES Program, 2002, 33 USC 1251, controls direct discharges into navigable waters. NPDES permits, issued by either the EPA or an authorized state or tribe, contain industry-specific, technology-based and water-quality-based limits and establish pollutant monitoring and reporting requirements.
- CWA, Section 401, requires an applicant for a federal license or permit to provide a certification that any discharges from the facility will comply with the CWA, including water quality standard requirements.
- CWA, Section 404, establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands.
- OPNAVINST 5090.1D, 12-3.8(f), discusses natural resources management relating to nonpoint source pollution.
- OPNAVINST 5090.1D, Chapter 39, establishes requirements, guidelines and standards for the assessment of damages arising from the release of oil or hazardous substances.
- Florida Statutes, Chapter 373, Management and Storage of Surface Waters, regulates the management and storage of surface water and is implemented by NFWFMD under Environmental Resources Permitting.
- Florida Statutes, Chapter 376, Pollutant Discharge Prevention and Removal, prohibits the discharge of pollutants into coastal waters, estuaries, tidal flats, or beaches.
- Florida Statutes, Chapter 380, The Florida Environmental Land and Water Management Act of 1972, is intended: (1) to ensure a water management system that reverses the deterioration of water quality and that provides optimum utilization of limited water resources; (2) to facilitate orderly, well planned development; and (3) to protect public health, welfare, safety, and quality of life for Florida residents.
- Florida Statutes, Chapter 403, Florida Air and Water Pollution Control Act, conserves, protects, maintains, and improves the quality of the public water supply. Waste must not be discharged into any waters without prior approval from the state.
- Florida Statutes, Chapter 582, Soil and Water Conservation, provides control and prevention of soil erosion, prevention of damage from floodwater and sediments, and conservation of soil and water resources.
- Florida Coastal Management Program, requires federal action in the coastal zone to be consistent with 23 Florida Statutes, which are administered by 11 state agencies and four of the five state water management districts. The coastal zone includes the area encompassed by the state's 67 counties and its territorial waters. Therefore, federal actions which occur throughout the state are reviewed by the state for consistency with

the FCMP. Consistency with the statutes constitutes consistency with the FCMP (DCA 1999).

Additional Sources of Information

Northwest Florida Water Management District
<http://www.nwfwmd.state.fl.us/>

NPDES Stormwater Pollution Prevention Plans
<https://www.epa.gov/npdes/developing-stormwater-pollution-prevention-plan-swppp>

EPA Office of Wetlands, Oceans, and Watersheds
<http://water.epa.gov/aboutow/owow/>

FDEP Water Programs
<http://www.dep.state.fl.us/water/>

FDEP Stormwater, Erosion, and Sediment Control
<http://www.dep.state.fl.us/water/nonpoint/erosion.htm>

FDEP Nonpoint Source Management Program
<http://www.dep.state.fl.us/water/nonpoint/index.htm>

USGS Water Resources Programs
<http://water.usgs.gov/programs.html>

USGS Florida Water Science Center
<http://fl.water.usgs.gov/>

Environmental Law Institute
www.eli.org

Nonpoint Source Pollution of Surface Waters
<http://water.epa.gov/aboutow/owow/>

5.1.4 Floodplain Management

Portions of the land at NAS Pensacola, Bronson Field, and Saufley Field are within 100-year floodplains. As such, management of land use and development at these properties is regulated by E.O. 11988, Floodplain Management, which directs federal agencies to avoid construction in the floodplain and prescribes management of land use in floodplains to avoid uses that would increase the amount and rate at which flooding occurs or decrease the flood attenuation capacity of the floodplain.

Issues

Substantial development (i.e., grading, filling, dredging, extraction, storage, soil mixing, and the construction or improvement of structures) has occurred within the 100-year floodplain at NAS Pensacola and Bronson Field (see Figures 2-2 and 2-3 in Chapter 2). Most of the ecological functions of the floodplain, such as the transport and cycling of nutrients and provision of productive and essential habitats, have been lost in the developed areas.

Goals and Objectives

- Protect and maintain natural resources within the NASP Complex by continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Continue existing and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized; and
- Protect and enhance shorelines through existing and new programs;

Projects

- Erosion Control for Coastal Zone Protection (Project 4 in Appendix A);
- Establish Shoreline Vegetation (Project 5 in Appendix A); and
- Natural Resources GIS and Mapping (Project 6 in Appendix A).

Management Strategies

- Review and monitor proposed activities for impact avoidance to the attenuation capacity of the 100-year floodplain. If it is determined that development is necessary within the 100-year floodplain to support the military mission, development shall first be located in the previously disturbed areas of the floodplain;
- Continue to evaluate the stormwater management program and activities contributing to stormwater runoff and pollutant loading in stormwater runoff, and implement BMPs to minimize stormwater pollution;
- Continue to develop a soil erosion control management plan, and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASP 2013);
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue using BMPs for forest management activities to ensure watershed protection (FDACS 2003);
- Ensure implementation of policies that minimize adverse impacts to ecosystem resources from land disturbance activities;
- Continue to establish a program to prevent further degradation of shorelines; and

- Continually verify that natural resources personnel obtain proper training and certifications.

Long-Term Management

The NASP Complex will avoid construction or management practices that will adversely affect the attenuation capacity of the 100-year floodplain unless it finds that: (1) there is no practical alternative, or (2) the proposed action has been designed to minimize harm to or within the floodplain. Preferred sites for development will be outside the 100-year floodplain. If there is no suitable location outside the 100-year floodplain that will satisfy the need of the military mission (for example, proximity to dependent function), preferred sites for development will be within previously disturbed areas of the 100-year floodplain. The NASP Complex will evaluate alternatives and techniques for controlling and reducing the potential for flood damages for all development within the 100-year floodplain. The NASP Complex will evaluate the use of the county's floodplain regulation as guidance for development in the floodplain.

Integration with Other Natural Resources Management Activities

- Wetlands, Section 5.1.1 – manage to maintain viability of floodplains;
- Soil Conservation and Erosion, Section 5.1.2 – identify soil types in floodplain;
- Stormwater and Water Quality, Section 5.1.4 – proper stormwater drainage helps reduce flood damage;
- Marine Coastal, Section 5.1.5 – manage to maintain viability of floodplains;
- Landscaping and Grounds Maintenance, Section 5.1.6 – use appropriate landscape practices in floodplains;
- Invasive, Exotic, and Noxious Species, Section 5.1.7 – ensure removal of undesired plants is consistent with maintaining floodplain function;
- Urban Forestry, Section 5.1.8 – ensure urban forestry is consistent with maintaining floodplain function;
- Silviculture, Section 5.2.1 – ensure silviculture is consistent with maintaining floodplain function;
- Forest Protection, Section 5.2.2 – burns promote the health of herbaceous ground cover to prevent erosion during flooding;
- Fisheries Management, Section 5.3.1 – proper management of floodplains improves water quality in fishing areas;
- Migratory Birds, Section 5.3.2 – undeveloped floodplains provides bird habitat away from infrastructure;
- Threatened and Endangered Species, Section 5.3.3 – controlling development in floodplains enhances habitat and water quality for protected species;
- Nuisance Wildlife and BASH, Section 5.3.4 – consider floodplain function when modifying habitat on the airfield;
- Outdoor Recreation, Section 5.4 – controlling development in floodplains enhances outdoor recreational opportunities;

- Natural Resources Training, Section 5.5.1 – ensure personnel are current on floodplain laws; and
- GIS, Section 5.5.2 – utilize GIS tools to improve management of floodplains.

Ecosystem Management

Proper management of the 100-year floodplain is an essential ecosystem management concept. Floodplains perform important natural functions, including temporary storage of floodwaters, moderation of peak flows, maintenance of water quality, groundwater recharge, and erosion prevention. Floodplains also provide habitat for wildlife, recreational opportunities, aesthetic benefits, and areas of archaeological significance.

Military Mission

Inappropriate floodplain management practices have the potential to decrease the flood attenuation capacity of the floodplain and increase the amount and rate at which flooding occurs. Flooding has the potential to adversely affect necessary infrastructure components of the military mission.

Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Floodplains

- Executive Order 11988, Floodplain Management, 24 May 1977, requires federal service agencies to avoid construction or management practices that will adversely affect floodplains, unless it is found that there is no practical alternative and the proposed action has been designed to minimize harm to or within the floodplain.
- OPNAVINST 5090.1D, 12-3.8(c), discusses natural resources management relating to floodplain management.
- Florida Coastal Management Program, requires federal action in the coastal zone to be consistent with 23 Florida Statutes, which are administered by 11 state agencies and four of the five state water management districts. The coastal zone includes the area encompassed by the state's 67 counties and its territorial waters. Therefore, federal actions which occur throughout the state are reviewed by the state for consistency with the FCMP. Consistency with the statutes constitutes consistency with the FCMP (DCA 1999).

Additional Sources of Information

Northwest Florida Water Management District
<http://www.nwfwmd.state.fl.us/>

FEMA Floodplain Management Publications
<https://www.fema.gov/floodplain-management-publications>

USFWS Floodplain Management
<http://www.fws.gov/policy/613fw1.html>

Florida Floodplain Management Program
<http://www.floridadisaster.org/Mitigation/SFMP/Index.htm>

Florida Floodplain Managers Association
<http://www.fffloods.org/>

5.1.5 Marine Coastal Management

The Coastal Zone Management Act of 1972 (16 U.S. Code [USC] 1451 et seq.), as amended, encourages states to preserve, protect, develop, and, where possible, restore or enhance valuable natural coastal resources such as wetlands, floodplains, estuaries, beaches, dunes, barrier islands, and coral reefs, as well as the fish and wildlife using those habitats. The Magnusson-Stevens Act calls for the minimization of adverse effects on essential fish habitat, and encourages the conservation and enhancement of such habitat. The coast serves important natural functions to absorb wind and wave energy from storms, enhance flood protection, and improve water quality. It also provides habitat for shorebirds such as rufa red knots.

Issues

The NASP Complex must ensure activities conducted in the coastal zone are carried out in a manner that is, to the maximum extent practicable, consistent with approved coastal zone management programs. The management of erosion to reduce or eliminate sedimentation into the near shore environment is a crucial management component for marine resources. Seagrasses are susceptible to decline under conditions of persistent sedimentation which reduces light attenuation. Seagrasses are very important for many near shore fauna including the endangered West Indian manatee and green sea turtle, and the federally-petitioned dwarf seahorse. They also provide nursery habitat for numerous recreationally and commercially-important fish species.

Goals and Objectives

- Protect and maintain natural resources within the NASP Complex by continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Continue existing and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized; and
- Protect and enhance shorelines through existing and new programs.

Projects

- Erosion Control for Coastal Zone Protection (Project 4 in Appendix A);
- Establish Shoreline Vegetation (Project 5 in Appendix A); and
- Natural Resources GIS and Mapping (Project 6 in Appendix A).

Management Strategies

- Continue to establish a program to prevent further degradation of shorelines;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASP 2013);
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue using BMPs for forest management activities to ensure watershed protection (FDACS 2003);
- Review and monitor proposed activities for impact avoidance to the attenuation capacity of the 100-year floodplain. If it is determined that development is necessary within the 100-year floodplain to support the military mission, development shall first be located in the previously disturbed areas of the floodplain;
- Continue to evaluate the stormwater management program and activities contributing to stormwater runoff and pollutant loading in stormwater runoff, and implement BMPs to minimize stormwater pollution;
- Continue to develop a soil erosion control management plan, and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Ensure implementation of policies that minimize adverse impacts to ecosystem resources from land disturbance activities; and
- Continually verify that natural resources personnel obtain proper training and certifications.

Long-Term Management

The NASP Complex will avoid construction or management practices that will adversely affect the attenuation capacity of the 100-year floodplain unless it finds that: (1) there is no practical alternative, or (2) the proposed action has been designed to minimize harm to or within the floodplain. Preferred sites for development will be outside the 100-year floodplain. If there is no suitable location outside the 100-year floodplain that will satisfy the need of the military mission (for example, proximity to dependent function), preferred sites for development will be within previously disturbed areas of the 100-year floodplain. The NASP Complex will evaluate alternatives and techniques for controlling and reducing the potential for flood damages for all development within the 100-year floodplain. The NASP Complex will evaluate the use of the county's floodplain regulation as guidance for development in the floodplain.

Integration with Other Natural Resources Management Activities

- Wetlands, Section 5.1.1 – healthy wetlands provide nursery habitat for many species that reside in the marine coastal zone;

- Soil Conservation and Erosion, Section 5.1.2 – erosion control protects dunes and prevents sedimentation;
- Stormwater and Water Quality, Section 5.1.4 – protect water quality of the marine coastal zone;
- Floodplains, Section 5.1.4 – viable marine coastal areas enhance floodplain function;
- Landscaping and Grounds Maintenance, Section 5.1.6 – maintain appropriate landscape in the marine coastal zone;
- Invasive, Exotic, and Noxious Species, Section 5.1.7 – ensure herbicide use does not compromise water quality;
- Urban Forestry, Section 5.1.8 – ensure fertilizer use does not compromise water quality;
- Silviculture, Section 5.2.1 – ensure silviculture efforts do not create sedimentation;
- Forest Protection, Section 5.2.2 – burns promote the health of herbaceous ground cover to prevent erosion and sedimentation;
- Fisheries Management, Section 5.3.1 – a viable marine coastal environment enhances recreational fishing opportunities;
- Migratory Birds, Section 5.3.2 - a viable marine coastal environment enhances habitat for migratory birds and helps keep them away from infrastructure;
- Threatened and Endangered Species, Section 5.3.3 – the marine coastal environment provides vital habitat for protected species;
- Nuisance Wildlife and BASH, Section 5.3.4 – ensure pesticide use does not compromise water quality;
- Outdoor Recreation, Section 5.4 – a viable marine coastal environment enhances outdoor recreational opportunities;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on CZMA and EFH laws; and
- GIS, Section 5.5.2 – utilize GIS tools to improve management of the marine coastal zone.

Ecosystem Management

Proper management of marine coastal zone is an essential ecosystem management concept as it provides important habitat and resources for aquatic vegetation, fishes, sea birds, manatees, and sea turtles. The marine coastal zone is an area of rapid ecological transition from the aquatic marine environment to terrestrial habitats.

Military Mission

Military activities in the marine coastal zone and related alterations to the coastal environment must be consistent with provisions of the CZMA and Magnusson-Stevens Act. Failure to comply with these laws could result in regulatory action by the NMFS and FDEP, creating extensive delays and expenses. A viable coastal zone protects water quality at the NASP Complex and provides a physical buffer to protect Navy lands and property against wind and wave energy from storms.

Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Marine Coastal Management

- Coastal Zone Management Act (16 U.S.C. 1451, et seq.), as amended, provides for the preservation, protection, development and, where feasible, restoration or enhancement of the nation's coastal zone. As required by Section 307(c) of the Coastal Zone Management Act, a proposed federal action must be consistent with the approved Florida Coastal Management Program to the maximum extent practicable.
- Florida Coastal Management Program, requires federal action in the coastal zone to be consistent with 23 Florida Statutes, which are administered by 11 state agencies and four of the five state water management districts. The coastal zone includes the area encompassed by the state's 67 counties and its territorial waters. Therefore, federal actions throughout the state are reviewed by the state for consistency with the FCMP. Consistency with the statutes constitutes consistency with the FCMP (DCA 1999).
- The Magnuson-Stevens Fishery Conservation Management Act (16 U.S.C. 1801-1882), charges NOAA Fisheries with designating and conserving EFH for Federally-managed fish species. The Act is intended to minimize, to the extent practicable, any adverse effects on habitat caused by fishing and non-fishing activities, and to identify other actions to encourage the conservation and enhancement of such habitat. The statute requires Federal agency consultation with NOAA Fisheries on any project that may adversely affect EFH.
- OPNAVINST 5090.1D, 12-3.8(c), discusses Navy policy regarding floodplain management.
- OPNAVINST 5090.1D, Chapter 14, pertains to policy and guidance to ensure Navy activities with the potential to affect coastal uses and resources are in full compliance with the Federal consistency provisions of the Coastal Zone Management Act.

Additional Sources of Information

NOAA, Coastal Resource Management
<https://coast.noaa.gov/>

FDEP, Coastal Management Protection
<http://www.dep.state.fl.us/cmp/>

NMFS, Protected Resources
<https://www.fisheries.noaa.gov/about/office-protected-resources>

NMFS, Habitat Protection
<https://www.fisheries.noaa.gov/topic/habitat-conservation>

FWC, Fish and Wildlife Research Institute, Seagrass Information
<http://myfwc.com/research/habitat/seagrasses/>

5.1.6 Landscaping and Grounds Maintenance

Landscaping and grounds maintenance is defined here as landscaping design and construction practices intended to benefit the environment and to generate long-term cost savings. Such practices include using native species, which will reduce the need for irrigation and fertilization, stabilize soil, and improve wildlife habitat. Grounds maintenance is provided by the Real Property Management Division of the Facilities Department.

Issues

Minimize capital costs by:

- preserving existing vegetation during construction in order to reduce the need for new plant materials;
- using native groundcover and shrubs instead of turf wherever possible to reduce maintenance and irrigation requirements;
- using plant materials to reduce solar loading and glare on buildings, to block winter winds, and to channel winds to enhance summer breezes;
- using plant material instead of expensive manmade controls for controlling erosion; and
- using plant barriers and screens instead of architectural screens;

Maintain an ecological balance within the region by:

- preserving environmentally sensitive areas with high value flora and fauna;
- preserving existing plant materials unless clearing is necessary to allow construction;
- revegetating disturbed areas with indigenous plant materials that promote wildlife habitat; and
- incorporating physical site constraints, such as soils, topography, drainage, and vegetation, into design decisions so as to disturb as little of the ecological balance as possible.

Contribute to engineering solutions by:

- using wide, shallow drainage channels planted with native grasses instead of closed systems;
- combining water features with natural drainage systems to provide retention, aesthetic interest, and climatological control;
- breaking up parking lots with planted medians to reduce solar heat buildup and glare;
- replanting disturbed areas immediately to minimize erosion and runoff; and
- hydroseeding dikes with indigenous wildflowers and grasses to stop erosion and slumping of banks.

Enhance the living environment and the aesthetic qualities of the NASP Complex by:

- creating an identity and sense of place that is indigenous to the environment, and by reducing negative impacts to the greatest degree possible;
- reducing monotonous and repetitive views by creating softer, more natural, cleared woods edges;
- creating and reinforcing outdoor spaces that give a distinctive identity and setting to each area and function;
- enhancing and controlling the site microclimate (wind, humidity, and temperature);
- humanizing and minimizing large paved areas to prevent extensive heat buildup and visual monotony;
- providing seasonal color for interest, variety and focal points; and

- using native materials and local building practices to achieve design continuity and harmony.

Goals and Objectives

- Protect and maintain natural resources within the NASP Complex by continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASP 2013);
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized; and
- Reduce and control invasive and exotic species;

Projects

- Species Protection and Habitat Development (Project 1 in Appendix A);
- Invasive Species Control (Project 3 in Appendix A);
- Natural Resources GIS and Mapping (Project 6 in Appendix A); and
- Gopher Tortoise Conservation (Project 7 in Appendix A).

Management Strategies

- Educate grounds maintenance personnel on the principles of landscaping discussed in this INRMP;
- Continue to follow its working Urban Forestry Plan and implement projects to enhance wildlife habitat and aesthetics in developed areas;
- Apply xeriscaping principles using native species for new landscaping, and phase in these principles for existing landscapes;
- Develop an invasive and exotic species management strategy;
- Use volunteer groups and/or interested installation personnel to assist in plantings;
- Review and monitor proposed activities for impact avoidance to the attenuation capacity of the 100-year floodplain. If it is determined that development is necessary within the 100-year floodplain to support the military mission, development shall first be located in the previously disturbed areas of the floodplain;

- Continue to evaluate the stormwater management program and activities contributing to stormwater runoff and pollutant loading in stormwater runoff, and implement BMPs to minimize stormwater pollution;
- Continue to develop a soil erosion control management plan, and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASP 2013);
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources; and
- Continually verify that natural resources personnel obtain proper training and certifications;

Long-Term Management

Executive Order 13148 of 21 April 2000, Section 207 calls for landscaping practices that benefit the environment and generate long-term cost savings at federal facilities. The EO provides the following guidelines to be followed when cost-effective and to the extent practicable:

- Use regionally native plants for landscaping;
- Design, use, or promote construction practices that minimize adverse effects on the natural habitat;
- Take measures to prevent pollution (i.e. reduce fertilizer and pesticide use);
- Implement water-efficient practices; and
- Promote awareness of environmental and economic benefits of native landscaping.

The NASP Complex will landscape by xeriscaping around all newly-constructed buildings and other facilities to create relatively low maintenance and low cost landscapes and reduce the need for intensive labor (i.e., hand trimming and bed maintenance). Xeriscaping will also be phased into existing landscaped areas. Xeriscaping offers a viable alternative to the typically high-volume water requirements of other landscaping approaches by conserving water through creative landscaping. Xeriscaping uses native plants, which are adapted to local climatic conditions and variations, generally resistant to drought, disease, and pests, and require less water than non-native species. The potential benefits of xeriscaping include reduced water use (typically from 30 to 80 percent), reduced heating and cooling costs from placement of appropriate tree species, decreased stormwater and irrigation runoff, fewer pesticide and fertilizer applications, less yard waste, increased habitat for plants and animals, and lower labor and maintenance effort and thus costs. Xeriscaping incorporates seven principles (Xeriscape Colorado, Inc., 1999):

1. Planning and design for water conservation and beauty;
2. Creating practical turf areas using manageable sizes, shapes, and appropriate grass species;

3. Selecting plants with low water requirements and grouping plants with similar water needs, then experimenting to determine how much and how often to water the plants;
4. Using soil amenities, such as compost or manure, appropriate to site and plant needs;
5. Using mulches, such as wood chips, to reduce evaporation and reduce soil temperatures;
6. Irrigating efficiently with properly designed systems (including hose-end equipment) and by applying the right amount of water at the right time; and
7. Maintaining the landscape by mowing, weeding, pruning, and fertilizing properly. Grass mowing should not be excessive and should be based on height rather than by arbitrarily specified time intervals.

The NASP Complex will adhere to best management practices to protect wetlands and water quality from sedimentation and erosion during activities on installation properties. These include the *Stormwater Management Action Plan, Naval Air Station Pensacola, Revised December 2013* (NASP 2013), *Florida Erosion and Sediment Control Designer and Reviewer Manual* (FDOT and FDEP 2007), *Florida Stormwater Erosion and Sedimentation Inspector's Manual* (FDEP 2008), and *Silviculture Best Management Practices, Revised 2003* (FDACS 2003).

The NASP Complex will evaluate current landscaping practices to determine how effective the principles of xeriscaping would be in improving existing conditions. The NASP Complex will determine: (1) if implementation of xeriscaping principles will provide sufficient benefits to justify any additional cost, (2) if the implementation of certain principles may achieve the desired results, or (3) if continuation of existing conditions will achieve desired results. The NASP Complex will monitor the success of integrating the principles of xeriscaping with existing landscaped areas and adjust management practices as warranted.

Grounds maintenance at the NASP Complex will be accomplished using the following guidelines:

- Avoid excessive mowing. Grass mowing should be scheduled on the basis of height, rather than by arbitrarily specified time intervals, if practicable;
- Maintain good ground cover through proper fertilization to prevent erosion. If erosion occurs, it will be addressed and corrected as soon as possible;
- Maintain healthy lawns to prevent insect infestations and disease;
- Minimize hand trimming; and
- Implement grounds maintenance activities in the vicinity of airfields to reduce BASH-related incidents. Grounds maintenance in the vicinity of airfield operations require significantly different management than in other developed areas; guidelines are provided in the NASPINST 3751.1C (BASH Plan).

Grounds maintenance personnel will contact the NRM for technical advice prior to tree and shrub pruning, fertilization, grass replacement, species selection, new landscape projects, and new irrigation projects. Pesticide and fertilizer applications during landscaping and grounds

maintenance will be consistent with the long-term management concepts pertaining to pesticides and fertilizers in Sections 5.1.7 and 5.3.4.

Integration with Other Natural Resources Management Activities

- Wetlands, Section 5.1.1 – maintain a 50-foot buffer around wetlands;
- Soil Conservation and Erosion, Section 5.1.2 – landscape to reduce erosion;
- Stormwater and Water Quality, Section 5.1.3 – use proper amounts of herbicide and fertilizers to avoid excessive runoff in stormwater;
- Floodplains, Section 5.1.4 – ensure landscaping in floodplains does not alter floodplain function;
- Marine Coastal, Section 5.1.5 – ensure fertilizer use does not compromise water quality;
- Invasive, Exotic, and Noxious Species, Section 5.1.7 – replace removed exotic species with native vegetation;
- Urban Forestry, Section 5.1.8 – utilize urban forestry principles during landscaping and grounds maintenance, and vice-versa;
- Forest Protection, Section 5.2.2 – maintain grounds to reduce fuel loads;
- Fisheries Management, Section 5.3.1 – use proper amounts of herbicide and fertilizers to avoid runoff into fishing areas;
- Migratory Birds, Section 5.3.2 - use proper amounts of herbicide and fertilizers to avoid runoff into wading areas;
- Threatened and Endangered Species, Section 5.3.3 – landscape and maintain grounds to maintain and enhance habitat for protected wildlife;
- Nuisance Wildlife and BASH, Section 5.3.4 – control nuisance animals to prevent landscape damage;
- Outdoor Recreation, Section 5.4 – maintain aesthetically-pleasing grounds for recreation;
- Natural Resources Training, Section 5.5.1 – ensure personnel are aware of landscaping and grounds issues and practices; and
- GIS, Section 5.5.2 – utilize GIS tools to improve landscaping plans.

Ecosystem Management

Beneficial landscaping through construction and design practices is consistent with an ecosystem management approach because it reduces the need for irrigation, pesticides, and fertilizers and relies on the functions and characteristics of native plant species. The use of native species also is recommended for the reduction and control of invasive species. Reducing irrigation, fertilizer, and pesticide demand reduces costs associated with grounds maintenance and reduces pollutant loading to stormwater runoff and surrounding surface waters and aquatic communities.

Military Mission

Inappropriate landscaping and grounds maintenance practices (e.g., excessive use or application of inappropriate pesticides) may potentially affect water quality and federally and state-designated endangered or threatened species, resulting in regulatory actions by agencies such as the

USFWS, FDEP, or USACE, which could threaten the military mission of the NASP Complex. In addition, appropriate landscaping and maintenance practices improve quality of life.

Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Landscaping and Grounds Maintenance

- Executive Order 13148, 21 April 2000, Section 207, requires implementing landscaping practices that are intended to benefit the environment and generate long-term cost savings.
- Executive Order 13751, 5 December 2016, requires federal agencies prevent the introduction, establishment, and spread of invasive species, detect and respond rapidly to eradicate or control populations of invasive species in a manner that is cost-effective and minimizes human, animal, plant, and environmental health risks, monitor invasive species populations accurately and reliably, and provide for the restoration of native species and ecosystems that have been impacted by invasive species, among other requirements.
- The President's April 16, 1994, Memorandum on Environmentally Beneficial Landscaping, requires implementing landscaping practices that are intended to benefit the environment and generate long-term cost savings.
- Federal Insecticide, Fungicide and Rodenticide Act, 7 U.S.C. 136, governs the use and application of pesticides in natural resources management programs.
- Federal Water Pollution Control Act as amended by the CWA of 1977, 33 U.S.C. 1251, prohibits the discharge of dredged or filled materials into waters of the United States, including wetlands, without first obtaining a permit from USACE (Section 404 of the CWA).
- OPNAVINST 5090.1D, 12-3.8(e), discusses natural resources management relating to environmentally and economically beneficial landscaping.
- DODINST 7310.5, administers the reimbursement of costs related to managing forest resources for timber production. Under this regulation, only expenses related to the maintenance of timber for commercial sales are reimbursed.

Additional Sources of Information

Xeriscape Information

<http://livinggreen.ifas.ufl.edu/landscaping/xeriscaping.html>

Florida Native Plant Society

<http://www.fnps.org>

Florida Association of Native Nurseries

<http://www.afnn.org/>

Escambia County IFAS Extension Office, Horticulture

<http://escambia.ifas.ufl.edu/lng/>

Florida Natural Areas Inventory

<http://www.fnai.org>

Florida Native Plant Society

<http://www.fnps.org>

American Water Works Association, WaterWiser

<http://www.awwa.org/waterwiser/>

5.1.7 Invasive, Exotic, and Noxious Species

Species can be categorized as native, exotic, exotic and invasive, or native and invasive. A native species is a species already occurring at the time of European contact in 1500 (Florida Exotic Pest Council 1999). An exotic species is a non-indigenous (non-native) species that was either purposefully or accidentally introduced into an area outside its natural range. Invasive species are alien species whose introduction does, or is likely to, cause harm to the economy, environment, or human health. Invasive species in natural areas include aggressive plants that produce a significant change in terms of species composition, ecosystem structure, or ecosystem function (Cronk and Fuller 1995).

The Federal Noxious Weed Act of 1974 (7 U.S.C. 2801-2814) provides for the control and eradication of noxious weeds and their regulation in interstate and foreign commerce. It defines noxious weeds as “any living stage (including but not limited to, seeds and reproductive parts) of any parasitic or other plant of a kind, or subdivision of a kind, which is of foreign origin, is new to or not widely prevalent in the United States, and can directly or indirectly injure crops, other useful plants, livestock, poultry, and agricultural irrigation navigation, the fish and wildlife resources of the United States, and the public health (7 U.S.C. 2802 (c)).

Executive Order 13751, Invasive Species, of 5 December 2016 requires executive agents to:

- prevent the introduction, establishment, and spread of invasive species,
- detect and respond rapidly to eradicate or control populations of invasive species in a manner that is cost-effective and minimizes human, animal, plant, and environmental health risks,
- monitor invasive species populations accurately and reliably,
- provide for the restoration of native species and ecosystems that have been impacted by invasive species, among other requirements.
- conduct research on invasive species and develop and apply technologies to prevent their introduction, and provide for environmentally sound methods of eradication and control of invasive species,
- promote public education and action on invasive species, their pathways, and ways to address them, with an emphasis on prevention, and early detection and rapid response,
- assess and strengthen, as appropriate, policy and regulatory frameworks pertaining to the prevention, eradication, and control of invasive species and address regulatory gaps, inconsistencies, and conflicts,
- in consultation with the Department of State and with other agencies as appropriate, coordinate with foreign governments to prevent the movement and minimize the impacts of invasive species, and

refrain from authorizing, funding, or implementing actions that are likely to cause or promote the introduction, establishment, or spread of invasive species in the United States unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species;

and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

The higher temperatures and changes in precipitation patterns associated with climate change are anticipated to cause shifts in species composition and geographic range. Among the species shifts anticipated are movement of wildlife to more favorable habitat, shifts in vector-borne diseases, and expansion of invasive grasses and shrubs. Invasive plants contribute fuel load for wildfires, which in turn increases the likelihood, range, and intensity of wildfire. Ongoing management of exotic and invasive species is therefore vital to offset the potential vulnerability of properties and native communities on the NASP Complex.

The following species occur on the NASP Complex and are considered exotic and invasive:

- Cogon grass (*Imperata cylindrica*) is a fast-growing perennial grass that thrives in areas of minimal tillage such as lawns and roadsides. Roots and rhizomes are remarkably resistant to fire. This grass is present along several roadways and disturbed areas throughout the NASP Complex.
- Mimosa (*Albizia julibrissin*), a native of Asia, is an ornamental that has escaped and become naturalized in the southeastern United States. It is found mainly along roadsides, disturbed areas, and edges of forests.
- Japanese climbing fern (*Lygodium japonicum*) is generally found in damp, usually disturbed areas. The plant tolerates both shade and sun and can be found along the edges of swamps, marshes, creeks, and lakes, as well as in upland woodlands. It forms a tangled mass over groundcover and shrubs, eliminating understory vegetation.
- Chinese tallow (*Sapium sebiferum*) tends to take over large areas, mainly areas with wet soils, but can thrive in upland areas as well. It can survive in both poorly drained freshwater and saline soils. It has the capacity to dominate wetland areas.
- Camphor tree (*Cinnamomum camphora*) generally occurs in drier disturbed areas, including scrub habitat, which is the habitat of many threatened and endangered species.
- Chinese privet (*Ligustrum sinense*) generally occurs on open disturbed sites and is difficult to control in wetland areas.
- Bladder-pod (*Sesbania vesicaria*) is present on the spoil island just north of Magazine Point. This weedy exotic plant should be eradicated to insure future openness of the spoil area for shore bird nesting (FNAI 1997a,b,c).
- Kudzu (*Pueraria lobata*) is a trailing or climbing, semi-woody vine introduced into this country from Japan. Kudzu has been used as an ornamental, for erosion control, and as a livestock forage.
- Common reed (*Phragmites australis*) thrives in shallow water and wet soils. It has spread throughout Gulf and Atlantic coast marshes in the United States in the past 30 years.
- Miscellaneous aquatic weeds (*Eichhornia spp.* and *Alternanthera spp.*) can degrade water quality and dramatically alter native plant and animal communities.
- Mole crickets (*Scapteriscus borellii*) damage turf and pasture grasses mainly by tunneling (because it is largely carnivorous and feeds on soil-inhabiting insects).

- Fire ants (*Solenopsis* spp.) include many opportunistic ant species, both exotic and native. Fire ants are present throughout the NASP Complex and have the ability to interfere with landing operations.
- Coyotes (*Canis latrans*), feral pigs (*Sus scrofa*), and armadillos (*Dasypus novemcinctus*) occur at the NASP Complex and are considered nuisance wildlife species (see Section 5.3.3).

Issues

Invasive species have the potential to interfere with military and recreational activities, wildlife habitats, forests, wetlands, and other natural areas. Invasive species often interfere with ecosystem functions. Some of them can form expansive monocultures when left uncontrolled and, in extreme case, will lead to complete loss of native plant communities and reduction in regional biodiversity. There are no known noxious weeds on the NASP Complex, as defined by the Federal Noxious Weeds Act.

Goals and Objectives

- Protect and maintain natural resources within the NASP Complex by continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Reduce and control invasive and exotic species;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices; and
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species.

Projects

- Species Protection and Habitat Development (Project 1 in Appendix A);
- Invasive Species Control (Project 3 in Appendix A); and
- Natural Resources GIS and Mapping (Project 6 in Appendix A).

Management Strategies

- Develop an invasive and exotic species management strategy that involves a survey of the NASP Complex to determine the extent of exotic and invasive species, control methods - including time of year for removal, and pesticide application rates;
- Consult the Pest Management Plan to determine removal methods. Consider non-pesticide removal methods and removal using pesticides with lower toxicity and applied at reduced rates;

- Consult with foresters and fish and wildlife biologists at NAVFAC SE, as well as with federal, state, and county wildlife biologists, foresters, and land managers, for identification of invasive and exotic species, and for appropriate, effective measures to protect fish and wildlife;
- Continue to participate in the Six Rivers CISMA and promote invasive species control and management in the regional area.
- Identify individuals and groups that could contribute to the control effort. Ensure adequate training of the control teams;
- Maintain a program for the eradication and control of invasive and exotic species and prohibit the planting of such species as part of NASP Complex's Grounds Maintenance Plan. Develop a monitoring and re-removal program for problem areas;
- Educate grounds maintenance personnel on the principles of landscaping discussed in this INRMP;
- Continue to follow its working Urban Forestry Plan and implement projects to enhance wildlife habitat and aesthetics in developed areas;
- Apply xeriscaping principles using native species for new landscaping, and phase in these principles for existing landscapes;
- Use volunteer groups and/or interested installation personnel to assist in plantings;
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources; and
- Continually verify that natural resources personnel obtain proper training and certifications;

Long-Term Management

Invasive and exotic species will be managed through the removal of the species and restrictions on the introduction of the species to the NASP Complex in accordance with Executive Order 13751. The Complex will survey the extent of invasive and exotic species on all properties and schedule removal. This plan will be implemented to control invasive and exotic species to acceptable levels. The NRM will screen all lists of landscaping plants proposed for the NASP Complex to ensure invasive and exotic species are not used.

Prior to the use of pesticides at the NASP Complex, the Installation's NRM will contact the NAVFAC ABD and the FDACS Pesticide Division for information regarding approved pesticides, including the location of use, amount, and concentrations, as well as treatment methods. The FDEP Bureau of Invasive Plant Management issues licenses that may be required for special use pesticides. The NASP Complex will also consider the applicability of burning and hand clearing in combination with pesticides, as well as non-pesticide removal methods alone.

The use of pesticides for removal of invasive and exotic species and pests will be conducted in accordance with federal and state laws regulating the use of pesticides. According to the EPA, a pesticide "is any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest. Pests can be insects, mice and other animals, unwanted plants

(weeds), fungi, or microorganisms like bacteria and viruses; the term pesticide also applies to herbicides, fungicides, and various other substances used to control pests” (<http://www.epa.gov/pesticides/about/>). Under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA; 7 U.S.C. 136), pesticides are registered at the federal level and by individual states. Therefore, a particular pesticide product that is federally registered by the EPA is not legal for use until it is also registered by the individual state. FIFRA allows individual state registrations to be more restrictive than federal registrations, but not less so.

Pesticides will be applied by skilled, DOD-certified workers and according to label instructions to ensure their application does not contaminate surface waters or affect flora and fauna. Careful prescription of the type and amount of chemical to be applied and the use of buffer areas around surface waters will also help prevent misdirected application or deposition. The NASP Complex will use pesticides with lower toxicity and apply them at rates below those specified on the label, when it is believed that such modifications can adequately address the problem. The NASP Complex will also consider the applicability of non-pesticide removal methods, which could be implemented through the use of volunteer groups.

Integration with Other Natural Resources Management Activities

- Wetlands, Section 5.1.1 – prevent contamination of wetlands by pesticides;
- Soil Conservation and Erosion, Section 5.1.2 – control nuisance animals that contribute to erosion;
- Stormwater and Water Quality, Section 5.1.3 – prevent contamination of water quality by pesticides;
- Floodplains, Section 5.1.4 – ensure exotic species do not compromise attenuation properties of floodplains;
- Marine Coastal, Section 5.1.5 – manage exotic plants and nuisance animals on the coast;
- Landscaping and Grounds Maintenance, Section 5.1.6 – landscape with native plants to reduce the opportunity for exotics to become established;
- Urban Forestry, Section 5.1.8 – ensure only native trees are planted;
- Silviculture, Section 5.2.1 – ensure activities promote native vegetation in the forest understory;
- Forest Protection, Section 5.2.2 – burn to accentuate the environmental conditions of native plants and wildlife;
- Fisheries Management, Section 5.3.1 – manage exotic aquatic plants and prevent stocking of non-native fishes;
- Migratory Birds, Section 5.3.2 – conserve native vegetation used by migratory birds;
- Threatened and Endangered Species, Section 5.3.3 – control exotic plants and wildlife that would otherwise compete with protect species for resources;
- Nuisance Wildlife and BASH, Section 5.3.4 – reduce nuisance species concurrent with control of invasives and exotics;

- Outdoor Recreation, Section 5.4 – eliminate exotic vegetation to enhance outdoor recreation;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on exotic and invasive control procedures and laws; and
- GIS, Section 5.5.2 – utilize GIS tools to improve management of exotic and invasive species.

Ecosystem Management

The management of exotic and invasive species is a fundamental component of the ecosystem management concept. Invasive species typically out-reproduce native species and have a propensity to spread into unstable or disturbed areas (e.g., highway and utility right-of-ways, site disturbance areas, ponds, and wetland areas). Therefore, the control of invasives and replacement with native species at the NASP Complex is essential to protect and enhance biodiversity, and for the proper functioning of wetlands as water storage and purifying systems.

Military Mission

Invasive species have a propensity to spread rapidly, potentially creating hazardous situations when they interfere with infrastructure systems (e.g., along and around roadway intersections and electric distribution lines and substations).

Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Invasive, Exotic, and Noxious Species

- Federal Noxious Weed Act of 1974, 7 U.S.C. 2801 et. seq., provides for the control and eradication of noxious weeds and their regulation in interstate and foreign commerce.
- Executive Order 13751, 5 December 2016, requires federal agencies prevent the introduction, establishment, and spread of invasive species, detect and respond rapidly to eradicate or control populations of invasive species in a manner that is cost-effective and minimizes human, animal, plant, and environmental health risks, monitor invasive species populations accurately and reliably, and provide for the restoration of native species and ecosystems that have been impacted by invasive species, among other requirements.
- Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. 136, requires that all pesticides, whether for commercial or private use, be applied in accordance with product labeling and that containers are properly disposed of. EPA is responsible under FIFRA for the registration of all pesticide active ingredients used in the United States.
- OPNAVINST 6250.4B, 27 August 1998, DOD Pest Management Programs, provides the DON with policies for implementing pest management programs directed against pests that conflict with or adversely affect the mission of the DOD; affect the health and well-being of the DON personnel and their dependants; attach or damage real property, supplies, or equipment; adversely affect the environment; or are otherwise undesirable.
- Federal Plant Pest Act, 7 U.S.C. 150a et seq., regulates the importation and interstate movement of plant pests and authorizes the Secretary of Agriculture to take emergency measures to destroy infected plants or materials.
- OPNAVINST 5090.1D, 12-3.10, discusses natural resources management relating to the control of invasive species.

- Florida Statutes, Chapter 487, the Florida Pesticide Law, regulates the distribution and use of pesticides.
- Florida Statutes, Chapter 482, Structural Pest Control Act, requires using pesticides for their intended purpose in accordance with the registered labels or as directed by the EPA.
- Florida Statutes, Chapter 369.20, Florida Aquatic Weed Control Act, regulates noxious aquatic weeds on public lands.
- Florida Statutes, Chapter 369.252, Invasive Exotic Plant Control, requires a program be established to eradicate or maintain control of the species detrimental to the state's natural environment.

Additional Sources of Information

USDA Invasive and Noxious Weeds

<http://plants.usda.gov/java/noxiousDriver>

Federal Noxious Weed Act

<http://www.fws.gov/laws/lawsdigest/fednox.html>

Six Rivers CISMA

<https://www.floridainvasives.org/SixRivers/>

Federal Insecticide, Fungicide, and Rodenticide Act

<https://www.epa.gov/laws-regulations/summary-federal-insecticide-fungicide-and-rodenticide-act>

USDA State-Specific Threats

<http://www.invasivespeciesinfo.gov/unitedstates/fl.shtml#thr>

Center for Plant Conservation

<http://www.centerforplantconservation.org/>

The Nature Conservancy, Protecting Native Plants and Animals

<http://www.nature.org/ourinitiatives/habitats/forests/howwework/protecting-native-plants-and-animals-taking-on-the-invaders.xml>

Florida Exotic Pest Plant Council

www.fleppc.org

FWC Invasive Plant Management Section

<http://myfwc.com/wildlifehabitats/invasive-plants/>

University of Florida, Center for Aquatic and Invasive Plants

<https://plants.ifas.ufl.edu/>

USFWS Invasive Species

<http://www.fws.gov/invasives/>

5.1.8 Urban Forestry

Urban forestry is the management of forests and related natural resources within human communities. Urban forests include trees, groups of trees, and stands of trees on improved or semi-improved lands, exclusive of forests managed under the NASP Complex Forestry Management Plan. Successful urban forestry programs manage these resources to enhance both natural and human-built features.

Issues

Trees and vegetation in urban areas, when properly managed, contribute to ecological health and quality of life at the NASP Complex. Certain areas at the NASP Complex, such as industrial and residential areas, would benefit from urban forestry practices that contribute to:

- Reduced noise levels, stormwater runoff, and soil erosion;
- Increased habitat for wildlife;
- Air quality improvements, dust control, purer air and dust control, reduced pollution, and controlled wind speeds;
- Moderated temperatures in paved areas and around buildings;
- Aesthetic improvements, including color, views, and seasonal changes; and
- Defined space, buffers, and barriers.

Urban landscaping has been shown to contribute to individuals' physical and mental health and quality of life. Urban landscaping also improves the public image of the Installation and directly relates to positive public opinion in the community.

Goals and Objectives

- Protect and maintain natural resources within the NASP Complex by continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized; and
- Reduce and control invasive and exotic species.

Projects

- Species Protection and Habitat Development (Project 1 in Appendix A);
- Invasive Species Control (Project 3 in Appendix A); and
- Natural Resources GIS and Mapping (Project 6 in Appendix A).

Management Strategies

- Educate grounds maintenance personnel on the principles of landscaping discussed in this INRMP;
- Train and educate grounds maintenance personnel on the principles of urban forestry management;
- Continue to follow its working Urban Forestry Plan and implement projects to enhance wildlife habitat and aesthetics in developed areas;
- Apply xeriscaping principles using native species for new landscaping, and phase in these principles for existing landscapes;
- Ensure that the NRM reviews all planned maintenance for effects on urban forests. Additional duties include oversight and management of inventories, plantings, removals, pruning, fertilization, and protection practices. Construction and facility managers shall coordinate with the NRM concerning replacement of trees removed for any reason, except due to natural causes;
- Ensure that the Facilities Management Officer coordinates Installation planning, construction, and maintenance with the NRM to ensure a positive effect on the installation urban forest;
- Ensure that the Urban Forestry Management Program conforms to technical and professional recommendations as provided NAVFAC SE or cooperating agencies;
- Observe the first week of December as “Tree Awareness Week,” and conduct educational programs and tree planting projects;
- Review and monitor proposed activities for impact avoidance to the attenuation capacity of the 100-year floodplain. If it is determined that development is necessary within the 100-year floodplain to support the military mission, development shall first be located in the previously disturbed areas of the floodplain;
- Continue using BMPs for forest management activities to ensure watershed protection (FDACS 2003);
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources; and
- Continually verify that natural resources personnel obtain proper training and certifications;

Long-Term Management

Long-term management for urban forestry will involve the central management of urban forest maintenance, tree planting, and tree protection to enhance the quality of life on the Installation. The NASP Complex will identify areas where the benefits of urban forestry can be applied, develop a plan for planting trees and shrubs, recruit and train volunteers (e.g., Scout groups to help plant trees), and develop partnerships to support the Complex’s urban forestry program.



The program primarily includes planting, removal, maintenance, and protection of urban trees and forests. The NASP Complex is working under a “working urban forestry plan” that includes an inventory and maintenance schedule for urban forestry projects. Federal inmates provide the man-power to complete this work through the cooperative with the Department of Justice. The primary components of the working urban forestry plan for the NASP Complex are listed below.

- Selection of the appropriate tree species;
- Use of appropriate maintenance measures (pruning, fertilizing, watering) for new plantings and established trees;
- Mulching and tree protection from mowers and weed eaters;
- Completion of inventories and annual work plans to implement the overall urban forestry plan; and
- Use of volunteer organizations for assistance with planting and maintenance activities.

The NASP Complex will strive to continue its achievement as a Tree City USA participant. Tree City USA is sponsored by The National Arbor Day Foundation in cooperation with the National Association of State Foresters, USDA Forest Service, US Conference of Mayors, and National League of Cities. The NASP Complex has achieved the “Tree City USA” award every year since 1995. To achieve the annual recertification (as well as the initial award), four standards must be met: the establishment of a tree board or department which develops and implements a tree management program, development of a community tree ordinance, the expenditure of at least \$2 per capita, annually, for the urban forestry program, and the observance of a Navy Tree Awareness Week.

Integration with Other Natural resources Management Activities

- Wetlands, Section 5.1.1 – maintain a 50-foot buffer around wetlands;
- Soil Conservation and Erosion, Section 5.1.2 – urban forestry can help reduce erosion;
- Stormwater and Water Quality, Section 5.1.3 – use proper amounts of herbicide and fertilizers to avoid excessive runoff in stormwater;
- Floodplains, Section 5.1.4 – ensure urban forestry does not compromise the function of floodplains;
- Marine Coastal, Section 5.1.5 – ensure fertilizer use does not compromise water quality.
- Landscaping and Grounds Maintenance, Section 5.1.6 – ensure urban forestry projects are consistent with landscaping and grounds maintenance tasks;
- Invasive, Exotic, and Noxious Species, Section 5.1.7 – replace removed exotic trees with native trees;
- Forest Protection, Section 5.2.2 – maintain urban forests to reduce fuel loads;
- Fisheries Management, Section 5.3.1 – use proper amounts of herbicide and fertilizers to avoid runoff into fishing areas;
- Migratory Birds, Section 5.3.2 - use proper amounts of herbicide and fertilizers to avoid runoff into wading areas;

- Threatened and Endangered Species, Section 5.3.3 – maintain and enhance habitat for protected wildlife;
- Nuisance Wildlife and BASH, Section 5.3.4 – be aware of creating potential habitat for BASH birds and wildlife;
- Outdoor Recreation, Section 5.4 – maintain aesthetically-pleasing grounds for recreation;
- Natural Resources Training, Section 5.5.1 – ensure personnel are aware of urban forestry issues and practices; and
- GIS, Section 5.5.2 – utilize GIS tools to improve urban forestry plans.

Ecosystem Management

Urban forestry supports the ecosystem management concept by providing wildlife habitat through the development of new greenways and managing urban areas for the enhancement of wildlife. Urban forests help reduce stormwater runoff and soil erosion, and will be used as a component of xeriscaping. Urban trees can also play an important role in temperature modification in developed areas.

Military Mission

Urban forestry practices can be implemented to help protect and enhance water quality and wildlife; thereby reducing the potential for adverse impacts to these resources that could threaten the military mission. It can also play an important part in improving quality of life for those supporting the military mission.

Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Urban Forest Management

- Federal Noxious Weed Act of 1974, 7 U.S.C. 2801, establishes control and eradication of noxious weeds and regulates them in interstate and foreign commerce.
- Executive Order 13751, 5 December 2016, requires federal agencies prevent the introduction, establishment, and spread of invasive species, detect and respond rapidly to eradicate or control populations of invasive species in a manner that is cost-effective and minimizes human, animal, plant, and environmental health risks, monitor invasive species populations accurately and reliably, and provide for the restoration of native species and ecosystems that have been impacted by invasive species, among other requirements.
- OPNAVINST 5090.1D, 12-3.8(j), discusses laws that govern natural resources management relating to the protection and management of forest resources.
- NASPNCLAINST 11015.1B, identifies requirements, delineates responsibilities, establishes procedures, and issues policies for the management of urban forests at NASP.

Additional Sources of Information

FDACS Forest Service
http://www.floridaforestservice.com/field_operations/county_foresters/

IFAS, Southern Escambia County, Florida's Urban Forests
<http://edis.ifas.ufl.edu/fr293>

Alliance for Community Trees
<http://actrees.org/site/index.php>

Arbor Day Foundation
<http://www.arborday.org/programs/treeCityUSA/index.cfm>

Native Florida, Your Florida Backyard
<http://www.nsis.org/>

International Society of Arboriculture
<http://www.isa-arbor.com/home.aspx>

National Association of State Foresters
<http://www.stateforesters.org/>

Society of American Foresters
<http://www.safnet.org/>

Society of Municipal Arborists
<http://www.urban-forestry.com/mc/page.do?sitePageld=1374>

USDA Forest Service
<http://www.fs.fed.us/>

5.2 FOREST MANAGEMENT

The NASP Complex will protect and enhance forest resources by practicing ecologically-sound forest management leading to sustained yield of quality forest products, watershed protection, and wildlife habitat protection and management. Ecologically-sound stewardship involves managing forestland for various components, including forest products, wildlife habitat, aesthetics, and recreation.



Components of the NASP Complex annual work plan generally include prescribed burning, timber sales, timber inventory, site preparation, and reforestation. To protect and enhance forest resources, the Complex will implement the strategies, projects, and initiatives described in Section 4 of the INRMP.

Forest Management may be divided into two major components: silviculture and forest protection. Silvicultural practices include timber harvesting, pine straw harvesting, prescribed burning, establishment of firebreaks, herbicide application, forest fertilization, site preparation, and regeneration. Forest protection includes protection from wildfire, diseases, and insects. The NASP Complex recognizes that the frequent and intense heat extremes and altered precipitation patterns projected to occur with climate change may increase the frequency and intensity of wildfires. Ongoing and continued forest management and protection measures are therefore vital to offset the potential vulnerability of properties on the Complex.

Approximately 2,487 acres of land are being managed as commercial forestland at the NASP Complex (see Figures 2-10 through 2-13 in Chapter 2). This includes forest stands at NASP, Bronson Field, Corry Station, and Saufley Field. The forest management program for the NASP Complex is administered by the NRM and Forester. The program provides for sustained-yield of quality timber products, and protection and development of other natural resources in an ecosystem management concept. The program is set up using a 10-year management plan with continual review and updating as required.

Slash and longleaf pine are the favored species, and will be perpetuated on those sites suited for the particular species. There are also naturally-occurring stands of sand pine present on the NASP complex. Hardwoods are limited in total area, but they nevertheless contribute much to the food and habitat needs of wildlife in the area. Some of the prevalent hardwood species include hickory, oak, dogwood, sweetgum, holly, maple, and blackgum. Hardwoods will be given equal importance with pine in areas where hardwood species can be managed. Leaving mast trees, den trees, and cavity trees for wildlife purposes will be given a high priority. During this 10-year period, forest stands will continue to be thinned to improve the quality of merchantable trees to be carried through the rotation age (80 years unless modified for the military mission). In addition, prescribed burning and herbicide and fertilizer applications will be utilized to improve stand quality and habitat.

5.2.1 Silvicultural Activities

Silvicultural activities include timber harvesting, pine straw harvesting, prescribed burning (including the establishment of firebreaks), herbicide application, forest fertilization, site preparation and regeneration. Timber harvesting methods include the following: thinning; improvement cutting; salvage cutting; clear cutting; seed tree cutting; and shelterwood cutting. Silvicultural practices are described below.

- **Thinnings** are cuttings in planted immature stands to increase the rate of growth of timber products and maintain stand composition. A thinning can be a removal of every other row of trees, or the removal of selected trees that are ready for the market and low-value trees that are competing with future crop trees. In either case, a thinning will redistribute the growth potential of the site to the best trees so that they continue to grow at an acceptable growth rate. This action also increases sunlight penetration to the forest floor, which stimulates understory growth and creates food and cover for wildlife.
- **Improvement cuttings** are made in stands older than the sapling stage, usually to improve the composition. This type cut is most often applied to wild stands being placed under management and involves removal of undesirable trees that are of sufficient size to provide merchantable products, as well as trees that are diseased, mechanically injured, unthrifty (likely to die before the next cut), insect infested, and of poor form (forked or crooked). Improvement cuttings and thinnings in a stand are usually concurrent operations.
- **Salvage cuttings** remove dead and injured trees in order to utilize them before they become unable to be harvested. Trees are salvaged promptly following storm events,

severe fires, or attacks of insects and diseases. Salvage cuts are sometimes required to clear construction sites.

- **Clear cuttings** will be used at the discretion of the NRM in consultation with NAVFAC SE foresters and fish and wildlife biologists, as well as other federal and state agencies. Clear cutting will be used when there is an identified need to change species (e.g., slash pine to longleaf pine), remove an over mature or diseased stand, or for another reason deemed essential (i.e., following natural disasters). No clear cutting is planned for this 10-year period. Occasionally, clear cutting is required to meet mission safety criteria, such as height restrictions around runways.
- **Shelterwood cuttings** will be used at the discretion of the NRM in consultation with NAVFAC SE foresters and fish and wildlife biologists, as well as other federal and state agencies. Shelterwood cutting will be used to regenerate forest stands through a series of perhaps two to three cuts. This system is frequently used to regenerate heavy seeded species. Cuttings may be separated by as much as 20 years.
- **Seed tree cuttings** will be used at the discretion of the NRM in consultation with NAVFAC SE foresters and fish and wildlife biologists, as well as other federal and state agencies. Seed tree cutting involves the removal of all trees except trees of the desired species in sufficient numbers to reseed the cut-over area.
- **Prescribed burning** is the purposeful application of fire in a controlled, knowledgeable manner to remove and reduce forest fuels on a specific land area under selected weather conditions. A prescribed burn generally involves backing a low-intensity, surface fire through forest stands. Prescribed burning improves habitat by removing dense, scrubby understory vegetation, and allowing early successional flora to grow. Burning removes forest floor litter, promotes wildlife forage, promotes germination of plant seeds scarified by the heat, releases minerals and nutrients tied up in vegetation to the soil, and creates an edge effect along the boundaries between burned and unburned areas. In addition, prescribed burning reduces fuel levels and the chance of wildfires, which could destroy or seriously damage forest stands and potentially cause a threat to the military mission. Prescribed burning cannot be used in hardwood stands under management. Sand pines are also very sensitive to fire.
- **Firebreaks** are a necessary part of a fire management program. Existing features such as roads and streams may be used as firebreaks, but oftentimes such features are not present. Where existing features do not occur, man-made firebreaks must be established. Plowed firebreaks will be disked and leveled to prevent soil erosion and interruption of boundaries and hydrology. Permanent firebreaks may later be used for forest access.
- **Pinestraw harvesting** involves the removal of annual pine litterfall from the forest floor. Quantity removed varies by age of stand and site quality. Younger (5 to 10 years) stands are generally more productive than older (>15 years) stands.
- **Herbicide application** is used as a timber stand improvement (TSI) practice to control understory vegetation in areas where prescribed burning cannot be accomplished.
- **Forest fertilization** is used as a TSI practice to improve timber growth rates on relatively poor quality sites. Combined with herbicide applications, prescribed burning, and thinning, fertilization will promote the more rapid development of the forest stand so that other ecosystem values can be realized.
- **Site preparation** includes activities designed to improve conditions for seeding or planting that result in increased germination or seedling survival and tree growth. Examples include land-clearing activities, such as drum chopping, shearing, raking, piling into windrows, burning, and pesticide applications. Additional methods of site preparation include complete vegetation removal through chipping and other debris removal methods, followed by disking or scarification.

- **Regeneration** is the renewal of a forest by either natural or artificial means. Regeneration is generally preceded by a clear cut, a seed tree cut, or a shelterwood cut. Regeneration methods include natural seeding, planting, and direct seeding. The need for regeneration is not anticipated during this 10-year period.

Issues

Forest stands at the NASP Complex require periodic maintenance (i.e., use of silvicultural activities). Maintenance neglect represents a threat to the military mission and to the sustainability of forestry and wildlife resources. Timber stands require maintenance to increase the growth rate of the preferred trees, to reduce the potential for wildfires, to control diseases and insect pests, and to ensure the continuation of fire-dependent plant and wildlife communities.

Goals and Objectives

- Protect and enhance forest resources by practicing ecologically sound forest management leading to sustained yield of quality forest products, watershed protection, and wildlife habitat;
- Protect and maintain natural resources within the NASP Complex by continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Practice the ecosystem management concept for sustained yield of forest products and forest health;
- Manage forests in an ecologically sound manner to provide habitat for wildlife;
- Manage forest stands for watershed protection. Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized; and
- Reduce and control invasive and exotic species.

Projects

- Species Protection and Habitat Development (Project 1 in Appendix A);
- Invasive Species Control (Project 3 in Appendix A);
- Natural Resources GIS and Mapping (Project 6 in Appendix A);
- Gopher Tortoise Conservation (Project 7 in Appendix A);
- Forest Administration (Project 11 in Appendix A);

- Forest Product Sales (Project 12 in Appendix A);
- Timber Stand Improvement (Project 13 in Appendix A);
- Construction and Maintenance of Forest Roads (Project 14 in Appendix A); and
- Fire Management (Project 15 in Appendix A).

Management Strategies

- Using competitive timber sales contracts, sell timber to private logging contractors for removal. Awards will be made based on the highest return to the Navy;
- Identify certified prescribed burn training programs. Ensure that the program and its duration are compatible with the timeframe of the implementation strategy;
- Identify training programs for Federal Wildland Firefighting;
- Consult with foresters at NAVFAC SE, as well as state and county foresters;
- Continue a habitat development and protection program using prescribed burns and thinnings to improve habitat quality, reduce the potential for wildfires, control diseases and insect pests, and ensure the continuation of fire-dependent plant and wildlife communities;
- Perpetuate the prevailing pine forest while giving equal emphasis to hardwoods in those areas best suited to such species;
- Continually evaluate forest management practices and their effects on ecosystems and wildlife habitat, and continue programs to protect rare, threatened, and endangered plant and animal species;
- Review and monitor proposed activities for impact avoidance to the attenuation capacity of the 100-year floodplain. If it is determined that development is necessary within the 100-year floodplain to support the military mission, development shall first be located in the previously disturbed areas of the floodplain;
- Continue using BMPs for forest management activities to ensure watershed protection (FDACS 2003);
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources; and
- Continually verify that natural resources personnel obtain proper training and certifications;

Long-Term Management

The 10-year Forestry Management Plan for the NASP Complex is included in Appendix B. Table B-1 characterizes forest stands at each Installation within the NASP Complex. Table B-2 presents a Summary of the 10-year Forestry Management Plan for the NASP Complex. Tables B-3 through B-6 presents the 10-year Forestry Management Plan for each property (i.e., NAS Pensacola, Bronson Field, Corry Station, and Saufley Field).

The yearly work plan, which is based on the 10-year Plan, is prepared and submitted as an annual increment to NAVFAC HQ via NAVFAC SE for funding of proposed work items. The annual increment identifies specific work items to be accomplished, such as timber stand

improvement, reforestation, fire management, timber sales, and administrative management. The approved increment is the basic forestry work for the year. The actual forestry operations are implemented by the NRM and Forester, NASP forces, NAVFAC SE, and contractual services. Basic operation, such as marking and cruising timber, prescribed burning, inspection of timber contracts, and general forest management, are the responsibility of the Installation NRM and Forester. NAVFAC SE provides technical support and assists in contract specification preparation. The Resident Officer in Charge of Construction and Contracts (ROICC) advertises, awards, and maintains records on forestry contracts.

Forest stands at the NASP Complex are managed with an ecosystem approach for sustained yield and health. Planned silvicultural activities for this 10-year period include thinning, prescribed burning, pine straw harvesting, herbicide application, and forest fertilization. Cutting and prescribed burn cycles will be conducted consistent with the long-term management concepts for wildlife (Section 5.3). To accomplish this, foresters and fish and wildlife biologists from NAVFAC SE, as well as other appropriate federal, state, and county agencies will review the forest annual increment of work. This review will help ensure that ongoing management techniques include those that enhance wildlife populations that are dependent on forest ecosystems. Silvicultural activities in relation to the 10-year Forestry Management Plan are discussed below.

Thinning

Scheduled thinnings reduce the stand density as measured by “basal area” in square feet per acre. The desired reduction in density will be determined by the NRM, and will reflect the needs of the forest stand and the associated ecosystem represented by the stand and surrounding area. Thinnings will be designed to promote future natural regeneration of the forest stand by leaving quality seed trees spaced appropriately. A target basal area for pine regeneration at rotation age will be from 20 to 60 square feet of basal area per acre. In pine communities, the cutting cycle will begin when the stand reaches merchantable size (approximately 13 to 15 years) and will continue every 7 to 10 years until the rotation age of 80 years. The cutting cycle will be scheduled at the discretion of the NRM. Stands older than 80 years will be evaluated by the NRM, as well as by NAVFAC SE wildlife biologists, for their value as wildlife habitat. Cutting will decrease stand density between 60 and 80%. Harvesting activities in forested wetlands will occur as determined by the NRM. The NASP Complex will practice snag retention, the practice of leaving dead trees standing in managed forests to enhance wildlife habitat. Dead trees are often colonized and used by various wildlife species. The NASP Complex will not to remove a snag unless it jeopardizes property or is a safety risk.

Prescribed Burning

Prescribed burning is the primary forestry management tool at the NASP Complex. Burns will be conducted by trained personnel. Forest stands (pine) will be burned on a 3-year rotation, or at the discretion of the NRM. Burns will be hot enough on pine stands to kill invasive hardwoods, and will be scheduled in winter to reduce fuel loads to allow growing season burns in subsequent years, if desired. Prescribed burns will be scheduled in wetlands for habitat management. The timing of prescribed burning will account for ecosystem needs within the forest stand and surrounding area and will be conducted during both the growing season and the dormant season as determined by the NRM.

Firebreaks must be established as part of the prescribed burning program to prevent fire from escaping from the burn area. Existing barriers such as roads and wetlands will be used as firebreaks where feasible, but firebreaks must be established and maintained where existing barriers are not present. Prescribed burning is dependent upon weather conditions and mission-related activities. Equipment necessary to conduct fire management includes crawler tractor, transport truck, ATVs, Gyrotrac, and other fire ignition and suppression equipment.

The following conditions must be understood and described in each prescription for prescribed burns to be an effective management technique: (1) biological requirements of target species (i.e., gopher tortoise, large-leaved jointweed), (2) vegetative condition of the stand to be burned, and (3) expected results for understory and species composition.

Pine straw Harvesting

Pine straw harvesting should occur annually for 3 to 5 years followed by no harvesting for 3 to 5 years in relatively young pine stands (5 to 20 years old) to prevent reduction of site quality. Two to 10 tons per acre per year of pine straw can be harvested in relatively young stands.

Herbicide Application

Herbicide application is scheduled in forest areas where prescribed burning is not effective or is not authorized due to proximity to residential areas and other smoke-sensitive sites. Prescribed fire can be introduced after initial treatment by herbicide in most cases. The removal of undesirable exotic species using herbicides is also discussed in the land management section of the INRMP. The control of exotic species will be coordinated with the Forest Management Plan (Appendix B) so forestry operations can enhance the control effort (i.e., prescribed burning following an exotic species control project).

Forest Fertilization

Fertilization is scheduled in forest areas where site quality is relatively poor. These forest stands are usually fertilized every 10 years.

Unplanned Activities

Unplanned activities that will require a change to the work plan in forest areas may result due to natural causes or mission-related requirements. Natural causes include the effects of wildfire, insect and disease outbreaks, nuisance animal damage, and weather-related events such as tornadoes, tropical storms, and hurricanes. Mission related requirements may include reduction of forest areas to construct new facilities and training requirements that require an interruption in the thinning or prescribed burn schedule. Should scheduled prescribed burning not occur due to mission-related requirements, the application of approved pesticides in forest areas, combined with the cutting and removal of understory vegetation, may be scheduled as an unplanned activity.

Silvicultural actions for unplanned activities include the full range of available and acceptable practices as described above, as well as forest harvesting methods, such as clear cutting. One hundred sixty (160) total acres (plus an increase of 300% in the event of natural events such as tornadoes and hurricanes) of forest area per year shall be designated as the approximate acreage requiring work described as an “unplanned activity”, in accord with the environmental assessment associated with this INRMP. Unplanned activities such as clear cutting, debris removal, chipping, drum chopping, shearing, raking, piling into windrows, burning, pesticide applications, and conversion to a different forest age class may be necessary if the unplanned activity is dictated by natural events. The specific project, if mission related, shall include complete environmental documentation separate from the actions designated by this INRMP as unplanned activities. The environmental authorization established by this INRMP will cease for an existing forest stand if it is converted to another use for mission purposes.

Integration with Other Natural Resources Management Activities

- Wetlands, Section 5.1.1 – maintain a 50-foot buffer around wetlands;
- Soil Conservation and Erosion, Section 5.1.2 – consider and control erosion during silvicultural activities such as thinning;
- Stormwater and Water Quality, Section 5.1.3 – use proper amounts of herbicide and fertilizers to avoid excessive runoff in stormwater;
- Floodplains, Section 5.1.4 – ensure silvicultural activities do not compromise the function of floodplains;
- Marine Coastal, Section 5.1.5 – manage erosion and sedimentation to protect water quality;

- Landscaping and Grounds Maintenance, Section 5.1.6 – ensure silvicultural projects are consistent with landscaping and grounds maintenance tasks;
- Invasive, Exotic, and Noxious Species, Section 5.1.7 – reduce and control exotic vegetation in forest stands;
- Urban Forestry, Section 5.1.8 – apply principles to urban forestry when possible;
- Forest Protection, Section 5.2.2 – maintain forest stands to reduce fuel loads;
- Fisheries Management, Section 5.3.1 – use proper amounts of herbicide and fertilizers to avoid runoff into fishing areas;
- Migratory Birds, Section 5.3.2 - use proper amounts of herbicide and fertilizers to avoid runoff into wading areas;
- Threatened and Endangered Species, Section 5.3.3 – maintain and enhance forest habitat for protected wildlife;
- Nuisance Wildlife and BASH, Section 5.3.4 – be aware of creating potential habitat for BASH birds and wildlife;
- Outdoor Recreation, Section 5.4 – maintain aesthetically-pleasing forests for recreation;
- Natural Resources Training, Section 5.5.1 – ensure personnel are aware of forestry issues and practices; and
- GIS, Section 5.5.2 – utilize GIS tools to improve forest management and silvicultural plans.

Ecosystem Management

Silvicultural activities are essential to maintain healthy forests, especially fire-dependent ecosystems, which provide quality wildlife habitat and sustainable yields of forest products. Silvicultural activities redistribute a site's growth potential to the best trees so that they grow at a faster rate. Ecosystem-based silviculture also stimulates understory growth, which creates food and cover for some wildlife. Prescribed burning mimic the natural burn cycles of ecosystems at the NASP Complex and, when used in combination with harvesting, can maintain healthy and vigorous forest stands on the properties, and provide critical habitat for rare, threatened, and endangered species. The NASP Complex adheres to BMPs prescribed in *Silviculture Best Management Practices, Revised 2003* to control sedimentation and erosion that might affect waterways and water quality as the result of silvicultural activities (FDACS 2003).

Military Mission

Silvicultural practices such as harvesting, herbicide applications, and prescribed burning on the NASP Complex decrease forest fuel loads, thus decreasing fuel available to wildfires, which could threaten the NASP Complex military mission activities, facilities, and housing, and affect scheduling for training.

Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Silvicultural Activities

- Resources Planning Act (RPA), passed by Congress in 1974, requires a complete national assessment or inventory of all forest, rangeland resources, and public needs every ten years, along with a plan to meet those needs.
- Soil Conservation Act, 16 USC 590a et. seq., provides for soil conservation practices on federal lands.
- Federal Noxious Weed Act of 1974, 7 U.S.C. 2801, establishes control and eradication of noxious weeds and regulates them in interstate and foreign commerce.
- Executive Order 13751, 5 December 2016, requires federal agencies prevent the introduction, establishment, and spread of invasive species, detect and respond rapidly to eradicate or control populations of invasive species in a manner that is cost-effective and minimizes human, animal, plant, and environmental health risks, monitor invasive species populations accurately and reliably, and provide for the restoration of native species and ecosystems that have been impacted by invasive species, among other requirements.
- Executive Orders 11989 and 12608, close areas to off-road vehicles where soil, wildlife, and other natural resources may be adversely affected.
- Federal Water Pollution Control Act, as amended by the CWA of 1977, 33 USC 1251, regulates the dredging and filling of wetlands and establishes procedures to identify and regulate nonpoint sources of pollutant discharge, including turbidity, into wetlands.
- CWA, Section 402 NPDES Program, 2002, 33 USC 1251, controls direct discharges into navigable waters. NPDES permits, issued by either the EPA or an authorized state or tribe, contain industry-specific, technology-based and water-quality-based limits and establish pollutant monitoring and reporting requirements.
- CWA Section 401, requires an applicant for a federal license or permit to provide a certification that any discharges from the facility will comply with the CWA, including water quality standard requirements.
- CWA Section 404, establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands.
- Endangered Species Act, protects threatened and endangered species and their habitats until they are out of danger of extinction.
- DOD 7000.14-R, Volume 11A, Chapter 16 administers the reimbursement of costs of managing forest resources for timber production. Under this regulation, only expenses related to the maintenance of timber for commercial sale are reimbursed.
- OPNAVINST 5090.1D, 12-3.8(j), discusses laws that govern natural resources management relating to the protection and management of forest resources.
- Sikes Act, 16 U.S.C. 670a-o, authorizes conservation programs on military reservations.
- DOD Directive 4715.1E, establishes the Defense Environmental Security Council; the Environment, Safety, and Occupational Health Policy Board and the Defense Environmental Security Council Committee structure; and the Armed Forces Pest Management Board.

Additional Sources of Information

Blackwater Forestry Center
<http://www.freshfromflorida.com/Divisions-Offices/Florida-Forest-Service/Our-Forests/Field-Operations/Blackwater-Forestry-Center-Field-Unit>

FDACS Florida Forest Service
<http://www.floridaforestservice.com/index.html>

FDACS Prescribed Fire Training
<http://www.freshfromflorida.com/Divisions-Offices/Florida-Forest-Service/Wildland-Fire/Prescribed-Fire>

FDACS County Forester Directory
<http://www.freshfromflorida.com/Divisions-Offices/Florida-Forest-Service/Our-Forests/Field-Operations/County-Foresters>

Tall Timbers Research Station
<http://www.talltimbers.org/>

TNC Fire Management Manual
<http://www.tncfiremanual.org/>

A Guide for Prescribed Fire in Southern Forests
https://www.fs.fed.us/rm/pubs/rmrs_gtr292/1989_wade.pdf

American Forests
<http://www.americanforests.org/>

National Association of State Foresters
<http://www.stateforesters.org/>

Society of American Foresters
<http://www.safnet.org/>

USDA Forest Service
<http://www.fs.fed.us/>

5.2.2 Forest Protection

The NASP Complex protects its forest stands against wildfires, insects, and diseases, and endeavors to maintain desirable environmental and aesthetic forest qualities. A desirable aesthetic quality may be a dense stand of healthy trees near a roadside.

- **Wildfires** are uncontained fires in forested or open areas. Wildfires may result from human activities or weather events. The potential for severe wildfires may be decreased by implementing prescribed burning programs, which decrease fuel loads in forest stands (see Section 5.2.1).
- **Diseases**, such as fusiform rust (*Cronartium fusiforme*), are present on the NASP Complex. Galls are the first signs of the disease, and grow on branches and tree trunks, eventually encircling the trunk or branch and killing it. Thinnings will emphasize salvage and removal of diseased trees. It is likely that highly infected plantations may have to be cleared and replanted because, after salvage cutting, too few trees per acre will remain for future growth and development.
- **Insects**, such as black turpentine beetles, attack and kill pine trees. The attack intensity depends on the field conditions, tree vigor, and weather. Needles on trees will turn brown within several days after a fatal attack. The threat of insect infestations may be lowered by the use of pesticides and maintaining thinned healthy forests (see Section 5.2.1). Damage to trees by machinery, especially in pine stands, should be minimized because the wounds will attract insects.

Issues

Wildfires, insects, and diseases have the potential to cause severe damage in forest stands on the NASP Complex. Silvicultural activities and proper training to control wildfires, insects, and diseases at the NASP Complex are essential to carrying out the goals and objectives of this INRMP. Proper forest protection activities will increase the growth rate of the preferred trees, reduce the potential for wildfires, control diseases and insect pests, and ensure the continuation of healthy forest communities.

Goals and Objectives

- Protect and enhance forest resources by practicing ecologically sound forest management leading to sustained yield of quality forest products, watershed protection, and wildlife habitat;
- Protect and maintain natural resources within the NASP Complex by continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Practice the ecosystem management concept for sustained yield of forest products and forest health;
- Manage forests in an ecologically sound manner to provide habitat for wildlife;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Maintain the ecological integrity of wetland and upland communities for the protection of native plant and animal species, including numerous federally and state listed species;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized; and
- Reduce and control invasive and exotic species.

Projects

- Species Protection and Habitat Development (Project 1 in Appendix A);
- Invasive Species Control (Project 3 in Appendix A);
- Natural Resources GIS and Mapping (Project 6 in Appendix A);
- Gopher Tortoise Conservation (Project 7 in Appendix A);
- Forest Administration (Project 11 in Appendix A);
- Forest Product Sales (Project 12 in Appendix A);
- Timber Stand Improvement (Project 13 in Appendix A);
- Construction and Maintenance of Forest Roads (Project 14 in Appendix A); and
- Fire Management (Project 15 in Appendix A).

Management Strategies

- Identify certified prescribed burn training programs. Ensure that the program and its duration are compatible with the timeframe of the implementation strategy;
- Identify training programs for Federal Wildland Firefighting;
- Consult with foresters at NAVFAC SE, as well as state and county foresters;
- Continue a habitat development and protection program using prescribed burns and thinnings to improve habitat quality, reduce the potential for wildfires, control diseases and insect pests, and ensure the continuation of fire-dependent plant and wildlife communities;
- Perpetuate the prevailing pine forest while giving equal emphasis to hardwoods in those areas best suited to such species;
- Monitor for insect and disease outbreaks;
- Continually evaluate forest management practices and their effects on ecosystems and wildlife habitat, and continue programs to protect rare, threatened, and endangered plant and animal species;
- Review and monitor proposed activities for impact avoidance to the attenuation capacity of the 100-year floodplain. If it is determined that development is necessary within the 100-year floodplain to support the military mission, development shall first be located in the previously disturbed areas of the floodplain; and
- Continue using BMPs for forest management activities to ensure watershed protection (FDACS 2003);
- Continually verify that natural resources personnel obtain proper training and certifications.

Long-Term Management

Forest stands at the NASP Complex are managed with an ecosystem approach to sustain yield and health. Planned silvicultural activities in the Forest Management Plan (Appendix B) that are directly related to forest protection include prescribed burning, thinning, and pesticide application (see Section 5.2.1). The NRM will have timber prescriptions reviewed by foresters and fish and wildlife biologists from NAVFAC SE, as well as other appropriate federal, state, and county agencies to ensure proper forest protection management. The NASP Complex adheres to BMPs prescribed in *Silviculture Best Management Practices, Revised 2003* to control sedimentation and erosion that might affect waterways and water quality as the result of forestry activities (FDACS 2003)

Gyrotrac

Navy Region Southeast has a Model GT-18XP Gyrotrac as an aid for vegetation control. The Gyrotrac Heavy Duty Brushcutter has a flail mower type cutting head mounted on the front of the track propelled machine powered by a 190 horsepower Cummings diesel engine. The cutter head has the capability of cutting to



ground level heavy brush and trees 8 to 12 inches in diameter, leaving nothing but a layer of chips on the ground. The Gyrotrac's low ground pressure tracks exert a pressure of only 2.5 pounds per square inch (PSI). This allows the machine to be used over a wide range of ground conditions. Navy Region Southeast has used this unit with great success to maintain roads, trails, right of ways, flight clearance zones, and security areas. The unit has been shared between the NASP Complex, NASWF Complex, NAS Meridian, and NWS Charleston since the time of purchase. Management responsibility is provided by the NAS Pensacola NRM and Forester.

The NASP Complex has successfully used the Gyrotrac to supplement its prescribed burning program and enables foresters to limit the forest fuel load year-round. This is important for proper forest management at the NASP Complex since smoke and limited burn days make it difficult to integrate burning schedules with aircraft training requirements. The Gyrotrac, when used to maintain firebreaks on unstable soils, reduces erosion that would otherwise be accentuated by more impactful machinery. The low ground pressure exerted by the Gyrotrac is suitable for use in wetland areas; the unit's approved use in wetlands generally does not require an EA.

The Gyrotrac has other applications that benefit natural resources management. It can be used to improve habitat for wildlife, reduce competition to release desirable forest species, maintain trails and enhance other outdoor recreation facilities, remove invasive plant species and enhance urban forestry areas.

The Gyrotrac is also cost effective. Since October 2002, over 1,000 acres have been cleared creating a cost savings of more than \$1 million to the Navy. This is based on conventional methods of clearing, which include grubbing, chipping, and/or removing debris from the site.

Integration with Other Natural Resources Management Activities

- Wetlands, Section 5.1.1 – use proper amounts of pesticides to avoid wetland contamination;
- Soil Conservation and Erosion, Section 5.1.2 – consider and control erosion during forest protection activities such as thinning;
- Stormwater and Water Quality, Section 5.1.3 – use proper amounts of pesticides to avoid excessive runoff in stormwater;
- Floodplains, Section 5.1.4 – ensure forest protection activities do not compromise the function of floodplains;
- Marine Coastal, Section 5.1.5 – use proper amounts of pesticides to avoid water quality contamination;
- Landscaping and Grounds Maintenance, Section 5.1.6 – ensure forest protection activities are consistent with landscaping and grounds maintenance tasks;

- Invasive, Exotic, and Noxious Species, Section 5.1.7 – reduce and control destructive pests in forest stands;
- Urban Forestry, Section 5.1.8 – protection measures will likely benefit urban forestry;
- Silvicultural Activities, Section 5.2.1 – maintain forest stands to reduce fuel loads;
- Fisheries Management, Section 5.3.1 – use proper amounts of pesticides to avoid runoff into fishing areas;
- Migratory Birds, Section 5.3.2 – use proper amounts of pesticides to avoid runoff into wading areas;
- Threatened and Endangered Species, Section 5.3.3 – protect forest health and habitat for protected wildlife;
- Nuisance Wildlife and BASH, Section 5.3.4 – be aware of creating potential habitat for BASH birds and wildlife;
- Outdoor Recreation, Section 5.4 – maintain aesthetically-pleasing forests for recreation;
- Natural Resources Training, Section 5.5.1 – ensure personnel are aware of forestry issues and practices; and
- GIS, Section 5.5.2 – utilize GIS tools to improve forest protection.

Ecosystem Management

Forest protection activities are essential to maintain healthy forests that provide quality wildlife habitat and sustainable yields and prevent the accumulation of fuel loads, which could cause detrimental effects to forest stands. In addition, forest protection activities enhance the functional capacities of wetland areas within the NASP Complex by allowing prescribed burns to remove invasive species within wetland areas, and minimize the potential for catastrophic wildfires that could decimate forest stands and expose large areas of soil to erosion.

Military Mission

Forest protection helps prevent wildfires which could threaten the NASP Complex military mission activities, facilities, and housing.

Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Forest Protection

- Federal Noxious Weed Act of 1974, 7 U.S.C. 2801, establishes control and eradication of noxious weeds and regulates them in interstate and foreign commerce.
- Executive Order 13751, 5 December 2016, requires federal agencies prevent the introduction, establishment, and spread of invasive species, detect and respond rapidly to eradicate or control populations of invasive species in a manner that is cost-effective and minimizes human, animal, plant, and environmental health risks, monitor invasive species populations accurately and reliably, and provide for the restoration of native species and ecosystems that have been impacted by invasive species, among other requirements.
- Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. 136, requires that all pesticides, whether for commercial or private use, be applied in accordance with product labeling and that containers are properly disposed of. EPA is responsible under FIFRA for the registration of all pesticide active ingredients used in the United States.

- Federal Plant Pest Act, 7 U.S.C. 150a et seq., regulates the importation and interstate movement of plant pests and authorizes the Secretary of Agriculture to take emergency measures to destroy infected plants or materials.
- Florida Statutes, Chapter 487, the Florida Pesticide Law, regulates the distribution and use of pesticides.
- OPNAVINST 6250.4B, 27 August 1998, DOD Pest Management Program, provides the DON with policies for implementing pest management programs directed against pests that conflict with or adversely affect the mission of the DOD; affect the health and well-being of the DON personnel and their dependants; attack or damage real property, supplies, or equipment; adversely affect the environment; or are otherwise undesirable.
- DOD 7000.14R, Volume 11A, Chapter 16 administers the reimbursement of costs of managing forest resources for timber production. Under this regulation, only expenses related to the maintenance of timber for commercial sale are reimbursed.
- OPNAVINST 5090.1D, 12-3.8(j), discusses laws that govern natural resources management relating to the protection and management of forest resources.

Additional Sources of Information

Blackwater Forestry Center

<http://www.freshfromflorida.com/Divisions-Offices/Florida-Forest-Service/Our-Forests/Field-Operations/Blackwater-Forestry-Center-Field-Unit>

FDACS Florida Forest Service

<http://www.floridaforestservice.com/index.html>

FDACS Prescribed Fire Training

<http://www.freshfromflorida.com/Divisions-Offices/Florida-Forest-Service/Wildland-Fire/Prescribed-Fire>

FDACS County Forester Directory

<http://www.freshfromflorida.com/Divisions-Offices/Florida-Forest-Service/Our-Forests/Field-Operations/County-Foresters>

Tall Timbers Research Station

<http://www.talltimbers.org/>

TNC Fire Management Manual

<http://www.tncfiremanual.org/>

A Guide for Prescribed Fire in Southern Forests

https://www.fs.fed.us/rm/pubs/rmrs_gtr292/1989_wade.pdf

American Forests

<http://www.americanforests.org/>

National Association of State Foresters

<http://www.stateforesters.org/>

Society of American Foresters

<http://www.safnet.org/>

USDA Forest Service

<http://www.fs.fed.us/>

5.3 FISH AND WILDLIFE

Fish and wildlife management actions are designed to preserve, enhance, and manage indigenous wildlife and their habitats. These actions include the conservation of protected species and nongame species, management and harvest of game species, BASH reduction, and animal damage and disease control. Primary management issues for fish and wildlife at the NASP Complex are: (1) fisheries management; (2) wildlife habitat management; (3) threatened and



endangered species and natural communities management; (4) wildlife damage and disease control; and (5) BASH. Hunting is not authorized at the NASP Complex because of the Complex's longtime regard as a wildlife sanctuary and due to safety considerations. Some game species may inhabit certain areas but probably not in sufficient numbers to make hunting feasible.

The objectives of fish and wildlife management at the NASP Complex are to protect, conserve, and manage fish and wildlife, and threatened and endangered species, as vital elements of the ecosystem. Species dependent upon wetlands, fire, and sandhill communities have been the focus of fish and wildlife management. Fish and wildlife have benefited from forest management practices (i.e., prescribed burning), native landscaping, preservation of natural communities, and wetlands protection. Proactive wildlife management activities at the NASP Complex have included:

- Management of Lake Frederic for recreational fishing through stocking and feeding programs;
- Trapping and removal of nuisance alligators;
- Nuisance wildlife control, including beaver and coyote trapping projects;
- Wetlands inventories and jurisdictional reviews;
- Implementing protection measures for the gopher tortoise;
- Completing a BASH plan;
- Conducting Area Osprey Restoration Project, 15 nest platforms have been erected on base;
- Administration of honeybee management program;
- Audubon Christmas Bird Counts;
- Establishing the A. C. Read Golf Course HCP; and
- Completion of biological surveys.

Current demands on wildlife resources and long-term needs for wildlife programs have included:

- Recreational Fishing Program for freshwater lakes, ponds, and streams at the NASP Complex;
- Survey and protection program for neotropical migratory birds;
- Species protection and habitat development program;
- Surveys and protection program for threatened and endangered species and natural communities;
- Program to address wildlife damage and diseases;
- Nuisance wildlife monitoring and control program;
- Golf Course HCP revision and implementation; and
- BASH Plan revision and implementation.

5.3.1 Fisheries Management

Fisheries management includes activities to monitor populations of fish species and manipulate their habitat. Such activities include stocking, feeding, and fertilizing ponds, providing for recreational fishing, controlling aquatic vegetation, and implementing water quality control programs.

Issues

Both freshwater and saltwater fishing are popular activities at the NASP Complex, and demand is expected to increase. Freshwater fishing opportunities at the NASP Complex include the beaver pond at Bronson Field, Eightmile Creek at Saufley Field, and Lake Frederic at NAS Pensacola, a small 1.2-acre pond located east of Sherman Cover. Due to limited resources, the general public is not allowed access for fishing, except as accompanied guests.

Goals and Objectives

- Protect and maintain resources within the NASP Complex through the continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Provide facilities and develop policies that allow for recreational and educational uses of natural resources, and result in positive effects to these natural resources while improving the quality of life;
- Continue existing and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASP 2013);
- Inventory wetlands and assess their function and quality as warranted;

- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Protect and enhance shorelines through existing and new programs;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Manage forests in an ecologically sound manner to provide habitat for wildlife;
- Manage forest stands for watershed protection (FDACS 2003); and
- Preserve and protect threatened and endangered species, and species of special concern, to prevent reduction of individuals or populations.

Projects

- Invasive Species Control (Project 3 in Appendix A);
- Erosion Control for Coastal Zone Protection (Project 4 in Appendix A);
- Establish Shoreline Vegetation (Project 5 in Appendix A);
- Natural Resources GIS and Mapping (Project 6 in Appendix A); and
- Fishery Conservation and Management (Project 8 in Appendix A).

Management Strategies

- Identify potential natural resources conflicts that could arise from increased outdoor recreational facilities;
- Investigate facility use agreements with other providers of educational, cultural, and recreational opportunities in the area;
- Review issues that currently prohibit public access to fishing opportunities;
- Revise fishing and hunting instructions to include all properties of the NASP Complex;
- Continue to evaluate the stormwater management program and activities contributing to stormwater runoff and pollutant loading in stormwater runoff, and implement BMPs to minimize stormwater pollution and erosion (FDACS 2003; FDOT and FDEP 2007; FDEP 2008; NASP 2013);
- Continue to develop a soil erosion control management plan, and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Continue to use Integrated Pest Management (IPM) techniques in pest management programs and emphasize the use of pesticides with low toxicity and low application rates;
- Inventory wetlands and assess their function and quality as warranted, promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue using BMPs for forest management activities to ensure watershed protection (FDACS 2003);

- Review and monitor proposed activities for impact avoidance to the attenuation capacity of the 100-year floodplain. If it is determined that development is necessary within the 100-year floodplain to support the military mission, development shall first be located in the previously disturbed areas of the floodplain;
- Ensure implementation of policies that minimize adverse impacts to ecosystem resources from land disturbance activities;
- Continue to establish a program to prevent further degradation of shorelines;
- Continue to implement programs and activities for the protection and enhancement of habitat for threatened and endangered animal and plant species; and
- Continually verify that natural resources personnel obtain proper training and certifications.

Long-Term Management

Long-term management of freshwater ponds and streams on the NASP Complex includes the water quality enhancement and the establishment of recreational fishing opportunities. Selected freshwater ponds and streams will be managed for recreational fishing through stocking, feeding, and fertilization (see Project 8, Appendix A). Ponds and streams that may be used for recreational fishing purposes include Lake Frederic at NAS Pensacola, the beaver pond at Bronson Field, and Eightmile Creek at Saufley Field. Long-term management of stormwater (see Section 5.1.4) and erosion control (see Section 5.1.3) will help maintain water quality in freshwater ponds and streams.

Integration with Other Natural Resources Management Activities

- Wetlands, Section 5.1.1 – wetland health relates to fishery health;
- Soil Conservation and Erosion, Section 5.1.2 – control sedimentation into fishing areas;
- Stormwater and Water Quality, Section 5.1.3 – water quality relates to fishery health;
- Floodplains, Section 5.1.4 – floodplain maintenance relates to fishery health;
- Marine Coastal, Section 5.1.5 – marine coastal condition relates to fishery health;
- Landscaping and Grounds Maintenance, Section 5.1.6 – maintain wetland buffers and properly apply herbicides and fertilizers;
- Invasive, Exotic, and Noxious Species, Section 5.1.7 – control invasive aquatic weeds in fishing areas;
- Urban Forestry, Section 5.1.8 – properly apply herbicides and fertilizers during urban forestry;
- Silviculture, Section 5.2.1 – consider effects of thinning and soil erosion on water quality;
- Forest Protection, Section 5.2.2 – maintain regular burn cycles to ensure natural wetland conditions;
- Migratory Birds, Section 5.3.2 – wading birds and osprey prey upon fish.
- Threatened and Endangered Species, Section 5.3.3 – ensure protection of sturgeon and other listed aquatic animals at fishing areas;

- Nuisance Wildlife and BASH, Section 5.3.4 – ensure fishing areas do not increase the BASH risk, and advise fishers of biting insects and venomous animals;
- Outdoor Recreation, Section 5.4 – properly educate recreational participants in stewardship of the resource and aquatic environment;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on Florida fishing rules and regulations; and
- GIS, Section 5.5.2 – utilize GIS tools to improve fisheries management.

Ecosystem Management

Fisheries management is consistent with ecosystem management. Coastal fishing areas and freshwater lakes, ponds, and streams will be managed for recreational fishing without adversely impacting native species or the environment.

Military Mission

Recreational fishing activities do not present a threat to the mission. Such activities help sustain the morale and wellness of base tenants.

Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Fisheries Management

- Executive Order 12962 directs federal agencies to cooperate in conservation of aquatic resources and enhancement of opportunities for recreational fishing.
- Endangered Species Act, 16 U.S.C. 35, 32 CFR 190, provides for the identification and protection of threatened and endangered species of fish, wildlife, and plants and their critical habitats. Requires federal agencies to ensure that no agency action is likely to jeopardize the continued existence of a threatened or endangered species.
- Sikes Act, as amended 16 U.S.C. 670a-o, requires each military department to manage fish and wildlife resources in accordance with a tripartite cooperative plan agreed to by the USFWS and state wildlife agency.
- Magnuson-Stevens Fishery Conservation and Management Act (1996 Reauthorization), 16 U.S.C. 1855(b), federal agencies must consult with the Secretary of Commerce on all activities, or proposed activities, authorized, funded, or undertaken by the agency, that may adversely affect EFH.
- Fish and Wildlife Conservation Act, 16 U.S.C. 2901, encourages all federal departments and agencies to utilize their statutory and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities, to conserve and promote conservation of nongame fish and wildlife and their habitats.
- Executive Order 13751, 5 December 2016, requires federal agencies prevent the introduction, establishment, and spread of invasive species, detect and respond rapidly to eradicate or control populations of invasive species in a manner that is cost-effective and minimizes human, animal, plant, and environmental health risks, monitor invasive species populations accurately and reliably, and provide for the restoration of native species and ecosystems that have been impacted by invasive species, among other requirements.
- OPNAVINST 5090.1D, 12-3.5, discusses laws that govern natural resources management relating to the protection and management of fish and wildlife resources.

- Florida Statutes, Chapter 370.12, Florida Endangered and Threatened Species Act, is to conserve, protect, and manage the threatened and endangered species and their habitats.

Additional Sources of Information

FWC, Division of Freshwater Fisheries Management
<http://myfwc.com/about/overview/programs/ffm/>

FWC, Division of Saltwater Fisheries Management
<http://myfwc.com/about/overview/programs/mfm/>

FWC, Division of Habitat and Species Conservation
<http://myfwc.com/about/overview/programs/hsc/>

UF, IFAS, Center for Aquatic and Invasive Plants
<http://plants.ifas.ufl.edu/>

USFWS, Panama City Ecological Services
<http://www.fws.gov/PanamaCity/>

NOAA Fisheries Service, Southeast Regional Office
<http://sero.nmfs.noaa.gov/>

5.3.2 Migratory Birds

The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-711) prohibits the unauthorized take of migratory birds, their eggs, nests, and feathers. Game birds are not protected by this Act, but their takes are governed by State hunting regulations. Migratory birds face serious challenges, including habitat loss, collisions with man-made structures, and environmental contaminants, which can result in species decline. Protecting migratory birds requires a coordinated effort involving multiple jurisdictions and interests because many species migrate across national boundaries, watersheds, and ecosystems. Under the MBTA, the Navy is compelled to exercise due diligence for activities requiring NEPA analysis and must develop appropriate and reasonable conservation measures to avoid, minimize, and mitigate adverse effects to migratory birds and their nests resulting from such activities.

Issues

Migratory birds at the NASP Complex are protected under the MBTA against take for normal and routine operations such as installation support functions. Take includes pesticide application, nest or egg removal, and tree removal. The temporal and spatial presence of migratory bird species must therefore be considered when carrying out all management activities described in this INRMP. Habitat modification as a result of timber sales would not constitute a take; neither would nest removal outside nesting season.

Goals and Objectives

- Protect and maintain resources within the NASP Complex through the continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;

- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Preserve and protect threatened and endangered species, and species of special concern, to prevent reduction of individuals or populations;
- Incorporate the concept of ecosystem management into all planning and management processes;
- Implement training, education, and stewardship initiatives for ecosystem management;
- Continue existing and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Protect and enhance shorelines through existing and new programs;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices; and
- Manage forests in an ecologically sound manner to provide habitat for wildlife;

Projects

- Erosion Control for Coastal Zone Protection (Project 4 in Appendix A);
- Natural Resources GIS and Mapping (Project 6 in Appendix A);
- Neotropical Migratory Bird Survey (Project 9 in Appendix A);
- Update Biological Inventory (Project 10 in Appendix A); and
- Fire Management (Project 15 in Appendix A).

Management Strategies

- Complete surveys for neotropical migratory birds by using the recommendations provided in the DOD Coordinated Bird Monitoring Plan to guide survey design and data management;
- Notify the NRM of installation support actions that may affect migratory bird species so that impacts to birds may be avoided and minimized in accordance with the MBTA;
- Update rare, threatened, and endangered species surveys;
- Seek opportunities create conservation partnerships with federal, state, local agencies and non-governmental organizations to improve habitat and allow for bird research at the NASP Complex;
- Utilized the IPM Plan to reduce pesticide use to the benefit of migratory birds;
- Where possible, site military readiness activities to avoid migratory birds and their nests;
- Routinely update and monitor the BASH Plan and implement grounds maintenance practices consistent with the BASH Plan;
- Establish procedures for the BASH to deliver regularly scheduled updates and reports to the NRM;

- Educate residents of the NASP Complex about the ecological and health benefits of keeping pet cats indoors and eliminating resident populations of feral cats;
- Use FWC guidelines for the protection of listed species from proposed development or land clearing impacts;
- Institute wildlife education and stewardship programs;
- Continue to use Integrated Pest Management (IPM) techniques in pest management programs and emphasize the use of pesticides with low toxicity and low application rates;
- Ensure implementation of policies that minimize adverse impacts to ecosystem resources from land disturbance activities;
- Continue to establish a program to prevent further degradation of shorelines;
- Continue to implement programs and activities for the protection and enhancement of habitat for threatened and endangered animal and plant species;
- Continue to implement programs and initiatives that foster citizen participation in ecosystem education and stewardship;
- Compile GIS data coverages and maintain and update data coverages of populations and habitats of endangered and threatened species and species of special concern; and
- Continually verify that natural resources personnel obtain proper training and certifications.

Long-Term Management

Avoiding and minimizing impacts to migratory birds begins with an up-to-date working knowledge of species presence, seasonality, nesting habits, and habitat condition on the installation. The NRM will therefore ensure that migratory bird surveys are regularly completed on the Complex. These surveys shall follow the guidance and recommendations in the DOD Coordinated Bird Monitoring Plan for survey design and data management. Additional guidance and information is available on the DOD Partners in Flight Monitoring Working Group website (www.dodpif.org). The NRM and Regional Natural Resources support staff will use collected data to avoid, minimize, and mitigate impacts to migratory birds resulting from activities on the NASP Complex. Because most migratory birds cross installation and state boundaries, data sharing is a vital component to their management. Data collected at the NASP Complex will be shared with federal and state agencies through participation in programs such as the Breeding Bird Research and Monitoring Database (BBIRD), eBird, and Monitoring Avian Productivity and Survivorship (MAPS). Public outreach opportunities, such as Christmas Bird Counts and wildlife viewing opportunities will continue to be promoted on the Complex.

The Commanding Officer maintains a depredation permit so a BASH control agent at the NASP Complex may legally take migratory birds that pose a BASH threat. The agent needs to cooperate with the NRM to ensure that the goals, objectives, and strategies for migratory bird management are achieved in concert with the goals, objectives, and strategies of BASH control.

Integration with Other Natural Resources Management Activities

- Wetlands, Section 5.1.1 – wetlands provide forage habitat for various bird species;
- Soil Conservation and Erosion, Section 5.1.2 – control sedimentation into bird foraging areas;
- Stormwater and Water Quality, Section 5.1.3 – control water quality in bird foraging areas;
- Floodplains, Section 5.1.4 – limited development in floodplains provides habitat for migratory birds away from Complex infrastructure;
- Marine Coastal, Section 5.1.5 – the marine coastal habitat provides forage and nesting areas for various bird species, away from Complex infrastructure;
- Landscaping and Grounds Maintenance, Section 5.1.6 – ensure nests are not removed in season during grounds maintenance activities;
- Invasive, Exotic, and Noxious Species, Section 5.1.7 – exotic species can provide unwanted nesting areas and materials for birds near infrastructure;
- Urban Forestry, Section 5.1.8 – consider potential for bird nesting near infrastructure and training areas when planning urban forests;
- Silviculture, Section 5.2.1 – consider nesting season when planning thinning and prescribed burn activities;
- Forest Protection, Section 5.2.2 – maintain forests to prevent disease and monitor dead trees that provide nesting habitat for BASH species;
- Fisheries Management, Section 5.3.1 – wading birds and osprey prey upon fish;
- Threatened and Endangered Species, Section 5.3.3 – migratory bird management aids the status and survival of rare bird species;
- Nuisance Wildlife and BASH, Section 5.3.4 – the NRM, Bash control agent, and USFWS should communicate before nests are removed for BASH purposes;
- Outdoor Recreation, Section 5.4 – enlist avid bird watchers in bird inventories ;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on MBTA and related laws; and
- GIS, Section 5.5.2 – utilize GIS tools to improve migratory bird management.

Ecosystem Management

Migratory bird management is one component of ecosystem management on the NASP Complex. Benefits of other management activities described in this INRMP, such as marine coastal management, wetland management, and nuisance animal control all benefit migratory bird management, and vice-versa. Many birds that migrate through the Complex spread seeds, eat rodents, and perform other functions that benefit the health of the entire ecosystem.

Military Mission

Appropriate landscaping and management of migratory birds will help alleviate potential hindrances to the military mission of the MBTA. The integration of the various management actions described in this INRMP and an understanding of how they all relate to migratory bird

management will enable the NASP Complex to accomplish all its training objectives within the framework of the MBTA.

Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Migratory Birds

- Migratory Bird Treaty Act, as amended 16 U.S.C. 703-712, prohibits the taking or harming of a migratory bird, its eggs, nests, or young without the appropriate permit.
- Bald and Golden Eagle Protection Act, 16 U.S.C. 668-668c, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs.
- Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, describes specific actions to advance migratory bird conservation, avoid or minimize the take of migratory birds, and ensure DoD operations, other than military readiness activities, are consistent with the MBTA.
- 2003 National Defense Authorization Act, exempts the Armed Forces from the incidental taking of migratory birds during military readiness activities.
- Endangered Species Act, 16 U.S.C. 35, 32 CFR 190, provides for the identification and protection of threatened and endangered species of fish, wildlife, and plants and their critical habitats. It requires federal agencies to ensure that no agency action is likely to jeopardize the continued existence of a threatened or endangered species.
- Sikes Act, as amended 16 U.S.C. 670a-o, requires each military department to manage fish and wildlife resources in accordance with a tripartite cooperative plan agreed to by the USFWS and state wildlife agency.
- Fish and Wildlife Conservation Act, 16 U.S.C. 2901, encourages all federal departments and agencies to utilize their statutory and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities, to conserve and promote conservation of nongame fish and wildlife and their habitats.
- Fish and Wildlife Conservation Act, 16 U.S.C. 2901, encourages all federal departments and agencies to utilize their statutory and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities, to conserve and promote conservation of nongame fish and wildlife and their habitats.
- OPNAVINST 5090.1D, 12-3.5(b)(1), discusses natural resources management relating to migratory birds.
- OPNAVINST 5090.1D, 12-3.5(b)(2), discusses natural resources management relating to bald and golden eagles.

Additional Sources of Information

Smithsonian National Zoological Park, Migratory Bird Center
<https://nationalzoo.si.edu/migratory-birds>

USFWS Division of Migratory Bird Management
<http://www.fws.gov/migratorybirds/>

Birds of Conservation Concern
<https://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>

Partners in Flight Bird Conservation Plan for The East Gulf Coastal Plain

<https://www.partnersinflight.org/wp-content/uploads/2017/03/Phys-Area-04-E-Gulf-Coastal-Plain.pdf>

Migratory Bird Treaty Act

<https://www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php>

The Nature Conservancy, Migratory Bird Program

<http://www.nature.org/initiatives/programs/birds/>

5.3.3 Threatened and Endangered Species

The ecological integrity of wetland and upland communities will be maintained for the protection of native plant and animal species, including numerous federally and state-listed species. Threatened and endangered species, and species of special concern, will be preserved and protected to ensure there is no reduction in species numbers or population sizes. Wildlife habitat management is the approach used by the NASP Complex to achieve. Management activities at the NASP Complex have been described in this INRMP for wetlands, floodplains, coastal areas, urban areas, and forests, and these activities are intended to enhance habitat for fish, birds, and wildlife on and adjacent to the Complex, including threatened and endangered species.

Species are listed as endangered or threatened if, based upon scientific and commercial data, there is a current or threatened habitat loss, disease, over-exploitation, or other factors affecting its existence. The Endangered Species Act (ESA) of 1973 prohibits federal agencies from authorizing, funding, or carrying out any actions that destroy or adversely modify “critical habitat.” Critical habitat for a threatened or endangered species is defined as: (1) the specific areas within the geographical area occupied by the species at the time it is listed as threatened or endangered on which are found physical or biological features essential to the conservation of the species, and which may require special management considerations or protection; and (2) specific areas outside the geographical areas occupied by the species at the time it is listed, upon a determination by the Secretary of Interior that such areas are essential for the conservation of the species.

The NASP Complex manages over 3,000 acres of unimproved lands and approximately 17 total miles of marine coastline that provide habitat for numerous wildlife species, including threatened and endangered species. The Florida Natural Areas Inventory completed rare animal inventories at the NASP Complex in 1996-97 and 2009-10. These inventories concluded that the NASP Complex is within or approached by the ranges of approximately 100 rare, threatened, endangered, or declining plant species and 70 rare, threatened, endangered, or declining vertebrate species. One federally-listed threatened species, one federal candidate species, two state-listed threatened species, and seven state-listed species of special concern are known to occur on the NASP Complex (see Section 2.3.2.; Table 2-4). The American alligator (*Alligator*

mississippiensis) is the only federally-threatened species confirmed present the NASP Complex. The gopher tortoise (*Gopherus polyphemus*) is a candidate for federal listing and is present on NAS Pensacola, Bronson Field, and Saufley Field. The gopher tortoise and least tern (*Sterna antillarum*), are the only two state-listed threatened species confirmed present on the NASP Complex. The following federally-protected species occur in adjacent estuarine and marine waters: gulf sturgeon (*Acipenser oxyrinchus desotoi*), loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas mydas*), leatherback sea turtle (*Dermochelys coriacea*), hawksbill sea turtle (*Eretmochelys imbricata imbricata*), Kemp's ridley sea turtle (*Lepidochelys kempii*), and West Indian manatee (*Trichechus manatus*).

Surveys of rare plants (e.g. state-listed rare, threatened, and endangered plants) were conducted by FNAI at the NASP Complex in 1996-97, 2006, and 2009-10. No federally-listed plant species were found. Eleven state-listed threatened and endangered plant species were identified across the NASP Complex in 1996-97, nine were observed in 2006, and ten were identified in 2009-10 (see Section 2.3.2; Table 2-5).

Issues

Federally and state-listed species inhabit the NASP Complex and adjacent waters. These species are protected under various laws, including the Endangered Species Act (ESA). Section 7(a)(1) of the ESA provides that all federal agencies, in consultation with USFWS and NMFS, shall use their authorities to further the purpose of ESA by carrying out programs for the conservation of endangered and threatened species. Section 7(a)(2) requires federal agencies to ensure, in consultation with USFWS and/or NMFS, that any action authorized, funded, or carried out is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of critical habitat.

Natural communities at the NASP Complex provide habitat for many protected species and require special protection and management. There are no areas designated as critical habitat for threatened and endangered species at the NASP Complex, although the adjacent marine waters are critical habitat for gulf sturgeon.

Climate change is anticipated to result in ecosystem changes and, consequently, many species are expected to become increasingly vulnerable to extinction. This scenario is of particular concern for threatened, endangered, rare, and species at-risk species. The response of species to climate change is uncertain and is subject to complex interactions and processes. Reptiles, amphibians, and fish, which are cold-blooded, will be more vulnerable than mammals and birds. More frequent and intense heat extremes and changes in precipitation patterns could alter wet prairies and wetlands, threatening vulnerable vegetation, such as pitcher plants, and facilitating their replacement by invasive grasses.

Goals and Objectives

- Protect and maintain resources within the NASP Complex through the continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Preserve and protect threatened and endangered species, and species of special concern, to prevent reduction of individuals or populations;
- Incorporate the concept of ecosystem management into all planning and management processes;
- Implement training, education, and stewardship initiatives for ecosystem management;
- Continue existing and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;
- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASP 2013);
- Inventory wetlands and assess their function and quality as warranted;
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Protect and enhance shorelines through existing and new programs;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Manage forests in an ecologically sound manner to provide habitat for wildlife; and
- Manage forest stands for watershed protection (FDACS 2003).

Projects

- Species Protection and Habitat Development (Project 1 in Appendix A);
- Pensacola INRMP (Project 2 in Appendix A);
- Invasive Species Control (Project 3 in Appendix A);
- Erosion Control for Coastal Zone Protection (Project 4 in Appendix A);
- Establish Shoreline Vegetation (Project 5 in Appendix A);
- Natural Resources GIS and Mapping (Project 6 in Appendix A);
- Gopher Tortoise Conservation (Project 7 in Appendix A);
- Neotropical Migratory Bird Survey (Project 9 in Appendix A);
- Update Biological Inventory (Project 10 in Appendix A);

- Fire Management (Project 15 in Appendix A); and
- Marine Species Monitoring and Protection (Project 16 in Appendix A).

Management Strategies

- Update rare, threatened, and endangered species surveys;
- Complete surveys for neotropical migratory birds;
- Use FWC guidelines for the protection of listed species from proposed development or land clearing impacts;
- Institute wildlife education and stewardship programs;
- Work with adjacent land-owning agencies (e.g., Gulf Islands National Seashore) to minimize impacts to nesting and hatchling sea turtles caused by outdoor lighting at the NASP Complex;
- Continue to evaluate the stormwater management program and activities contributing to stormwater runoff and pollutant loading in stormwater runoff, and implement BMPs to minimize stormwater pollution and erosion (FDACS 2003; FDOT and FDEP 2007; FDEP 2008; NASP 2013);
- Continue to develop a soil erosion control management plan, and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Continue to use Integrated Pest Management (IPM) techniques in pest management programs and emphasize the use of pesticides with low toxicity and low application rates;
- Inventory wetlands and assess their function and quality as warranted, promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Continue using BMPs for forest management activities to ensure watershed protection (FDACS 2003);
- Review and monitor proposed activities for impact avoidance to the attenuation capacity of the 100-year floodplain. If it is determined that development is necessary within the 100-year floodplain to support the military mission, development shall first be located in the previously disturbed areas of the floodplain;
- Ensure implementation of policies that minimize adverse impacts to ecosystem resources from land disturbance activities;
- Continue to establish a program to prevent further degradation of shorelines;
- Continue to implement programs and activities for the protection and enhancement of habitat for threatened and endangered animal and plant species;
- Continue to implement programs and initiatives that foster citizen participation in ecosystem education and stewardship;
- Compile GIS data coverages and maintain and update data coverages of populations and habitats of endangered and threatened species and species of special concern; and
- Continually verify that natural resources personnel obtain proper training and certifications.

Long-Term Management

The NASP Complex will actively manage areas and natural communities to provide habitat for rare, threatened, and endangered species that are known to occur on the properties. Other

federally or state-listed threatened and endangered species will also be managed as conditions warrant. The NASP Complex regularly will monitor populations of the reticulated flatwoods salamander (presently not known to occur at the NASP Complex), gopher tortoises, bird species (including the piping plover), and protected plants (including SAVs). The NRM will undertake measures, as appropriate, to ensure activities and actions conducted within the NASP Complex are not detrimental to rare, threatened, and endangered species or habitats upon which they depend.

Species dependent upon wetlands and fire-dependent communities are the focus of most management activities at the NASP Complex. Natural communities and other wildlife habitats will be managed to sustain and enhance fish and wildlife resources on the Complex consistent with the military mission. Management techniques for natural communities are discussed below.

Estuarine tidal marsh requires little active management other than protection from disturbance and maintenance of the natural hydrology.

Scrub communities in the Florida panhandle may respond positively to a relatively infrequent burning schedule. The fire management plan for scrub at NASP should be flexible to allow for new ideas resulting from management research.

Mesic flatwoods, scrubby flatwoods, wet flatwoods, and seepage slopes should be burned during the growing season every 2 to 5 years. To control the upslope invasion of wetland species, prescribed burning to the uplands should be allowed to spread into or through adjacent wetland communities. Soil disturbances should be minimized and natural fire breaks should be used where practicable.

Beach dune communities require little active management, except protection from foot and vehicular traffic.

Baygall and depression marshes should be allowed to burn periodically. Fire breaks should not be used around these areas so that fire can either extinguish naturally or burn through the community.

Wet prairies should be burned during the growing season to limit encroachment by woody species and aid in successful reproduction of herbs. It is also important to maintain the hydrologic regime of the sites by avoiding bedding, ditching, logging activities, and off-road vehicle use in wetlands.

Blackwater streams should be protected from siltation and toxic runoff. Maintaining the natural vegetation around the stream will provide a natural barrier to such degrading factors.

Floodplain swamps should be protected, but require no active management.

Seagrass beds should be managed by preservation and protection in their natural state.

Long-term habitat management concepts for wildlife habitat management that will be used at the NASP Complex are presented below. The NASP Complex will sustain existing natural communities for wildlife and enhance other ecosystems for urban and non-urban species using a combination of the following management concepts. These management concepts will be implemented under the direction of the NRM.

- Preserve portions of stands to provide suitable large snags and trees for den and cavity activities;
- Provide nest boxes and platforms for birds and bats, and prevent disturbance of known colonies;
- Leave brush material along woodland edges following necessary clearing (e.g., military mission);
- Plant trees and shrubs, and seed open areas for soil stabilization and wildlife habitat;
- Maintain pine stands with basal areas low enough to prevent crown closure in order to stimulate understory growth, which creates food and cover;
- Prescribe burn on rotation through forest stands and wetland areas. Mosaic patterns, narrow-strip, and small-block burns will result in an interspersions of habitat types;
- Avoid habitat fragmentation. Although fragmentation increases edge, arbitrarily locating human-made linear and nonlinear features within wildlife areas undermines ecological processes through the separation of wildlife populations and may render the fragmented parcel unsustainable for wildlife;
- Work with adjacent land-owning agencies for protection of threatened and endangered species, such as working with Gulf Islands National Seashore to reduce impacts to sea turtles (reduce outdoor lighting at NAS Pensacola);
- Create and enhance connections between habitats to facilitate wildlife movement between areas. The necessary characteristics of connections will vary depending on the species. For instance, amphibians need water or moist areas to move between ponds and wet areas. Most vertebrates require protective cover (from predation) such as trees, shrubs, dense ground cover, downed trees, and existing burrows;
- Create brush piles in clear-cuts and other open areas. Brush piles provide areas for nesting, feeding, and cover; a medium for plant growth; and a perch for songbirds whose droppings may contain viable seeds;
- Maintain vegetative buffers around wetland areas and along undeveloped shoreline areas adjacent to Bayou Grande, Pensacola Bay, Big Lagoon, and Perdido Bay;
- Leave snags and downed logs for nesting, roosting, foraging, cover, perching, and territorial displays; and
- Maintain hardwood areas for foraging activities.

The following species sub-sections describe management recommendations and benefits of this INRMP for threatened and endangered species known to occur at the NASP Complex (Table 5-2). Changes in management practices may result from: (1) the listing or removal of a species under the ESA or (2) a change in species presence at the NASP Complex. The NASP Complex will continue to conduct species survey updates to identify changes in populations and habitat on the properties. Species information provided in the surveys will be used to modify management

practices. Modification to management practices will be administered by the NRM in consultation with NAVFAC SE foresters and fish and wildlife biologists, as well as other federal, state, and county agencies.

Federally-Listed Species

Alligator Snapping Turtle (*Macroclemys temminckii*).

Status: Under Review (Federal) and Species of Special Concern (State).

Alligator snapping turtles are highly aquatic. They rarely bask and will usually only emerge from the water to lay eggs, which occurs during spring. The species generally prefers shallow freshwater areas with mud substrate, aquatic vegetation, and natural debris. Nests will usually be within 50 feet of a river or lake bank. This INRMP protects habitat for alligator snapping turtles through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and floodplain management (Section 5.1.4). Projects described in this INRMP that benefit and conserve alligator snapping turtle habitat include Invasive Species Control, Update Biological Inventory, and Fishery Conservation and Management (see Appendix A for project descriptions).

American Alligator (*Alligator mississippiensis*).

Status: Threatened (Federal) due to similarity of appearance to protected crocodylians.

The American alligator is found on NAS Pensacola. Alligators inhabit low-lying areas near water, preferring freshwater but also venturing into brackish or saltwater. Females build nests near water and lay clutches of 20-60 eggs between May and July. They are protective of their nesting areas during this season and such areas should be avoided. Alligators should not be fed, as this causes them to associate humans with food, thereby increasing the likelihood of dangerous encounters. Staff and visitors will be educated about the dangers of interacting with alligators. This INRMP protects habitat and water quality for alligators through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and floodplain management (Section 5.1.4). Projects described in this INRMP that benefit and conserve alligator habitat include Invasive Species Control, Establish Shoreline Vegetation, and Update Biological Inventory (see Appendix A for project descriptions).

Caribbean Electric Ray (*Narcine bancroftii*)

Status: Under Review (Federal).

The Caribbean electric ray is a small ray found on soft, sandy substrates in shallow marine and estuarine water, generally less than 100 feet deep. It has a wide range of distribution which includes the entire northern Gulf of Mexico coast, but it does not have a

tolerance for freshwater. It is benthic, dwelling at or near the seafloor where it preys upon shrimp, crabs, worms, and small fishes. This INRMP protects habitat and water quality for Caribbean electric rays through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and marine coastal management (Section 5.1.5). Projects described in this INRMP that benefit and conserve Caribbean electric ray habitat include Marine Species Monitoring, Invasive Species Control, Establish Shoreline Vegetation, and Update Biological Inventory (see Appendix A for project descriptions).

Dwarf Seahorse (*Hippocampus zosterae*)

Status: Under Review (Federal).

The dwarf seahorse occurs in subtidal aquatic seagrass beds in marine and estuarine environments. There is very little available information about its extent of occurrence or its area of occupancy; it is known to occur in the northern Gulf of Mexico and may be assumed to occupy seagrass beds adjacent to NAS Pensacola. This INRMP protects potential habitat for the dwarf seahorse through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and marine coastal management (Section 5.1.5). Projects described in this INRMP that benefit and conserve potential dwarf seahorse habitat include Marine Species Monitoring, Invasive Species Control, Establish Shoreline Vegetation, and Update Biological Inventory (see Appendix A for project descriptions)

Eastern Diamondback Rattlesnake (*Crotalus adamanteus*)

Status: Under Review (Federal).

Eastern diamondback rattlesnakes are common in the Florida panhandle and are likely present on the NASP Complex. They generally live in dry, pine flatwoods, sandy woodlands, and coastal scrub habitats, and often inhabit gopher tortoise burrows. Natural resources managers at the NASP Complex actively manage habitat for the benefit of gopher tortoises and these actions concurrently protect habitat for eastern diamondbacks. Although the eastern diamondback is not endangered, indiscriminate killing and widespread loss of habitat have decreased its numbers throughout its range, which stretches from North Carolina to eastern Louisiana. This INRMP protects habitat for the eastern diamondback rattlesnake through active management of factors such as landscaping and grounds maintenance (Section 5.1.6), vegetation management (Section 5.1.7), invasive species control (Section 5.1.8), silvicultural activities (particularly thinning and prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve eastern diamondback habitat include

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Update Biological Inventory, Species Protection and Habitat Development, Gopher Tortoise Conservation, Invasive Species Control, Forest Administration, Forest Product Sales, Timber Stand Improvement, and Fire Management (see Appendix A for project descriptions).

Giant Manta Ray (*Manta birostris*)

Status: Threatened (Federal).

The giant manta ray has a worldwide distribution in tropical and temperate climates. It spends most of its time in offshore waters, but occasionally ventures into coastal waters, where it may come in vicinity of NAS Penacola, although the likelihood is low. This INRMP protects water quality to the benefit of species such as the giant manta ray through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and marine coastal management (Section 5.1.5). Management actions have successfully maintained and improved water quality around the NASP Complex, as exemplified by the Clean Marina status earned by Bayou Grande and Sherman Cove Marinas. Projects described in this INRMP that benefit and conserve water quality include Marine Species Monitoring, Invasive Species Control, Establish Shoreline Vegetation, and Update Biological Inventory (see Appendix A for project descriptions).

Gopher Frog (*Lithobates capito*).

Status: Under Review (Federal).

Gopher frogs prefer upland sandy uplands in pine-forest areas, and historically were ubiquitous in longleaf pine habitat. They are dependent upon gopher tortoises since they reside in the tortoise burrows. Forest management strategies such as thinning and prescribed burning help open canopy and promote the growth of forage plants. Gopher frogs are vulnerable to predation by nuisance animals such as dogs, feral cats, and raccoons. This INRMP protects habitat for gopher frogs through active management of factors such as landscaping and grounds maintenance (Section 5.1.6), vegetation management (Section 5.1.7), invasive species control (Section 5.1.8), silvicultural activities (particularly thinning and prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve gopher frog habitat include Gopher Tortoise Conservation, Update Biological Inventory, Species Protection and Habitat Development, Invasive Species Control, Forest Administration, Forest Product Sales, Timber Stand Improvement, and Fire Management (see Appendix A for project descriptions).

Gopher Tortoise (*Gopherus polyphemus*).

Status: Candidate (Federal) and Threatened (State).

Gopher tortoises prefer sandy uplands with open canopy and ample low-lying herbaceous vegetation for foraging. Forest management strategies such as thinning and prescribed burning help open canopy and promote the growth of forage plants. Gopher tortoises are vulnerable to predation by nuisance animals such as dogs, feral cats, and raccoons. This INRMP protects habitat for gopher tortoises through active management of factors such as landscaping and grounds maintenance (Section 5.1.6), vegetation management (Section 5.1.7), invasive species control (Section 5.1.8), silvicultural activities (particularly thinning and prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve gopher tortoise habitat include Gopher Tortoise Conservation, Update Biological Inventory, Species Protection and Habitat Development, Invasive Species Control, Forest Administration, Forest Product Sales, Timber Stand Improvement, and Fire Management (see Appendix A for project descriptions).

Gulf Sturgeon (*Acipenser oxyrinchus desotoi*).

Status: Threatened (Federal).

The Gulf sturgeon is anadromous; adults and sub-adults spend the coldest three to four months in the Gulf of Mexico and the remainder of the year in rivers where spawning occurs. Spawning typically takes place from February to April. The Gulf sturgeon occurs in the water bodies adjacent to NAS Pensacola and Bronson Field, and is commonly found during midwinter in the deep cut located north of the barrier island at Fort Pickens and south of NAS Pensacola. This INRMP protects habitat and water quality for Gulf sturgeon through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and marine coastal management (Section 5.1.5). Management actions have successfully maintained and improved water quality around the NASP Complex, as exemplified by the Clean Marina status earned by Bayou Grande and Sherman Cove Marinas. Projects described in this INRMP that benefit and conserve Gulf sturgeon habitat include Marine Species Monitoring, Invasive Species Control, Establish Shoreline Vegetation, and Update Biological Inventory (see Appendix A for project descriptions).

Monarch Butterfly (*Danaus plexippus plexippus*).

Status: Under Review (Federal).

The monarch butterfly is found throughout the United States during warm months, but migrates to Mexico during winter. Monarch caterpillars exclusively eat milkweed leaves, so the presence of milkweed (*Asclepias* spp.) is a crucial habitat requirement. Milkweed protection is therefore a key component of monarch butterfly conservation. This INRMP protects habitat for monarch butterflies through active management of factors such as wetlands (Section 5.1.1), landscaping and grounds maintenance (Section 5.1.6), vegetation management (Section 5.1.7), and invasive species control (Section 5.1.8). Projects described in this INRMP that benefit and conserve monarch butterfly habitat include Species Protection and Habitat Development, Invasive Species Control, Natural Resources GIS and Mapping, Update Biological Inventory, Fire Management, and Pensacola INRMP Updates (see Appendix A for project descriptions).

Rufa Red Knot (*Calidris canutus ssp. rufa*).

Status: Threatened (Federal)

The rufa red knot migrates long distances between southern non-breeding habitats, as far south as southern South America, and nesting habitats in the Canadian arctic tundra. Flocks migrate north and south through the contiguous United States from April through October, with most breeding taking place in Canada between late May and mid-August. Rufa red knots primarily utilize tidal flats and beaches along seacoasts during their migration and, so, could occur on coastal habitats at the NASP Complex. This INRMP protects potential habitat for rufa red knots through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and marine coastal management (Section 5.1.5). Projects described in this INRMP that benefit and conserve potential rufa red knot habitat include Invasive Species Control, Establish Shoreline Vegetation, and Update Biological Inventory (see Appendix A for project descriptions).

Sea Turtles:

**Green Sea Turtle (*Chelonia mydas mydas*),
Hawksbill Sea Turtle (*Eretmochelys imbricata imbricata*),
Kemp's Ridley Sea Turtle (*Lepidochelys kempi*),
Leatherback Sea Turtle (*Dermochelys coriacea*). and
Loggerhead Sea Turtle (*Caretta caretta*).**

Status: Loggerhead is Threatened (Federal). All others are Endangered (Federal).

All five sea turtle species are primarily pelagic, but do venture into the embayments adjacent to NAS Pensacola and Bronson Field; This is particularly true for green sea turtles, Kemp's Ridley sea turtles, and loggerheads. Nesting typically occurs during

summer months on sandy beaches facing open water; no nesting has been documented at NAS Pensacola or Bronson Field. The green sea turtle feeds upon seagrasses and algae and the other four species eat jellyfish, crabs, mollusks, and fish. This INRMP protects habitat and water quality for sea turtles through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and marine coastal management (Section 5.1.5). Management actions have successfully maintained and improved water quality around the NASP Complex, as exemplified by the Clean Marina status earned by Bayou Grande and Sherman Cove Marinas. Projects described in this INRMP that benefit and conserve sea turtle habitat include Marine Species Monitoring, Invasive Species Control, Establish Shoreline Vegetation, and Update Biological Inventory (see Appendix A for project descriptions).

Southern Hog-nosed Snake (*Heterodon simus*).

Status: Under Review (Federal).

Southern hog-nosed snakes are most often associated with well drained, xeric, sandy soils where longleaf pine and/or scrub oaks (especially turkey oak) are the characteristic woody vegetation. Wiregrass is often a significant component of the groundcover. Such habitats are necessarily fire-maintained. Ruderal habitats, including fallow fields, may also be used. This INRMP protects habitat for southern hog-nosed snakes through active management of factors such as landscaping and grounds maintenance (Section 5.1.6), vegetation management (Section 5.1.7), invasive species control (Section 5.1.8), silvicultural activities (particularly prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve southern hog-nosed snake habitat include Update Biological Inventory, Species Protection and Habitat Development, Gopher Tortoise Conservation, Invasive Species Control, Forest Administration, Forest Product Sales, Timber Stand Improvement, and Fire Management (see Appendix A for project descriptions).

West Indian Manatee (*Trichechus manatus*)

Status: Threatened (Federal)

West Indian manatees range throughout coastal and freshwater Florida waters and individuals can move long distances seasonally, although their distribution is restricted to springs and other relatively warm-water areas during the coldest weeks of winter. They have been observed in the waters adjacent to NAS Pensacola and Bronson Field. Manatees are herbivorous and feed primarily on aquatic grasses in saltwater and freshwater. They are threatened by vessel collisions and habitat loss. This INRMP protects habitat and water quality for West Indian manatees through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater

control (Section 5.1.3), and marine coastal management (Section 5.1.5). Management actions have successfully maintained and improved water quality around the NASP Complex, as exemplified by the Clean Marina status earned by Bayou Grande and Sherman Cove Marinas. Projects described in this INRMP that benefit and conserve manatee habitat include Marine Species Monitoring, Invasive Species Control, Establish Shoreline Vegetation, and Update Biological Inventory (see Appendix A for project descriptions).

State-Listed Species

American Oyster Catcher (*Haematopus palliatus*)

Status: Threatened (State).

The oyster catcher is a coastal bird. It primarily breeds in areas along the north Atlantic and migrates to the southeastern U.S. during winter months. It utilizes undisturbed coastal areas and forages on shellfish such as clams, mussels, and oysters. Protection of coastal areas and water quality on NASP is therefore important for the protection of oyster catcher habitat as well as the habitat of its prey. This INRMP protects habitat for oyster catchers through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and marine coastal management (Section 5.1.5). Projects described in this INRMP that benefit and conserve oyster catcher habitat include Invasive Species Control, Erosion Control for Coastal Zone Protection, Establish Shoreline Vegetation, Update Biological Inventory, Neotropical Migratory Bird Survey, Species Protection and Habitat Development, and Fishery Conservation and Management (see Appendix A for project descriptions). Bird surveys will direct effort towards locating any nesting on the NASP Complex.

Black Skimmer (*Rynchops niger*)

Status: Threatened (State).

The black skimmer is a seabird often observed flying along the surface of estuarine waters “skimming” for small fish prey with its long lower bill which extends well beyond the top bill. Skimmer breed in the summer and nest in colonies consisting of one to several hundred pairs on sand beaches, sandbars, and dredged-spoil islands. Their reliance on beach habitat makes skimmers particularly vulnerable to recreational disturbances in coastal Florida. This INRMP protects habitat for black skimmers through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and coastal marine management (Section 5.1.5). Projects described in this INRMP that benefit and conserve black skimmer habitat include Invasive Species Control, Erosion Control for Coastal Zone Protection, Establish Shoreline Vegetation, Update Biological Inventory, Neotropical Migratory Bird Survey, Species

Protection and Habitat Development, and Fishery Conservation and Management (see Appendix A for project descriptions). Bird surveys will direct effort towards locating any nesting on the NASP Complex.

Chapman's Butterwort (*Pinguicula planifolia*).

Status: Threatened (State).

Chapman's butterwort is an insectivorous plant that is known to be present at the northwest portion of OLF Saufley Field. It grows among grasses in very wet bogs, swamps, and ditches in the coastal plain, and requires exposure to sun. Threats to the species include land-use conversion, habitat fragmentation, and encroachment of woody shading species. Natural resource management at NASP will maintain the hydrology of the seepage slope at the northwest corner of OLF Saufley Field. Prescribed burns during the growing season will reduce woody species encroachment. This INRMP protects habitat for Chapman's butterwort through active management of factors such as wetland management (Section 5.1.1), erosion control (Section 5.1.2), invasive species control (Section 5.1.8), and silvicultural activities (particularly prescribed burns [Section 5.2.1]). Projects described in this INRMP that benefit and conserve Chapman's butterwort habitat include Invasive Species Control, Forest Administration, Forest Product Sales, Timber Stand Improvement, Fire Management, Update Biological Inventory, and Species Protection and Habitat Development (see Appendix A for project descriptions).

Florida Pine Snake (*Pituophis melanoleucus mugitus*)

Status: Threatened (State).

The Florida pine snake is a large non-venomous snake that ranges from Mobile Bay, Alabama, to southwest South Carolina and southern Florida, inhabiting areas with well-drained sandy soils and moderate to open canopies. Florida pine snakes prefer fire-dependent habitats, inhabiting burrows, and were historically found in longleaf forests, so habitat loss and fragmentation are its primary threats, although predation of eggs and hatchlings by armadillos, hogs, fire ants, and house cats is also thought to be significant. This INRMP protects habitat for Florida pine snakes through active management of factors such as landscaping and grounds maintenance (Section 5.1.6), vegetation management (Section 5.1.7), invasive species control (Section 5.1.8), silvicultural activities (particularly thinning and prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve Florida pine snake habitat include Gopher Tortoise Conservation, Update Biological Inventory, Species Protection and Habitat Development, Invasive Species Control, Forest Administration, Forest Product Sales, Timber Stand Improvement, and Fire Management (see Appendix A for project

descriptions). Any observations of this species on the NASP Complex will be reported to FWC.

Large-leaf Jointweed (*Polygonella macrophylla*).

Status: Threatened (State).

Largeleaf jointweed is a perennial shrub with a woody base and herbaceous stems. It grows among open-canopy sand pine, oak, and rosemary scrub on ridges and dunes near the coast. Natural fires should be allowed to burn through scrub to the coast when possible to improve habitat for this species. This INRMP protects habitat for largeleaf jointweeds through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and floodplain management (Section 5.1.4). Projects described in this INRMP that benefit and conserve largeleaf jointweed habitat include Invasive Species Control, Erosion Control for Coastal Zone Protection, Establish Shoreline Vegetation, Fire Management, Update Biological Inventory, and Species Protection and Habitat Development (see Appendix A for project descriptions).

Least Tern (*Sterna antillarum*).

Status: Threatened (State).

Least terns nest on the ground in undeveloped coastal areas during spring and summer. Adults, fledglings, and eggs are therefore vulnerable to human activity and predation by nuisance animals such as dogs, feral cats, and raccoons. The spoil island north of Magazine Point is known to be a least tern nesting area at NASP. It is closed during the nesting season. This INRMP protects habitat for least terns through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and coastal marine management (Section 5.1.5). Projects described in this INRMP that benefit and conserve least tern habitat include Invasive Species Control, Erosion Control for Coastal Zone Protection, Establish Shoreline Vegetation, Update Biological Inventory, Neotropical Migratory Bird Survey, Species Protection and Habitat Development, and Fishery Conservation and Management (see Appendix A for project descriptions). Bird surveys will direct effort towards locating any nesting on the NASP Complex.

Little Blue Heron (*Egretta caerulea*).

Status: Threatened (State).

Little blue herons are wading birds that forage in shallow wetlands for small fishes, aquatic crustaceans, amphibians, small reptiles, and insects. They rely on freshwater forage sites to raise young until they become more salt tolerant, and nesting occurs on coastal islands

near foraging sites. It was state-listed as threatened based on an estimated population size reduction of at least 30% over the last three generations, due to a decline in habitat quality, and a similar reduction projected to occur over the next three generations. This INRMP protects habitat for little blue herons through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and coastal marine management (Section 5.1.5). Projects described in this INRMP that benefit and conserve little blue heron habitat include Invasive Species Control, Erosion Control for Coastal Zone Protection, Establish Shoreline Vegetation, Update Biological Inventory, Neotropical Migratory Bird Survey, Species Protection and Habitat Development, and Fishery Conservation and Management (see Appendix A for project descriptions).

Marian's Marsh Wren (*Cistothorus palustris marianae*).

Status: Threatened (State).

The Marian's marsh wren is a small bird, attaining a length of five inches, with a brown body, white bands above their eyes and a white-streaked black triangle on their back. They inhabit marshes and tidal creeks dominated by cordgrass and black needle rush on the Florida Gulf, and nest in the same vegetation during the months of March and April. Habitat destruction and fragmentation are the main threats to this species, particularly dredge and fill activities along marsh shorelines. This INRMP protects habitat for Marian's marsh wrens through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and coastal marine management (Section 5.1.5). Projects described in this INRMP that benefit and conserve Marian's marsh wren habitat include Invasive Species Control, Erosion Control for Coastal Zone Protection, Establish Shoreline Vegetation, Update Biological Inventory, Neotropical Migratory Bird Survey, Species Protection and Habitat Development, and Fishery Conservation and Management (see Appendix A for project descriptions).

Osprey (*Pandion haliaetus*).

Status: Species of Special Concern (State).

Osprey populations have increased dramatically since declines during the 1970's. Ospreys are abundant along the Gulf of Mexico coast and are found on NAS Pensacola. They build large stick nests on living and dead trees and tall man-made structures such as telephone poles or, as is the case at NASP, on antennas. Natural resource management at NASP constructs nesting platforms for ospreys in order to lure them away from antenna fields, airfield areas, and clear zones. Osprey nests typically contain eggs during winter and spring. This INRMP protects habitat for ospreys through active management of factors such as wetlands (Section 5.1.1), landscaping and grounds maintenance (Section

5.1.6), urban forestry (Section 5.1.9), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve osprey habitat include Invasive Species Control, Erosion Control for Coastal Zone Protection, Forest Administration, Timber Stand Improvement, Fire Management, Update Biological Inventory, Neotropical Migratory Bird Survey, and Species Protection and Habitat Development (see Appendix A for project descriptions).

Parrot Pitcher Plant (*Sarracenia psittacina*).

Status: Threatened (State).

The parrot pitcher plant requires open and sunny ecotones, bogs, wet prairies, savannas, and gaps along streams and swamps with moist, acidic, low-nutrient soil. It depends upon frequent low-intensity fires to maintain open habitat and reduce competition. This species is usually found in association with other insectivorous plants. Natural resource management will maintain the hydrologic regime at the NASP Complex by avoiding bedding, ditching, logging activities, and off-road vehicle use. Prescribed burns during the growing season will limit encroachment by woody vegetation and aid in successful reproduction of herbs. This INRMP protects habitat for parrot pitcher plants through active management of factors such as wetland management (Section 5.1.1), erosion control (Section 5.1.2), invasive species control (Section 5.1.8), and silvicultural activities (particularly prescribed burns [Section 5.2.1]). Projects described in this INRMP that benefit and conserve parrot pitcher plant habitat include Invasive Species Control, Forest Administration, Forest Product Sales, Timber Stand Improvement, Fire Management, Update Biological Inventory, and Species Protection and Habitat Development (see Appendix A for project descriptions).

Primrose-flowered Butterwort (*Pinguicula primuliflora*).

Status: Endangered (State).

Primrose-flowered butterwort is an insectivorous plant that requires full sun and grows in shallow, usually flowing, water of small streams, swamps, and occasionally ditches. It is subject to threats such as land-use conversion, habitat fragmentation, and encroachment by woody shading species. Natural resource management at NASP will maintain the flow of water that supports this species by protecting surrounding uplands from logging and other potential erosion-causing activities. Prescribed burns during the growing season will reduce woody species encroachment. This INRMP protects habitat for primrose-flowered butterwort through active management of factors such as wetland management (Section 5.1.1), erosion control (Section 5.1.2), invasive species control (Section 5.1.8), and silvicultural activities (particularly prescribed burns [Section 5.2.1]). Projects described in this INRMP that benefit and conserve primrose-flowered butterwort habitat include

Invasive Species Control, Forest Administration, Forest Product Sales, Timber Stand Improvement, Fire Management, Update Biological Inventory, and Species Protection and Habitat Development (see Appendix A for project descriptions).

Purple Pitcher Plant (*Sarracenia purpurea*).

Status: Threatened (State).

The purple pitcher plant is an insectivorous plant that grows in bogs, savannas, and wet meadows. Periodic moderate fires are necessary for the long-term viability of the species. Pollination is by bees. Natural resource management will prevent hydrologic alteration and damage to soils that may be caused by draining, ditching, bedding, logging activities, and off-road vehicle use. Prescribed burns during the growing season in wet prairies will limit encroachment by woody vegetation. This INRMP protects habitat for purple pitcher plants through active management of factors such as wetland management (Section 5.1.1), erosion control (Section 5.1.2), invasive species control (Section 5.1.8), and silvicultural activities (particularly prescribed burns [Section 5.2.1]). Projects described in this INRMP that benefit and conserve purple pitcher plant habitat include Invasive Species Control, Forest Administration, Forest Product Sales, Timber Stand Improvement, Fire Management, Update Biological Inventory, and Species Protection and Habitat Development (see Appendix A for project descriptions).

Reddish Egret (*Egretta rufescens*)

Status: Threatened (State).

The reddish egret is the rarest heron species in the United States where its range extends from coastal Florida to coastal Texas. Their primary prey is small fish, which they typically chase by jumping and weaving back and forth in shallow water with wings spread. Reddish egrets inhabit coastal areas in the panhandle, mainly along estuaries, lagoons, and on dredge spoiled islands. They can be present year-round, but nest from February to June, typically in large colonies of mixed species on platforms of sticks and branches. This INRMP protects habitat for reddish egrets through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and coastal marine management (Section 5.1.5). Projects described in this INRMP that benefit and conserve reddish egret habitat include Invasive Species Control, Erosion Control for Coastal Zone Protection, Establish Shoreline Vegetation, Update Biological Inventory, Neotropical Migratory Bird Survey, Species Protection and Habitat Development, and Fishery Conservation and Management (see Appendix A for project descriptions).

Snowy Orchid (*Platanthera nivea*).

Status: Threatened (State).

The snowy orchid grows in full sun or partial shade in moist, open, acidic bogs, prairies, pine woods, and roadsides. Natural resource management at the NASP Complex will prevent damage to soils and hydrologic alterations that may be caused by draining, ditching, and off-road vehicle use. Prescribed burns during the growing season in wet prairies will limit woody species encroachment. This INRMP protects habitat for snowy orchids through active management of factors such as wetland management (Section 5.1.1), erosion control (Section 5.1.2), invasive species control (Section 5.1.8), and silvicultural activities (particularly prescribed burns [Section 5.2.1]). Projects described in this INRMP that benefit and conserve snowy orchid habitat include Invasive Species Control, Forest Administration, Forest Product Sales, Timber Stand Improvement, Fire Management, Update Biological Inventory, and Species Protection and Habitat Development (see Appendix A for project descriptions).

Saltmarsh Topminnow (*Fundulus jenkinsi*)

Status: Threatened (State).

The saltmarsh topminnow is a small estuarine fish species, attaining a maximum length of only 1.75 inches. It is light brown with two rows of black spots down the sides of its body and has a life span of generally less than two years. The saltmarsh topminnow inhabits low-salinity salt marshes and estuaries dominated by cordgrasses and breeds between the months of March and August. The primary threat is habitat modification, particularly dredge and fill activities in nearshore estuarine waters. This INRMP protects potential habitat for the saltmarsh topminnow through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and marine coastal management (Section 5.1.5). Projects described in this INRMP that benefit and conserve potential saltmarsh topminnow habitat include Marine Species Monitoring, Invasive Species Control, Establish Shoreline Vegetation, and Update Biological Inventory (see Appendix A for project descriptions).

Snowy Plover (*Charadrius nivosus*)

Status: Threatened (State).

The snowy plover is a small grayish to light-brown bird that inhabits sandy beaches on Florida's narrow fringe of sandy beaches along the Gulf of Mexico coast. The Florida breeding population is disjunct: one group occurs in northwest Florida from Franklin County west, and the other occurs from Pasco to Collier counties in southwest Florida.

Snowy plovers are solitary ground-nesters and nest on open sandy beaches between the months of February and August. This INRMP protects habitat for snowy plovers through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and coastal marine management (Section 5.1.5). Projects described in this INRMP that benefit and conserve snowy plover habitat include Invasive Species Control, Erosion Control for Coastal Zone Protection, Establish Shoreline Vegetation, Update Biological Inventory, Neotropical Migratory Bird Survey, Species Protection and Habitat Development, and Fishery Conservation and Management (see Appendix A for project descriptions). Bird surveys will direct effort towards locating any nesting on the NASP Complex.

Southern Red Lily (*Lilium catesbaei*).

Status: Threatened (State).

The Southern red lily is a perennial lily that grows in pine savannahs, flatwoods, and bogs. Its orange-red flowers are more conspicuous following fire. Prescribed burns at the NASP Complex during the growing season can reduce shrub encroachment on this species. Draining, ditching, off-road vehicles, and logging activities should be limited in areas where the Southern red lily occurs in order to maintain natural hydrologic regimes. This INRMP protects habitat for Southern red lily through active management of factors such as landscaping and grounds maintenance (Section 5.1.6), invasive species control (Section 5.1.8), silvicultural activities (particularly prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve Southern red lily habitat include Invasive Species Control, Forest Administration, Forest Product Sales, Timber Stand Improvement, Fire Management, Update Biological Inventory, and Species Protection and Habitat Development (see Appendix A for project descriptions).

Spoonflower (*Peltandra sagittifolia*).

Status: Species of Special Concern (State).

Spoonflower is a rare plant found in the open sandy dune systems of NASP. This INRMP protects habitat for spoonflower through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and marine coastal management (Section 5.1.5). Projects described in this INRMP that benefit and conserve spoonflower habitat include Invasive Species Control, Erosion Control for Coastal Zone Protection, Establish Shoreline Vegetation, Update Biological Inventory, and Species Protection and Habitat Development (see Appendix A for project descriptions).

Spoon-leaf Sundew (*Drosera intermedia*).

Status: Threatened (State).

The spoon-leaf sundew is an insectivorous plant that prefers nutrient-free soils and open sunny areas of marshes and wet prairies. Prescribed burns in wet prairies at the NASP Complex during the growing season can limit woody vegetation encroachment on this species. Draining, ditching, off-road vehicles, and logging activities should be limited in areas where the spoon-leaf sundew occurs, particularly on the trails at Saufley Field. This INRMP protects habitat for spoon-leaf sundew through active management of factors such as landscaping and grounds maintenance (Section 5.1.6), invasive species control (Section 5.1.8), silvicultural activities (particularly prescribed burns [Section 5.2.1]), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve spoon-leaf sundew habitat include Invasive Species Control, Forest Administration, Forest Product Sales, Timber Stand Improvement, Construction and Maintenance of Forest Roads, Fire Management, Update Biological Inventory, and Species Protection and Habitat Development (see Appendix A for project descriptions).

Tricolored Heron (*Egretta tricolor*)

Status: Threatened (State).

The tricolored heron is named for its distinct coloration. It has a dark slate-blue colored head and upper body, a purple chest, and white underparts; it is the only dark heron with light underparts. It inhabits fresh and saltwater marshes, estuaries, lagoons, and river deltas, and primarily eats fish. Tricolored herons breed in colonies between the months of February and August. Nests are found in trees or shrubs on salt marsh islands or standing water. Primary threats include the continued development of wetlands and exposure to pollutants and pesticides. This INRMP protects habitat for tricolored herons through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and coastal marine management (Section 5.1.5). Projects described in this INRMP that benefit and conserve tricolored heron habitat include Invasive Species Control, Erosion Control for Coastal Zone Protection, Establish Shoreline Vegetation, Update Biological Inventory, Neotropical Migratory Bird Survey, Species Protection and Habitat Development, and Fishery Conservation and Management (see Appendix A for project descriptions).

White-fringed Orchid (*Platanthera blephariglottis*).

Status: Threatened (State).

The white-fringed orchid grows in full sun or partial shade in bogs and on moist banks of lakes, rivers, and streams. It was found to be present on the southwest corner of the

clear-zone for the east/west runway at Forrest Sherman Field. Hydrology is important for this species and will be maintained at the NASP Complex by avoiding plowlines, off-road vehicle traffic, draining, and further ditching. The use of fire to maintain open herbaceous clear zones in white-fringed orchid habitat is recommended over the continued use of mechanical methods such as mowing. This INRMP protects habitat for white-fringed orchids through active management of factors such as wetland management (Section 5.1.1), erosion control (Section 5.1.2), invasive species control (Section 5.1.8), and silvicultural activities (particularly prescribed burns [Section 5.2.1]). Projects described in this INRMP that benefit and conserve white-fringed orchid habitat include Invasive Species Control, Forest Administration, Forest Product Sales, Timber Stand Improvement, Fire Management, Update Biological Inventory, and Species Protection and Habitat Development (see Appendix A for project descriptions).

White-top Pitcher Plant (*Sarracenia leucophylla*).

Status: Endangered (State).

The white-top pitcher plant is a long-lived perennial insectivorous plant that inhabits bogs, wet pine savannahs, and flatwoods of the NASP Complex. Natural resource management will prevent hydrologic alterations and damage to soils that may be caused by draining, ditching, logging activities, and off-road vehicle use. Prescribed burns during the growing season in wet prairies, particularly at the seepage areas in the upland pine community at OLF Saufley Field, will limit encroachment by woody vegetation that could adversely shade the species. This INRMP protects habitat for white-top pitcher plants through active management of factors such as wetland management (Section 5.1.1), erosion control (Section 5.1.2), invasive species control (Section 5.1.8), and silvicultural activities (particularly prescribed burns [Section 5.2.1]). Projects described in this INRMP that benefit and conserve white-top pitcher plant habitat include Invasive Species Control, Forest Administration, Forest Product Sales, Timber Stand Improvement, Fire Management, Update Biological Inventory, and Species Protection and Habitat Development (see Appendix A for project descriptions).

Other Rare Species

American Swallow-tailed Kite (*Elanoides forficatus*).

The American swallow-tailed kite is known to forage, and may nest, on NASP. Spring migrants arrive in the United States in mid-February and nest in colonies from March through mid-June. The species selects tall trees for nesting and open areas for foraging. Examples of ideal habitat include pine forests, savannas, cypress swamps, hardwood hammocks, narrow riparian forests, and brackish marshes. The species therefore benefits from management actions in forests and wetlands. This INRMP protects habitat for

swallow-tailed kites through active management of factors such as wetlands (Section 5.1.1), invasive species control (Section 5.1.8), silvicultural activities (Section 5.2.1), and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve swallow-tailed kite habitat include Invasive Species Control, Establish Shoreline Vegetation, Forest Administration, Forest Product Sales, Timber Stand Improvement, Fire Management, Update Biological Inventory, Neotropical Migratory Bird Survey, and Species Protection and Habitat Development (see Appendix A for project descriptions).

Carolina Lily (*Lilaeopsis carolinensis*).

The Carolina lily grows in fragile freshwater and estuarine environments. This INRMP protects habitat for Carolina lily through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and floodplain management (Section 5.1.4). Projects described in this INRMP that benefit and conserve Carolina lily habitat include Invasive Species Control, Erosion Control for Coastal Zone Protection, Establish Shoreline Vegetation, Update Biological Inventory, and Species Protection and Habitat Development (see Appendix A for project descriptions).

Coastal Sand Frostweed (*Helianthemum arenicola*).

Coastal sand frostweed is a perennial coastal herb that grows on maritime sand dunes, especially on barrier beaches and islands. It may also be found growing in adjacent sand pine scrub and inland in disturbed sandhill pine-oak barrens. This INRMP protects habitat for coastal sand frostweed through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and marine coastal management (Section 5.1.5). Projects described in this INRMP that benefit and conserve gulf rock rose habitat include Invasive Species Control, Erosion Control for Coastal Zone Protection, Establish Shoreline Vegetation, Update Biological Inventory, and Species Protection and Habitat Development (see Appendix A for project descriptions).

Drummond's Yellow-eyed Grass (*Xyris drummondii*).

Drummond's yellow-eyed grass is a low tufted herbaceous plant, usually found in moist to wet acidic sands and sandy peats of bogs and seeps or sphagnum peats of roadside ditches, pine flatwoods, and disturbed lowlands. It is threatened by drainage in clear-cut areas and vulnerable to other logging or site preparations. It requires full sun and while it may occur in young planted pine plantations, the species will not persist after the crowns have closed. This INRMP protects habitat for Drummond's yellow-eyed grass through active management of factors such as wetland management (Section 5.1.1), erosion control (Section 5.1.2), silvicultural activities (particularly prescribed burns [Section 5.2.1]),

and forest protection (Section 5.2.2). Projects described in this INRMP that benefit and conserve Drummond's yellow-eyed grass habitat include Invasive Species Control, Forest Administration, Forest Product Sales, Timber Stand Improvement, Fire Management, Update Biological Inventory, and Species Protection and Habitat Development (see Appendix A for project descriptions).

Godfrey's Golden Aster (*Chrysopsis godfreyi*).

Godfrey's golden aster occurs as scattered plants behind sand dunes, in scrub openings, and beside beach roadsides along the west Florida panhandle. This INRMP protects habitat for Godfrey's golden aster through active management of factors such as wetlands (Section 5.1.1), erosion control (Section 5.1.2), stormwater control (Section 5.1.3), and marine coastal management (Section 5.1.5). Projects described in this INRMP that benefit and conserve Godfrey's golden aster habitat include Invasive Species Control, Erosion Control for Coastal Zone Protection, Establish Shoreline Vegetation, Update Biological Inventory, and Species Protection and Habitat Development (see Appendix A for project descriptions).

Integration with Other Natural Resources Management Activities

- Wetlands, Section 5.1.1 – wetland provide habitat for many rare species;
- Soil Conservation and Erosion, Section 5.1.2 – control sedimentation into wetland habitat;
- Stormwater and Water Quality, Section 5.1.3 – control water quality for rare aquatic species;
- Floodplains, Section 5.1.4 – maintaining floodplain conditions benefits rare species;
- Marine Coastal, Section 5.1.5 – marine coastal management benefits nesting sea turtles;
- Landscaping and Grounds Maintenance, Section 5.1.6 – be aware of habitat utilization by rare species during grounds maintenance;
- Invasive, Exotic, and Noxious Species, Section 5.1.7 – control exotic species, especially those that compete with native rare species;
- Urban Forestry, Section 5.1.8 – utilize native tree species that provide habitat for rare animal species;
- Silviculture, Section 5.2.1 – thinning and controlled burns benefit upland rare species such as gopher tortoises;
- Forest Protection, Section 5.2.2 – controlling wildfires prevents damage to rare species;
- Fisheries Management 5.3.1 – ensure fisheries management is consistent with habitat management for rare aquatic species;
- Migratory Birds, Section 5.3.2 – combine migratory bird surveys with efforts to inventory protected species;
- Nuisance Wildlife and BASH, Section 5.3.4 – ensure BASH controllers are aware of rare species and reduce predation by nuisance carnivores;

- Outdoor Recreation, Section 5.4 – properly educate recreational participants in stewardship of the resource and aquatic environment;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on protected species rules and regulations; and
- GIS, Section 5.5.2 – utilize GIS tools to improve management of rare species and their habitats.

Ecosystem Management

The concepts presented in this section are consistent with ecosystem management. By effectively managing wildlife habitats and natural communities on the NASP Complex, managers not only enhance wildlife communities, but provide opportunities for interdependent species to thrive. For example, increasing gopher tortoise habitat may also benefit other species, such as the gopher frog, eastern indigo snake, and pine snake, which often utilize gopher tortoise burrows for cover.

Military Mission

Federal law prohibits harassment and all other forms of take for federally-protected species. The NASP Complex must maintain a working knowledge of the protected species and their required habitats on its properties and take prudent steps to protect those species and habitats. Failure to do so could result in regulatory action by the USFWS, NMFS, and FDEP, which could delay or otherwise hinder military training operations at the Complex. The NASP Complex must consult with NMFS for any action which may destroy or adversely modify critical habitat for the Gulf sturgeon.

Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Threatened and Endangered Species

Endangered Species Act, 16 U.S.C. 35, 32 CFR 190, provides for the identification and protection of threatened and endangered species of fish, wildlife, and plants and their critical habitats. It requires federal agencies to ensure that no agency action is likely to jeopardize the continued existence of a threatened or endangered species.

Migratory Bird Treaty Act, as amended 16 U.S.C. 703-712, prohibits the taking or harming of a migratory bird, its eggs, nests, or young without the appropriate permit.

Sikes Act, as amended 16 U.S.C. 670a-o, requires each military department to manage fish and wildlife resources in accordance with a tripartite cooperative plan agreed to by the USFWS and state wildlife agency.

Marine Mammal Protection Act of 1972, 16 U.S.C. 1361-1407, prohibits the taking or harming of marine mammals without the appropriate permit.

Bald and Golden Eagle Protection Act, 16 U.S.C. 668-668c, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs.

Magnuson-Stevens Fishery Conservation and Management Act (1996 Reauthorization), 16 U.S.C. 1855(b), federal agencies must consult with the Secretary of Commerce on all

activities, or proposed activities, authorized, funded, or undertaken by the agency, that may adversely affect EFH.

Fish and Wildlife Conservation Act, 16 U.S.C. 2901, encourages all federal departments and agencies to utilize their statutory and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities, to conserve and promote conservation of nongame fish and wildlife and their habitats.

Executive Order 13751, 5 December 2016, requires federal agencies prevent the introduction, establishment, and spread of invasive species, detect and respond rapidly to eradicate or control populations of invasive species in a manner that is cost-effective and minimizes human, animal, plant, and environmental health risks, monitor invasive species populations accurately and reliably, and provide for the restoration of native species and ecosystems that have been impacted by invasive species, among other requirements.

OPNAVINST 5090.1D, 12-3.5, discusses laws that govern natural resources management relating to the protection and management of fish and wildlife resources.

Florida Statutes, Chapter 370.12, regulates the taking, killing, destroying, harassing, disturbing, and molesting of any marine turtle.

Florida Statutes, Chapter 370.12, Florida Endangered and Threatened Species Act, is to conserve, protect, and manage the threatened and endangered species and their habitats.

Additional Sources of Information

Habitat Conservation Planning Handbook

https://www.fws.gov/endangered/what-we-do/hcp_handbook-chapters.html

Florida Fish and Wildlife Conservation Commission

<http://myfwc.com/>

U.S. Fish and Wildlife Service

<http://www.fws.gov/>

Effects of Fire on Threatened and Endangered Plants

<https://www.fws.gov/fire/ifcc/esr/Library/TEPlants.pdf>

Fire Effects on Plants and Wildlife

<https://www.feis-crs.org/feis/>

Prevention and Control of Wildlife Damage and Wildlife Diseases and Humans

<http://icwdm.org/handbook/allPDF/complete%20Handbook.pdf>

Florida Natural Areas Inventory

<http://www.fnai.org/>

5.3.4 Nuisance Wildlife and BASH

Nuisance wildlife causes inconveniences to humans, threatens health and safety of human populations, and has the potential to cause property damage. Effects can be relatively minor, such as reducing the aesthetic qualities of an area, or major, such as damaging landscaped areas, damaging property, and causing personal injury. Nuisance wildlife also may act as vectors for human disease.

Integrated Pest Management (IPM) is an acceptable, environmentally responsible, and economically practical method of controlling pest animal populations. IPM incorporates a variety

of cultural, biological, and chemical methods to efficiently manage pest populations while lowering dependence on chemical controls. A number of animal pests occur on the NASP Complex, including fire ants, cockroaches, termites, and other invertebrates, and the control of these pests is an integral part of ecosystem management practices.

Mammal and bird populations, especially in the vicinity of runways, pose a Bird-Aircraft Strike Hazard (BASH) risk to aircraft and must be minimized and controlled to prevent costly and potentially-deadly incidents.

Issues

Termites, rodents, feral cats, and some species of birds and other small mammals have caused structural damage at buildings on NASP Complex. Fire ants create nuisances and control costs by building ant mounds across the landscape. The climate and environment at Pensacola is ideal for the proliferation of insects such as mosquitoes and ticks which act as vectors for blood-borne diseases. Many people suffer from allergens to dander and certain insect bites or stings. The wet habitats all across the Complex harbor alligators and venomous snakes that must be regarded with caution by base tenants and visitors. The coastal environment also attracts numerous bird species in large populations, so the risk of BASH is always present. During the two year period, March 2010 to March of 2012, there were 48 BASH strike reports submitted for NAS Pensacola along with 526 birds and animals taken via depredation, and 25,000 wildlife dispersal actions taken by USDA Wildlife Services.

Goals and Objectives

- Protect and maintain resources within the NASP Complex through the continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Preserve and protect threatened and endangered species, and species of special concern, to prevent reduction of individuals or populations;
- Control nuisance wildlife and wildlife diseases that may adversely affect human health or welfare, the health of the ecosystem, and the military mission;
- Incorporate the concept of ecosystem management into all planning and management processes;
- Implement training, education, and stewardship initiatives for ecosystem management;
- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Continue existing and establish new programs and procedures to monitor, maintain, and enhance wetlands and water quality;

- Continue to implement BMPs to minimize stormwater pollution and erosion (FDOT and FDEP 2007; FDEP 2008; NASP 2013);
- Inventory wetlands and assess their function and quality as warranted;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized; and
- Manage forests in an ecologically sound manner to provide habitat for wildlife.

Projects

- Invasive Species Control (Project 3 in Appendix A);
- Establish Shoreline Vegetation (Project 5 in Appendix A);
- Natural Resources GIS and Mapping (Project 6 in Appendix A);
- Gopher Tortoise Conservation (Project 7 in Appendix A);
- Neotropical Migratory Bird Survey (Project 9 in Appendix A);
- Update Biological Inventory (Project 10 in Appendix A); and
- Fire Management (Project 15 in Appendix A).

Management Strategies

- Establish an awareness program to educate the public on indicators of wildlife population problems and diseases. Use pamphlets, flyers, and command units to disseminate information;
- Routinely update and monitor the BASH Plan and implement grounds maintenance practices consistent with the BASH Plan;
- Continue to monitor the health and size of animal populations, and control populations as needed;
- Continue to use Integrated Pest Management (IPM) techniques in pest management programs and emphasize the use of pesticides with low toxicity and low application rates;
- Monitor and forecast pest populations to determine whether insect infestations are present, and if so, the type of pests, degree of infestation (small, medium, or large), and the size of the area or number of plants under attack;
- Educate residents of the NASP Complex about the ecological and health benefits of keeping pet cats indoors and eliminating resident populations of feral cats;
- Use BMPs for pesticide management, such as:
 - complying with all legal requirements for pesticide use,
 - using appropriate tools for spraying,
 - calibrating sprayers,
 - obtaining required education, Pesticide Application Training regarding pesticide use,
 - ensuring proper pesticide handling and storage,
 - adhering to worker protection standards,
 - practicing drift reduction techniques, and

- considering special circumstances, off-site impacts, proximity to urban areas, and endangered species.
- Maintain repairs to the perimeter fence at NAS Pensacola, and develop management strategies for clear zones to keep deer from interfering with flight operations;
- Ensure grounds maintenance personnel receive a copy of the BASH plan and are aware of the locations in which to manage in accordance with the Plan;
- Use FWC guidelines for the protection of listed species from proposed development or land clearing impacts;
- Institute wildlife education and stewardship programs;
- Continue to evaluate the stormwater management program and activities contributing to stormwater runoff and pollutant loading in stormwater runoff, and implement BMPs to minimize stormwater pollution and erosion (FDACS 2003; FDOT and FDEP 2007; FDEP 2008; NASP 2013);
- Ensure implementation of policies that minimize adverse impacts to ecosystem resources from land disturbance activities;
- Maintain mowing schedule and grass height around the airfields to optimize BASH controls;
- Establish procedures for the BASH to deliver regularly scheduled updates and reports to the NRM;
- Continue to implement programs and initiatives that foster citizen participation in ecosystem education and stewardship;
- Compile GIS data coverages and maintain and update data coverages of populations and habitats of nuisance wildlife problems and BASH issues; and
- Continually verify that natural resources personnel obtain proper training and certifications.

Long-Term Management

Aviator safety is among the Navy's highest priorities. BASH is one of the greatest threats to safety during flight training operations. The Navy therefore entered into a Memorandum of Understanding (MOU) with USDA Animal and Plant Health Inspection Service, Wildlife Services, on 1 October 2010 to establish and continue an Integrated Wildlife Damage Management (IWDM) program at various installations, including the NASP Complex. The MOU will last five years. The primary objective of this program is to assist and provide technical recommendations regarding wildlife hazards to aircraft and the protection of human health and safety. A secondary objective of the MOU is to reduce damage to property and natural resources caused by wildlife. Additional objectives include:

- Supplement and enhance the overall Natural Resources Program;
- Monitor wildlife activity while evaluating the effectiveness of IWDM program efforts;
- Facilitate the acquisition and renewal of an annual migratory bird depredation/salvage permit and state depredation permits, as necessary;
- Assist in wildlife-strike reporting and monthly briefings on the status of the BASH program;

- Assist with the review and revision of the NASP Complex BASH Plan to ensure updated, effective techniques are in place to reduce the threat of wildlife strikes to aircraft;
- Assist in the collection, preparation and shipment of wildlife strike remains to the Smithsonian Institution for positive identification;
- Serve as a member of the NASP Complex Bird Hazard Working Group;
- Evaluate off-station airfields frequented by military aircraft where repeated BASH strikes have occurred, as directed by NASP Complex points of contact.
- Train Navy personnel that may be part of a Bird Detection and Dispersal Team (BDDT) in accordance with the Weapons Division Qualification/Certification program;
- Train BDDT members on the use of active scare techniques and placement of static wildlife deterrent devices; and
- Train local squadrons detailing bird and animal strike hazards.

USDA APHIS WS has assigned one full-time wildlife biologist, subject to the MOU, who will employ appropriate methods for IWDM, including approved traps, pyrotechnics, firearms, and bird toxicants (e.g., Alpha Chloralose, Avitrol, and DRC-1339). IWDM will complement activities of the Natural Resources Program and will coordinate activities with the NRM and Airfield Operations Officer, as well as local, state and federal officials.

The BASH Plan for the NASP Complex is subject to CNIC Instruction 3700, *Navy BASH Program Implementing Guidance*, of 7 July 2011. This instruction holds the Environmental Department and NRM responsible for ensuring the BASH program is compliant with all applicable environmental laws and regulations and DoD and Navy policies, directives, and instructions. Section 5(c)(2)(g) of the Instruction local requires oversight of the USDA Wildlife Biologist and regular coordination of efforts and strike identification with the NRM.

The NASP Complex will manage all habitats surrounding an airfield, natural or man-made, in such a way as to discourage bird and wildlife hazards. Thorough and periodically updated ecological studies of airfields and their vicinity are vital to reduce BASH. The NASP Complex will determine the management practices that will best discourage birds/animals from flying/congregating in areas likely to cause problems, and implement those management practices. Wildlife occurs at or near airfields generally because of food, water, or shelter, and/or because of local migrations. By managing areas to be less attractive to nuisance wildlife, it is possible to reduce hazards. For example, nine osprey nests were removed in 2011-12 after the birds were observed for a period of weeks to cross the clear zone to fish. Twenty-five acres of brush were cleared adjacent to the clear zone in 2009 after increased deer sightings and this action has successfully kept deer farther from the runways.

The NASP Complex will continue to monitor the health and size of animal populations and control nuisance species as needed. A long-term management policy of public awareness (e.g.,

informing employees and visitors) for wildlife-related diseases focuses on, but is not limited to, the following issues:

- Knowledge of the diseases in the area and the specific times of year that present the greatest risk of exposure;
- Knowledge of and recognition of early symptoms of diseases and the condition of exposure;
- The use of extreme caution when approaching or handling a wild or feral animal, especially one that looks sick or abnormal;
- The use of protective measures against fungal diseases where there is an accumulation of animal feces (e.g., under a bird roost);
- Protection from vector-borne disease in high-risk areas using measures such as mosquito or tick repellent, and wearing special clothing; and
- Reduction in host populations and their ectoparasites.

In the event that the NASP Complex identifies a wildlife conflict, a damage control program will be established. The program will have four parts (Dolbeer *et al.* 1994):

1. **Problem definition** to determine the species and number of animals causing the problem, the amount of loss or nature of the conflict, and other biological and social factors related to the problem;
2. **Ecology of the problem species** to understand the life history of the species, especially in relationship to the conflict;
3. **Control method** takes the information gained from parts 1 and 2 and develops an appropriate management program to alleviate or reduce the conflict; and
4. **Evaluation of control** assesses the reduction in damage in relation to costs and impact of the control on target and non-target populations and the environment.

The NASP Complex would use recommended IPM practices to control pests occurring on properties. The primary pests include fire ants, mosquitoes, cockroaches, termites, and biting flies. Because of the technical nature of this program, the NASP Complex would utilize sources of technical information, such as university researchers, to remain advised of current IPM techniques. Additionally, Complex grounds managers would be provided with continual training and education on the most recent IPM techniques and issues. Integrated pest management practices together form a total management system which includes chemical, cultural, biological, genetic, and mechanical controls.

- **Chemical Controls** often form part of an IPM strategy. The key is to use the pesticides to complement, rather than hinder, other strategy elements and to limit negative environmental effects. It is also important to understand the life cycle of a pest so that the pesticide can be applied when the pest is at its most vulnerable, and to achieve maximum effect at minimum levels of pesticide. Chemical controls include the following:
 - **Conventional:** include carbamates, chlorinated hydrocarbons, some botanicals and analogs, new compounds; and
 - **Biorational:** include pheromones, antifeedants, heat/cold, minerals, oils, some botanicals, and microbials

- **Cultural Controls** include plant variety and site selection rotations, cultivations, and sanitation. These control measures are often referred to as the older forms of pest control.
- **Biological Controls** maintain pests at levels that do not cause great economic or aesthetic losses. The principle behind biological pest control is that a given pest can be killed by predators, parasites, or pathogens. By introducing or encouraging such adversaries, the population of pest organisms should decline. There are three general approaches to biological pest control: importation, augmentation, and conservation.
 - **Importation** involves importing a specific organism to control another; however, there are dangers with this approach. This method requires extensive research before a control organism is released in order to determine whether it will attack species other than the pest species.
 - **Augmentation** consists of manipulating existing natural enemies to increase their effectiveness. This can be achieved by mass production and periodic release of natural enemies of the pest, and by genetic enhancement of the enemies to increase their effectiveness at control.
 - **Conservation** involves identifying and modifying factors that may limit the effectiveness of the natural enemy. In some situations, this may include reducing the application of pesticides, as pesticides may kill predators as well as killing pests. Sometimes part of a crop area is left untreated so that natural enemies will survive and recolonize the treated areas.
- **Genetic Controls** include the transfer of resistance genes into a plant, or the engineering of a disadvantageous trait in the pest, then releasing modified individuals into the pest control area. Another method is the introduction of sterile members of the pest species.
- **Physical or Mechanical Controls** alter environmental factors in a way that reduces pest populations. These controls may be performed by the individual groundskeeper; examples include crop rotation and pruning. Another physical control method, sometimes called “mating disruption,” involves the use of sex pheromones produced by females to attract males for mating. Many of these pheromones are reproduced synthetically in the laboratory and are available commercially. Quantities of the pheromone placed around an orchard can disrupt mating by confusing male insects, which are then less likely to find a mate.

Integration with Other Natural Resources Management Activities

- Wetlands, Section 5.1.1 – ensure pesticides do not contaminate wetlands and manage wetlands near airfields to reduce BASH;
- Soil Conservation and Erosion, Section 5.1.2 – control sedimentation into wetland habitat;
- Stormwater and Water Quality, Section 5.1.3 – prevent contamination of water quality by pesticides;
- Floodplains, Section 5.1.4 – ensure continued attenuation capacity of the floodplain;
- Marine Coastal, Section 5.1.5 – manage nuisance animals on the coast to prevent predation on birds;
- Landscaping and Grounds Maintenance, Section 5.1.6 – utilize IPM practices during landscaping and grounds maintenance;
- Invasive and Exotic Species, Section 5.1.7 – control of nuisance animals may correlate with control of invasive and exotic species;

- Urban Forestry, Section 5.1.8 – consider BASH risks when selecting trees and locations for urban forestry;
- Silviculture, Section 5.2.1 – utilize IPM to reduce risk of disease and infestation of forest trees;
- Forest Protection, Section 5.2.2 – burn to accentuate the environmental conditions of native plants and wildlife;
- Fisheries Management, Section 5.3.1 – ensure pesticide use does not contaminate fishing areas;
- Migratory Birds, Section 5.3.2 – ensure BASH control complies with the MBTA;
- Threatened and Endangered Species, Section 5.3.3 – control nuisance animals, such as feral cats, that predate on protect species;
- Outdoor Recreation, Section 5.4 – educate recreational users about precautions against disease-bearing insects and hazardous wildlife;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on IPM and BASH procedures and laws; and
- GIS, Section 5.5.2 – map habitat types around airfields to identify BASH risks and solutions.

Ecosystem Management

An integrated ecosystem approach compliant with the SAIA, as amended, is used to manage habitats for wildlife. Safety, health, and BASH issued must be considered when developing management plans to control nuisance wildlife.

Military Mission

Nuisance wildlife and the outbreak of disease on the NASP Complex could pose a threat to implementation of the military mission through the infection of military personnel and the consequent limitation of access to areas of the Complex to control a problem. Structural damage to military infrastructure from infestation could also result in delays and costs to operations. BASH is a serious issue and can potentially threaten the military mission by causing accidents in the air and on the runway. Accidents may cause equipment damage as well as bodily harm to aircraft personnel.

Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Nuisance Wildlife and BASH

- Endangered Species Act, 16 U.S.C. 35, 32 CFR 190, provides for the identification and protection of threatened and endangered species of fish, wildlife, and plants and their critical habitats. It requires federal agencies to ensure that no agency action is likely to jeopardize the continued existence of a threatened or endangered species.
- Migratory Bird Treaty Act, as amended 16 U.S.C. 703-712, prohibits the taking or harming of a migratory bird, its eggs, nests, or young without the appropriate permit.
- Bald and Golden Eagle Protection Act, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs.

- Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, imposes substantive obligations on the United States for the conservation of migratory birds and their habitats.
- 2003 National Defense Authorization Act, exempts the Armed Forces from the incidental taking of migratory birds during military readiness activities.
- NASP Instruction 3751.1C, provides guidance for bird/animal strike hazard reduction and establishes areas of responsibility for bird control, bird hazard warning conditions, and local aircraft bird avoidance operating procedures.
- OPNAVINST 5090.1D, 12-3.12(b), discusses preparation and implementation of BASH plans.
- CNIC Instruction 3700, 7 July 2011, establishes policies and procedures for implementing the BASH plan, establishes mandatory BASH event reporting and remains collection procedure and establishes BASH program procedures.
- Executive Order 13751, 5 December 2016, requires federal agencies prevent the introduction, establishment, and spread of invasive species, detect and respond rapidly to eradicate or control populations of invasive species in a manner that is cost-effective and minimizes human, animal, plant, and environmental health risks, monitor invasive species populations accurately and reliably, and provide for the restoration of native species and ecosystems that have been impacted by invasive species, among other requirements.
- OPNAVINST 5090.1D, 12-3.10, discusses Navy policy regarding invasive species.
- FIFRA, 7 U.S.C.136, states that a pesticide that is federally registered by the EPA is not legal for use until it is also registered by the individual state.
- Forest Pest Suppression Memorandum of Agreement between the Department of Agriculture and DOD, 11 December 1990, is the planning, coordination, and execution of field operations to prevent and suppress damaging forest insects and disease outbreaks.
- OPNAVINST 5090.1D, 12-3.8(g), discusses the use of pesticides on Navy installations.
- Armed Forces Pest Management Board, Technical Information Memorandum No. 3Z, presents guidelines for reducing feral cat populations on military installations in the U.S.
- CNO Policy Letter (Ser. N456M/1U595820), 10 Jan 2002, requires Navy commands to institute proactive pet management procedures to prevent the establishment of feral cat and dog populations.
- OPNAVINST 5090.1D, 12-3.10(b), discusses Navy policy regarding feral cat and dog control, and explicitly prohibits the use of Trap-Neuter-Release and similar programs.

Additional Sources of Information

Wildlife damage and diseases information provided by the University of Nebraska Cooperative Extension Service, Great Plains Agricultural Council, and the USDA
<http://icwdm.org/handbook/allPDF/complete%20Handbook.pdf>

USDA APHIS Wildlife Damage Management
<https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage>

USGS National Wildlife Health Center Web
<http://www.nwhc.usgs.gov/>

Wildlife Disease/Health Related Links
<http://www.wildlifedisease.org/wda/OUTREACH/Links.aspx>

National Integrated Pest Management Network
http://webipm.ento.vt.edu/ipm-www/nipmn/nipmn_presentation/nipmnhome.html

Biological Control Virtual Information Center
<http://agris.fao.org/agris-search/search.do?recordID=US201300078353>

US Bird Avoidance Model
<https://catalog.data.gov/dataset/bird-avoidance-model>

DoD Partners in Flight BASH Planning
https://www.partnersinflight.org/working_groups/dod-pif/

Air Force Safety Center
<http://www.safety.af.mil/>

5.4 OUTDOOR RECREATION

Outdoor recreation in this INRMP is defined as the use of natural resources, including indoor interpretive centers, where the primary focus is on the understanding and application of the natural environment. Outdoor recreation includes nature trails, picnic and camping areas, consumptive and non-consumptive uses of natural resources, establishment and management of recreational trails, scenic rivers, equestrian areas, the use of off-road vehicles, as well as other uses of natural resources. It does not include other highly developed outdoor uses such as golf courses, tennis courts, athletic fields, and swimming pools, which are the responsibility of MWR. Outdoor recreation opportunities are dependent upon the natural environment and can be classified as concentrated or dispersed. Concentrated recreation opportunities refer to those activities where users concentrate in a specific area (e.g., picnicking, camping, fitness trails, archery, and interpretive centers). Dispersed recreation opportunities refer to those activities where the user moves about through the area (e.g., hiking, boating).

The Morale, Wellness and Recreation (MWR) Department is the primary entity responsible for maintaining and developing outdoor recreational activities on the NASP Complex. Most of the programs and facilities maintained by MWR have been established for many years. The NASP Complex's Environmental Division reviews and provides recommendations and guidance for all new projects proposed by MWR.



The National Park Service (NPS) completed Outdoor Recreation Management plans for selected properties within the NASP Complex in 1999. These plans contain detailed information on dispersed and concentrated outdoor recreational opportunities, and are available from the NRM.

Information pertaining to specified outdoor recreational opportunities at the NASP Complex is provided in Appendix C. Tables C-1 and C-2 list concentrated and dispersed outdoor recreational

opportunities at NAS Pensacola, Tables C-3 and C-4 list concentrated and dispersed outdoor recreational opportunities at Corry Station and BARP (Bronson Field); and Tables C-5 and C-6 list concentrated and dispersed outdoor recreational opportunities at Saufley Field. In addition to recreational opportunities available at the NASP Complex, the Pensacola area has numerous outdoor recreational opportunities including boating, fishing, biking, camping, and hiking. There are numerous public lands in the vicinity of the NASP Complex with outdoor recreational opportunities including Blackwater River State Park, Blackwater River State Forest, Fort Pickens, the Perdido Pitcher Plant Prairie and areas of Gulf Islands National Seashore.

Issues

According to Florida's State Comprehensive Outdoor Recreation Plan (SCORP), the most popular outdoor activities in the West Florida region include coastal beach activities, bicycle riding, saltwater fishing (by boat), picnicking, hiking, and visiting archaeological and historical sites. All are outdoor recreation opportunities provided at the NASP Complex. Ecotourism is also popular, as are Watchable Wildlife programs. Information pertaining to the demand for outdoor recreational activities at the NASP Complex is limited. However, the demand for outdoor recreational opportunities is expected to increase. A participant survey is necessary to determine demand for specific outdoor recreational opportunities and to provide the detailed information needed for future planning.

Goals and Objectives

- Protect and maintain resources within the NASP Complex through the continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Provide facilities and develop policies that allow for recreational and educational uses of natural resources, and result in positive effects to these natural resources while improving the quality of life. Implement BMPs to minimize stormwater pollution and erosion (FDACS 2003; FDOT and FDEP 2007; FDEP 2008; NASP 2013);
- Develop additional recreational facilities, trails, and interpretive centers to support present and future natural resources-based outdoor recreation at the NASP Complex;
- Promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Maintain the attenuation capacity of the remaining undisturbed acreage within the 100-year floodplain;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Protect and enhance shorelines through existing and new programs;

- Implement environmentally beneficial landscaping, grounds maintenance, and urban forestry practices;
- Manage forests in an ecologically sound manner to provide habitat for wildlife; and
- Preserve and protect threatened and endangered species, and species of special concern, to prevent reduction of individuals or populations.

Projects

- Invasive Species Control (Project 3 in Appendix A);
- Erosion Control for Coastal Zone Protection (Project 4 in Appendix A);
- Establish Shoreline Vegetation (Project 5 in Appendix A);
- Natural Resources GIS and Mapping (Project 6 in Appendix A); and
- Fishery Conservation and Management (Project 8 in Appendix A).

Management Strategies

- Continue to develop baseline information pertaining to present usage of natural resources-based outdoor recreation activities;
- Continue to develop recreational trails and interpretive centers in areas exhibiting unique cultural, natural, historical, or archeological resources;
- Monitor existing use of outdoor recreational facilities and trails by placing sign-in sheets at convenient locations;
- Survey base personnel to determine types and locations of desired natural resources-based outdoor recreational activities;
- Use volunteers and interested installation personnel for construction of facilities;
- Identify potential natural resources conflicts that could arise from increased outdoor recreational facilities;
- Investigate facility use agreements with other providers of educational, cultural, and recreational opportunities in the area;
- Review issues that currently prohibit public access;
- Identify the types of outdoor recreational and educational opportunities compatible with the NASP Complex's mission;
- Revise fishing and hunting instructions to include all properties of the NASP Complex;
- Continue to develop a soil erosion control management plan, and reduce the rate of soil erosion through the implementation of long-term measures and projects;
- Continue to use Integrated Pest Management (IPM) techniques in pest management programs and emphasize the use of pesticides with low toxicity and low application rates;
- Inventory wetlands and assess their function and quality as warranted, promote 50-foot buffers for all wetlands, and ensure land use and land management practices that will not adversely affect wetland resources;
- Review and monitor proposed activities for impact avoidance to the attenuation capacity of the 100-year floodplain. If it is determined that development is necessary within the 100-year floodplain to support the military mission, development shall first be located in the previously disturbed areas of the floodplain;

- Ensure implementation of policies that minimize adverse impacts to ecosystem resources from land disturbance activities;
- Continue to establish a program to prevent further degradation of shorelines;
- Continue to implement programs and activities for the protection and enhancement of habitat for threatened and endangered animal and plant species; and
- Continually verify that natural resources personnel obtain proper training and certifications.

Long-Term Management

The Outdoor Recreation Plans prepared by the NPS (1999a,b,c) for the NASP Complex contain numerous management recommendations for outdoor recreation at the NASP Complex. Using the NPS documents as a guide, the NASP Complex should survey existing outdoor recreational opportunities and usage, and continue to develop outdoor recreational opportunities that do not adversely affect natural systems. MWR will seek guidance from the NRM to ensure new projects do not negatively impact the natural environment. Recommended natural resources projects proposed by the NPS include:

- Continued cooperation with Gulf Island National Seashore to preserve existing cultural and natural resources;
- Implement and maintain appropriate ecosystem management practices, and continue efforts to protect areas with significant natural resources (i.e., protected plant or animal communities);
- Look at existing natural communities for potential environmental interpretation areas;
- Initiate public access from Bronson Field to the Perdido Pitcher Plant Prairie;
- Utilize visitor surveys to determine if the existing fishing opportunities are meeting the needs of the users. If the need exists, consider additional areas for fishing opportunities (i.e., the old water survival-training pier);
- Consider a user fee/permit for fishing. Consult with state and federal fisheries experts to determine carrying capacities;
- Develop a base-wide multi-purpose/mountain bike trail throughout the natural resources managed areas at the Complex;
- Establish a system of promoting the use of all nature trails. Make information on these areas more readily available to the public;
- Encourage expanded non-motorized boating use of Bayou Grande;
- Follow the proper procedures to have Trout Point established as a Watchable Wildlife Area, and evaluate other areas suitable for including in the Watchable Wildlife Program;
- Develop access from Corry Housing to the Jones Swamp Preserve by constructing marked pathways to US Hwy 98, crossing points at the Pensacola Junior College and US Naval Hospital traffic signals;
- Develop a handicapped accessible nature trail leading off from the existing handicapped accessible picnic site at the Family Picnic Center on Bayou Grande;
- Develop an outdoor education and interpretation program centered around the existing nature trails, Trout Point, and Bayou Grande, specifically. Plan to include other significant natural and cultural resources as the program grows;

- Contact state and National Park naturalist/interpreter for outdoor interpretive assistance;
- Promote fishing opportunities at BARP. Work with MWR personnel to develop and implement special promotional activities;
- Revise the fishing and hunting regulations for the NASP Complex to reflect regionalization;
- Develop the utility right-of-ways at BARP into multi-purpose trails, that could be used for hiking, bicycling and nature study;
- Develop connector trails from BARP at Bronson Field leading to the beaver pond and to the adjacent Tarkiln Bayou State Park;
- Evaluate the problems with beach erosion at BARP and develop a solution for eliminating the problem;
- Develop an outdoor education and interpretation program at BARP focusing on the cultural resources at the park and on the natural resources nearby at Bronson Field and at the Tarkiln Bayou State Park. Establish multi-purpose trails with interpretive signs leading to these areas;
- Research the possibility of developing a ropes course at the NASP Complex;
- Develop an orienteering program in the natural resources areas at BARP;
- Begin efforts to establish a developed trail to Elevenmile Creek at Saufley Field utilizing the existing abandoned railroad corridor, and to Perdido Bay utilizing the drainage way;
- Develop a network of multi-purpose trails connecting the existing Saufley Nature Trail with the trail leading to Elevenmile Creek;
- Constitute a formal request procedure for all calls concerning the use of the Saufley Nature Trail;
- Use the resources available through the Escambia County School District volunteer groups to develop promotional brochures and other projects, such as the Bird Box and Wildlife walking tour;
- Follow the proper procedures to have the Saufley Nature Trail area formally established as a Watchable Wildlife Area;
- Encourage groups, including the Scouts, to use the primitive camping sites on the Saufley Nature Trail. Also, contact the local Scout masters for assistance in maintaining the sites. Utilize the same call-in procedures for the campsites that will be used for the nature trail;
- Promote the existing jogging and fitness trails at Saufley Field. Develop a map designating each trail and make it readily available to users and potential users. Place sign-in sheets at trail heads to get an estimate of use; and
- Develop an outdoor education and interpretation program focusing on the natural resources around the Saufley Nature Trail.

Public access is defined herein as the right of the general public to enter and use NASP Complex facilities. The Sikes Act requires that sustainable use of natural resources by the public take place to the extent that the use is not inconsistent with the needs of the fish and wildlife resources. Currently, public access is limited at the NASP Complex. The general public is allowed access to: all NPS areas, cultural resources areas such as the Presidio Santa Maria de Galvé and the Pensacola Lighthouse, the Sunec-ke Nature Trail, Bayou Grande Nature Trail and

Trout Point Nature Trail at NAS Pensacola, and Saufley Field Nature Trail at Saufley Field. In addition, the public has limited access to the MWR jogging and fitness trail and to Bayou Grande and Saufley Field primitive camping areas on a reservation basis. Bronson Field is open to the public by special request and scout groups are allowed access to primitive camping areas at BARP. Due to the relatively high level of outdoor recreation by military personnel at the NASP Complex, additional public access to outdoor recreational areas at the NASP Complex would likely cause detrimental effects to the natural environment.

Integration with Other Natural Resources Management Activities

- Wetlands, Section 5.1.1 – ensure recreational opportunities do not compromise wetlands;
- Soil Conservation and Erosion, Section 5.1.2 – control sedimentation during recreational activities;
- Stormwater and Water Quality, Section 5.1.3 – ensure recreational opportunities do not compromise water quality;
- Floodplains, Section 5.1.4 – development of new recreational facilities must not compromise attenuation capacity of the floodplain;
- Marine Coastal, Section 5.1.5 – ensure recreational opportunities do not compromise the function of marine coastal habitat;
- Landscaping and Grounds Maintenance, Section 5.1.6 – develop aesthetically pleasing landscapes for recreation;
- Invasive and Exotic Species, Section 5.1.7 – reduce invasive and exotic species to enhance the outdoor recreational experience;
- Urban Forestry, Section 5.1.8 – utilize urban forestry principles to enhance recreational experiences;
- Silviculture, Section 5.2.1 – use BMPs to reduce sedimentation and contamination of water quality for aquatic activities (FDACS 2003);
- Forest Protection, Section 5.2.2 – protect forest health to the benefit of pleasant recreational experiences;
- Fisheries Management, Section 5.3.1 – manage fisheries to the benefit of pleasant recreational experiences;
- Migratory Birds, Section 5.3.2 – avid bird watchers may be able to provide information;
- Threatened and Endangered Species, Section 5.3.3 – ensure recreational activities do not harass protected species, and make wildlife observers aware of rare species;
- Nuisance Wildlife and BASH, Section 5.3.4 – control nuisance wildlife to enhance the outdoor recreational experience;
- Natural Resources Training, Section 5.5.1 – ensure personnel are current on applicable laws and recreational policies and regulations; and
- GIS, Section 5.5.2 – utilize maps to the benefit of outdoor recreation.

Ecosystem Management

Ecosystem management practices are enhanced by environmental stewardship and by educating the general public about environmental conservation issues, problems, and solutions. By

providing natural recreational and educational opportunities on the NASP Complex, public awareness of vital environmental resources issues can be enhanced, thus providing a regional educational resource. Using volunteer groups and NASP Complex personnel for the physical construction of recreational and educational facilities provides opportunities to educate group members on the values and characteristics of a healthy environment, and on the problems and solutions associated with human use of the environment.

Military Mission

Outdoor recreational opportunities are dependent upon the environment and the security and safety constraints of the military mission. At the same time, outdoor recreation serves to enhance the well-being and morale of base tenants. Outdoor recreational opportunities must be developed and used consistently with the sustainability of the land. The over-utilization or improper location of an outdoor recreation area could impact natural resources and the military mission.

Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Outdoor Recreation

- Sikes Act and Improvement Act of 1997, 16 U.S.C. 670a(b)(1)(G), requires public access to a military Installation for the necessary, appropriate, and sustainable use of natural resources by the public to the extent that the use is not inconsistent with the needs of the fish and wildlife resources or with safety and military security.
- Outdoor Recreation – Federal/State Program Act, 16 U.S.C. 460c, defines a program for managing lands for outdoor recreation.
- OPNAVINST 5090.1D, 12-3.11, discusses natural resources management relating to the protection and management of outdoor recreational resources.
- National Historic Preservation Act, 16 U.S.C. 470-470m, establishes a program for the preservation of historic properties throughout the nation and for other purposes.
- Executive Order 11989, establishes policies and procedures to ensure the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands.
- NAVFAC MO – 100.4, provides technical guidance for establishing goals and objectives and planning requirements for outdoor recreation.
- DODINST 4715.3 of May 1996, states DoD installations may engage in public awareness and outreach programs to educate the public regarding the resources on military lands and DoD efforts to conserve those resources.
- SECNAVINST 5090.8, requires integration of environmental protection, natural resources, and cultural resources programs into DoN operations and activities.
- State of Florida Freshwater and Saltwater Fishing Regulations.

Additional Sources of Information

FDEP, Division of Recreation and Parks
<https://floridadep.gov/parks>

National Park Service

<http://www.nps.gov/index.htm>

Gulf Islands National Seashore

<http://www.nps.gov/guis/index.htm>

FWC, Fishing in Florida

<http://myfwc.com/fishing/>

5.5 TRAINING

This section addresses the development and implementation of programs and techniques for training natural resources personnel. The training issues of this INRMP include training of GIS data integration, access, and reporting.

The natural resources program at the NASP Complex shall support military readiness and sustainability while continuing to protect and conserve the natural resources on its properties. Natural resources and land management planning should be integrated with other base planning processes. All projects occurring on the NASP Complex that potentially impact natural resources (e.g. wetlands, natural areas, urban forests, floodplains, water quality) will be evaluated prior to implementation. This will allow those projects to be reviewed by appropriate personnel so potential constraints (e.g. threatened and endangered species, wetlands, floodplains) can be identified.

Natural resources personnel will review pertinent literature to stay informed on current methodologies and techniques for natural resources management. Natural resources personnel should ensure that project plans, including military construction (MILCON) projects are consistent with the INRMP's management goals, objectives and strategies. The NASP Complex will implement adaptive management to accommodate new strategies resulting from monitoring, scientific findings and new management guidelines.

Partnerships are often necessary and effective in implementing an INRMP while maintaining cost-effectiveness. Cooperative agreements are often used in partnerships with states, local governments, non-governmental organizations, and individuals to provide for the benefit, maintenance, and improvement of natural resources on DoD Installations. Cooperative agreements are authorized to implement INRMP projects (OPNAVINST 5090.1D, 12-3.4(c)(8)(b)). NAVFAC SE is tasked with providing the technical and administrative guidance for the development of cooperative agreements to implement natural resources plans and execute cooperative agreements on behalf of Installation commanders upon request.

5.5.1 Training of Natural Resources Personnel

Natural resources personnel at the NASP Complex are expected to maintain a working knowledge of current research, issues, and technologies pertinent to natural resources

management at the Complex. In addition, personnel engaged in wildland fire management, timber marketing, and pesticide application must receive specific training, as described below:

Wildland Fire Personnel Training

DoD has recently adopted the National Wildfire Coordination Group's (NWCG) Federal Wildland Fire Policy to govern all wildland fire activities carried out by DoD personnel. DoD is presently exploring the possibility of seeking membership in the NWCG. The NWCG is made up of all Federal agencies (except DoD) with wildland fire responsibilities and the National Association of State Foresters. The Federal Wildland Fire Policy requires that all personnel involved in prescribed fire and/or wildfire activities meet certain training and physical qualifications. DoD is presently reviewing how it will implement this requirement. Some military installations have already implemented this requirement with most of them making it mandatory for new hires and positions and voluntary for current employees. The NASP Complex's requirements for personnel qualifications will be reviewed and the Prescribed Fire Plan within the Forest Management Plan will contain complete information on personnel qualifications.

Timber Marketing

All personnel engaged in timber marking at the NASP Complex, at a minimum, must meet the qualifications established by the Office of Personnel Management for Forestry Technician GS 0462-05 (see 'Additional Sources of Information' at the end of this section). Additional training will be given as to local requirements and procedures. This training will be under actual field conditions in a productive capacity.

Pesticide Applicator Training

Pest Management is provided through implementation of the Integrated Pest Management Plan (IPMP). The IPMP provides a comprehensive, long-range document that captures all the pest management operations and pesticide-related activities conducted at the NASP Complex. All Complex personnel who apply pesticides shall have received and maintained DoD (government staff) or Florida (contractors) certification as pesticide applicators for the categories of pest control engaged.

Federal Personnel

Federal personnel applying any pesticide on Federal land need DoD certification in accordance with OPNAVINST 6250.4B. Only Federal employees under hiring programs with duties as pesticide applicators can participate in the on-the-job (OTJ) training program. During this time, the new employee works under the direct supervision (see paragraph 2 below) of a certified pesticide applicator until they are qualified (1 year OTJ

experience) and satisfactorily complete the DoD Pest Management Certification Course and can work independently.

Civilian Contractors

Civilian contractors applying any pesticide on the NASP Complex require a Florida certification in the category or applicable sub-categories of work performed. All of the contractor's pest management staff who apply pesticides must be certified as pesticide applicators. Non-certified contractor employees are prohibited from applying pesticides.

Inspectors

Individuals who evaluate the quality of work of pest control contracts (QAEs) should also be trained in the pest management category or categories of work being performed.

Supervisor

Direct supervision is defined in DoD Instruction 4150.7 as supervision that includes being at the specific location where pest management work is conducted, providing instruction and control, and maintaining a line-of-sight view of the work performed. Certain circumstances may temporarily remove the line-of-sight view of the application of pesticide from the supervisor such as topographic, vegetation, or structural constraints. Under these temporary circumstances, the supervisor shall be responsible for the actions of the pesticide applicators.

Training and Certification

Training and certification will be conducted at government expense for DoD personnel. Certified pest control personnel shall be re-certified in accordance with Florida or DoD requirements as specified above. Employed pesticide applicators must be certified and the quality assurance evaluator must be trained in the following categories when appropriate. Certification and training is required when performing pest control operations that involve restricted-use or state-limited-use pesticides, to supervise other employees conducting pest control involving restricted-use or state-limited-use pesticides, or to evaluate contractor performance relating to pest control within these categories:

- Forest pest control (DoD & EPA category 2);
- Ornamental and turf pest control (DoD & EPA category 3);
- Aquatic pest control (DoD & EPA category 5);
- Right-of-way pest control (DoD & EPA category 6);
- Industrial, Institutional, Structural, and Health-related pest control (DoD & EPA category 7);
- Public health (DoD & EPA category 8); and
- Aerial Application (DoD & EPA category 11) if planned to be used.

Continuing Education and Training

Personnel, who are involved in pesticide applications on a regular or seasonal basis, especially when mixing formulations is required, are encouraged to attend local pest management classes, workshops and seminars. This is important in order to keep abreast of pest problems and pest management techniques, which are unique to the area surrounding the installation. This is particularly true when dealing with vegetation control since many of the herbicide labels indicate that choices in strength and application technique should be based on local conditions.

The time and labor expended in this type of training is easily recouped through improved efficiency in pest management. Local pest management training may include on-site training in addition to any off-site re-certification training, such as the DoD course or state re-certification requirements. Other personnel who deal directly with pest control operations, but who may not need to be certified, are also encouraged to attend local seminars to better understand pest management needs.

Issues

The natural resources program at the NASP Complex has only two personnel, an NRM and a Forester. Training is therefore important to ensure the limited staff is able to accomplish all necessary facets of natural resources management on the Complex. Personnel should also be knowledgeable of environmental laws pertaining to federal lands and DoD installations.

Goals and Objectives

- Protect and maintain natural resources within the NASP Complex by continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;
- Protect and enhance forest resources by practicing ecologically sound forest management leading to sustained yield of quality forest products, watershed protection, and wildlife habitat;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Provide facilities and develop policies that allow for recreational and educational uses of natural resources, and result in positive effects to these natural resources while improving the quality of life;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Provide adequate staffing, equipment, technology, and training to the Natural Resources Program to ensure proper implementation of this INRMP;

- Incorporate the concept of ecosystem management into all planning and management processes;
- Preserve and protect threatened and endangered species, and species of special concern, to prevent reduction of individuals or populations; and
- Establish a planning team to review and update the INRMP in accordance with OPNAVINST 5090.1D, 12-3.4(c).

Projects

- Pensacola INRMP (Project 2 in Appendix A); and
- Natural Resources GIS and Mapping (Project 6 in Appendix A).

Management Strategies

- Staffing needs shall be continuously reviewed for adequacy and filled to meet management needs;
- Continually verify that natural resources personnel obtain proper training and/certifications for the following:
 - Fire Management;
 - Threatened and Endangered Species Management;
 - Wetlands Management;
 - Ecosystem Management;
 - Technology (GIS/GPS);
 - Natural Resources Legal Requirements;
 - Forest Management;
 - Department of Transportation (DOT) Requirements;
 - HW Training;
 - Safety Training; and
 - Pest Management;
- Continue to utilize the review board within the Facilities Maintenance Department to review all projects that potentially affect natural resources, including soil and water quality;
- Continue to integrate the management concepts of the INRMP into all working programs and department plans (i.e., HCP, PMP, Urban Forestry Plan, and Grounds Maintenance Plan);
- Continue the working team that integrates the concepts of the INRMP into the HCP, PMP, Urban Forestry Plan, and Grounds Maintenance Plan;
- Continue to ensure that all cooperative agreements, memoranda, and other agreements between the installation and federal and state agencies that oversee and regulate natural resources protection, are current, and those agreements have been established with all necessary agencies;
- Continue with the ecosystem management awareness and training/education program available to all interested NASP Complex personnel;

- Continue the technical education and training program for all contract and Installation personnel involved in activities on the NASP Complex that may directly or indirectly affect ecosystem management success;
- Develop a team of experts with sufficient technical knowledge to evaluate the effectiveness of INRMP implementation and to recommend improvements;
- Review NASP Complex staffing, including assistance from NAVFAC SE and federal, state, and county agencies, to identify whether there are adequate staffing and expertise to update the INRMP; and
- Continue to utilize staffing assistance provided by the Student Conservation Association.

Long-Term Management

Adequate staffing and training are essential components of long-term natural resources management at the NASP Complex. Partnerships and cooperation with regulatory agencies, NAVFAC SE, university researchers, conservation groups, and non-government organizations are also vital to the continued success of management activities. The natural resources program will continue to enlist the assistance of interns through the Student Conservation Association (SCA), a partnership that has proven valuable to accomplishing research on the NASP Complex while helping to educate the next generation of natural resources managers.

Integration with Other Natural Resources Management Activities

Training natural resources personnel at the NASP Complex is important to successfully accomplish every natural resources management activity described in this INRMP, from wetland management (Section 5.1.1) and marine coastal management (5.1.5) to grounds maintenance (Section 5.1.6), silvicultural activities (Section 5.2.1), BASH (Section 5.3.4), and threatened and endangered species conservation (Section 5.3.3). Staff training is not only integrated into all of these activities, but it is essential to successful integration *between* all of these activities as well.

Ecosystem Management

Ecosystem management is at the core of training for natural resources staff at the NASP Complex, and would therefore be compromised by a lack of training.

Military Mission

A properly-trained natural resources staff is the NASP Complex's first line of protection against activities that could result in violations of environmental laws and policies. Communication between the NRM and the chain of command and other departments is vital to ensure the NASP Complex remains in compliance with environmental legislation, avoiding regulatory action that could delay or otherwise compromise the military mission.

Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Training of Natural Resources Personnel

- Sikes Act, as amended 16 USC 670 a-o, requires each military department to manage fish and wildlife resources in accordance with a tripartite cooperative plan agreed to by the USFWS and state wildlife agency, to provide its personnel with professional training in fish and wildlife management.
- Fish and Wildlife Conservation Act, 16 USC 2901, encourages all federal departments and agencies to utilize their statutory and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities, to conserve and promote conservation of nongame fish and wildlife and their habitats.
- OPNAVINST 6250.4B, 27 August 1998, DOD Pest Management Programs, provides the DON with policies for implementing pest management programs directed against pests that conflict with or adversely affect the mission of the DOD; affect the health and well-being of the DON personnel and their dependants; attach or damage real property, supplies, or equipment; adversely affect the environment; or are otherwise undesirable.
- DoD Instruction 4150.7, requires a supervisor to be at the specific location where pest management work is conducted, providing instruction and control, and maintaining a line-of-sight view of the work performed.
- OPNAVINST 5090.1D, Chapter 12, discusses natural resources management at Navy installations.

Additional Sources of Information

Environmental Law Institute
<http://www.eli.org/>

FDACS, Pesticide Application
<http://www.freshfromflorida.com/Business-Services/Pesticide-Licensing/Pesticide-Applicator-Licenses/Pesticide-Applicator-Certification-and-Licensing>

National Wildfire Coordination Group
<http://www.nwccg.gov/>

FDACS, Wildland Fire and Fire Prevention
<http://www.freshfromflorida.com/Divisions-Offices/Florida-Forest-Service/Wildland-Fire/Fire-Prevention>

Qualifications of a Forestry Technician GS 0462-04 and Greater
<http://www.opm.gov/qualifications/standards/IORs/g0400/0462.htm>

Naval Civil Engineering Officer's Corps School (CECOS)
<https://www.netc.navy.mil/centers/csfe/cecos/>

Student Conservation Association
<http://www.thesca.org/>

5.5.2 Geographical Information Systems, Data Integration, and Reporting

Mapping and spatial analysis are integral components of natural resources management that are fulfilled through the use of Geographic Information Systems (GIS) data and software. Data provide documentation for the location and attributes of resources while software contains the tools necessary for the management, display, and analysis of these data. A major goal of any GIS is the development of rigorous organization and accuracy standards. These standards

provide for a sound base dataset needed for rigorous analysis used in managing natural resources.

Issues

Natural resources data gathered from surveys and studies should be integrated into the NASP Complex's GIS and made available to planners and land managers to aid in decision making and ensure resource management techniques and planned land uses do not conflict with natural resources conservation. The NRM must ensure that newly-acquired and updated natural resources data is integrated into the Installation GIS database on a regular basis.

Goals and Objectives

- Protect and maintain natural resources within the NASP Complex by continuation and enhancement of ecologically appropriate and beneficial land use and management practices, while ensuring the continuation of the military mission;
- Protect and enhance forest resources by practicing ecologically sound forest management leading to sustained yield of quality forest products, watershed protection, and wildlife habitat;
- Protect, maintain, and restore native communities of plant and animal life, while improving the quality of life and ensuring the military mission;
- Provide facilities and develop policies that allow for recreational and educational uses of natural resources, and result in positive effects to these natural resources while improving the quality of life;
- Protect and conserve the ecological value and diversity of natural resources by fostering knowledge of, and participation in, adaptive ecosystem management;
- Ensure that land management and land use decisions comply with all applicable laws, executive orders, regulations, directives, and instructions, and that adverse impacts to the natural environment are minimized;
- Incorporate the concept of ecosystem management into all planning and management processes;
- Preserve and protect threatened and endangered species, and species of special concern, to prevent reduction of individuals or populations; and
- Prevent conflicts with long-term management goals and training missions.

Projects

- Pensacola INRMP (Project 2 in Appendix A); and
- Natural Resources GIS and Mapping (Project 6 in Appendix A).

Management Strategies

- Produce custom maps for preliminary environmental site assessments and to facilitate analysis of environmental issues;
- Compile GIS data coverages and maintain and update data coverages, as needed. GIS data coverages should include:

- Wetlands, water bodies, water courses, and appropriate buffers;
- Forest stands;
- Natural communities;
- Undisturbed and undeveloped 100-year floodplain;
- Military constraint areas;
- Map soil units and areas where soil type presents a threat of erosion;
- Populations and habitats of endangered and threatened species and species of special concern;
- HW sites;
- Land use;
- Infrastructure and utilities;
- NASP Complex boundaries and buildings;
- Roads;
- Cultural, natural, historical, or archeological resources;
- Surface water quality monitoring stations;
- Stormwater outfalls and monitoring stations; and
- Shoreline areas, submerged aquatic vegetation, and essential fish habitat;
- Continue with the ecosystem management awareness and training/education program available to all interested NASP Complex personnel; and
- Continue the technical education and training program for all contract and Installation personnel involved in activities on the NASP Complex that may directly or indirectly affect ecosystem management success.

Long-Term Management

GIS databases and mapping capabilities will be used for daily decisions as well as long-term planning of natural resources management and its integration with the military mission. This work is driven by laws such as the NEPA, ESA, and Clean Water Act. All impacts on Federal land from a proposed project must be considered before the project can be implemented, in accordance with NEPA. These impacts may affect natural resources such as endangered species, water, and timber, so detailed maps are required to assess the impacts potential on resources. A list of data layers that should be developed and maintained includes:

- Rare, threatened and endangered species occurrences;
- Streams and wetlands;
- Archaeological sites;
- Fishing areas;
- Forest stand inventory data;
- Fire breaks and prescribed burning areas;
- Solid waste management areas;

- Hazardous waste management;
- Groundwater and soil remediation areas;
- Stormwater pollution prevention; and
- Air pollution emission sources.

The NRM also have access to ancillary data such as infrastructure, installation boundaries, and geodetic reference points via the NAVFACSE Geo-readiness Center. The NAVFACSE Geo-readiness Center maintains a server where finalized data, intermediate working data, and all supporting files are stored. Data for the Navy's training mission, such as training area boundaries, short range fire ranges, and training impact areas, are maintained by the NASP Complex.

Integration with Other Natural Resources Management Activities

Geographical Information Systems is integrated into every natural resources management activity described in this INRMP, from wetland management (Section 5.1.1) and marine coastal management (5.1.5) to grounds maintenance (Section 5.1.6), silvicultural activities (Section 5.2.1), BASH (Section 5.3.4), and threatened and endangered species conservation (Section 5.3.3). Data from surveys, studies, and other projects completed for any all of these management activities should be submitted to the NRM and NAVFAC SE to ensure inclusion in the applicable GIS databases. This will also facilitate integration between the management activities themselves.

Ecosystem Management

The use of GIS enhances ecosystem management by making data available and decipherable across all components of the ecosystem. Air quality, water quality, land use, species presence, forest stands, and urban development, among other factors, can more easily be consolidated into overall analyses of ecosystem function on the NASP Complex.

Military Mission

Uninterrupted performance of the military mission at the NASP Complex depends upon compliance with environmental laws and policies and delineating environmentally-sensitive areas such as wetlands and the occurrences of protected species and their habitats. GIS is a crucial tool in this delineation and the accessibility of GIS databases by various departments at the NASP Complex facilitates the avoidance and minimization of impacts to sensitive areas.

Laws, Executive Orders, Regulations, Directives, and Memoranda Relevant to Geographical Information Systems, Data Integration, and Reporting

- Sikes Act, as amended 16 USC 670 a-o, requires each military department to manage fish and wildlife resources in accordance with a tripartite cooperative plan agreed to by

the USFWS and state wildlife agency, to provide its personnel with professional training in fish and wildlife management.

- Fish and Wildlife Conservation Act, 16 USC 2901, encourages all federal departments and agencies to utilize their statutory and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities, to conserve and promote conservation of nongame fish and wildlife and their habitats.
- OPNAVINST 5090.1D, Chapter 12, discusses natural resources management at Navy installations.

Additional Sources of Information

Geo-readiness Explorer

<https://www.navfac.navy.mil/search.html?q=georeadiness>

GIS.com

<http://www.esri.com/what-is-gis/>

6

Implementation

Over the course of its implementation, this INRMP will:

- Enable the NASP Complex to make progress towards achieving a sustainable natural resources base and a realistic training environment which is embodied in the diversity of its natural ecosystems;
- Establish appropriate stewardship policies that serve to protect both natural resources;
- Ensure compliance with environmental laws;
- Provide a continuity of direction and effort that can accommodate changes in personnel and leadership;
- Promote cost-effectiveness through better planning and coordination;
- Promote good public relations by demonstrating the Complex's commitment to stewardship, as well as a multiple-use concept for the general public; and
- Make use of innovative strategies to accomplish specific management objectives.

6.1 PLAN IMPLEMENTATION AND REVIEW

The annual INRMP reviews and metrics located at the Natural Resources Data Call Station website (<https://eprweb.cnic.navy.mil/eprwebnet/web/NemosPortal.aspx?SourcePage=Login>) will be used to assess implementation. A general summary of major actions/projects during the next 5 years and programs they support are provided in Appendix A. Projects will be developed during the budgetary process and coordinated with CNRSE natural resources personnel.

6.2 PLANNING AND MISSION SUSTAINABILITY

The goal at the NASP Complex is to maintain and enhance the capability of military lands to support the training mission while conserving natural resources. The implementation of projects, future revisions and updates of this INRMP will assist the NASP Complex in maintaining natural habitats, assessing the impacts of military training activities on flora and fauna populations, controlling erosion and sedimentation in stream channels, roads and unvegetated areas, implementing ecosystem management, managing the Complex's forest areas, and providing recreational opportunities.

Frequent and close coordination between the NASP Natural Resources Manager and the Airfield Operations office will be necessary to implement this plan and ensure minimal impacts and

conflicts with military training. The Airfield Operations office will schedule and manage airfield use and must be aware of proposed management actions on the properties. All actions that involve contractors or workers must coordinate with NASP natural resources staff. These actions will include, but are not limited to, timber harvest, invasive species control, and plant and animal surveys. In addition, the natural resources staff must know when and where military training is occurring so work can be coordinated with those activities. Airfield Operations provides a list of the range and training areas scheduled for use on a regular basis to assist with work planning.

6.3 PARTNERSHIPS

The magnitude and complexity of the management requirements necessitate outside assistance. This assistance can vary, but usually takes the form of a partnership, which may include funding, technical and logistical support, GIS or use of FWC biologists, or an agreement between agencies to achieve common goals. Agencies with shared goals include:

- NRCS to provide expertise on soil erosion control;
- USACE to develop wetland restoration and mitigation credit banks;
- USFWS to assist in identifying conservation measures for enhancement of threatened and endangered species and their habitat;
- FWC to assist in developing and implementing hunting and fishing regulations, feral hog depredation, and fish pond stocking;

6.4 FUNDING

Funding for implementation of the INRMP will come from the CNRSE or NAVFAC SE natural resources fund. The natural resources programs and projects described in this INRMP are divided into mandatory and stewardship categories to reflect implementation priorities. Every effort will be made to acquire O&M(N) Environmental or other funding to implement DoD mandatory projects, in the timeliest manner possible. Stewardship projects will be funded through fish and wildlife licenses or other fund sources as funds and personnel become available.

Forestry funding is provided through NAVFAC SE from the sale of timber products. Funding for special projects in natural resources may be available from NAVFAC SE through surplus funding sources or forestry reserve accounts. Non-compliance funding may come from Legacy Act. Funding for compliance with environmental legislation and regulations is requested through the Navy Environmental Program Requirements Web (EPRWeb). Compliance projects falling under the EPRWeb include species surveys, assessments, management, protection, INRMPs, wetlands delineation and protection, conservation mapping, nonpoint source pollution, watershed management, cultural resource surveys, protection and plans, archaeological curation, conservation of soil and water or fish and wildlife, forest management and outdoor recreation (wildlife). All projects must be conducted in strict compliance with the Anti-Deficiency Act (13

USC 1341), which requires that all obligations or commitments made by the Federal government be funded at levels that do not exceed the Congressional appropriations.

Table A-1 in Appendix A summarizes the projects for the NASP Complex. One of the objectives of the INRMP is to plan for no net loss of military mission. Partnerships, proper funding, and compliance with NEPA requirements will ensure that the Navy will achieve its military mission.

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Projects of the INRMP

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Appendix A describes the projects to be implemented by the NASP Complex. Projects were identified by the NASP Complex NRM in consultation with foresters, fish and wildlife biologists, and soil conservationists at NAVFAC SE, as well as with federal, state, and county wildlife biologists, foresters, and land managers. For each project, Appendix A discusses the purpose, location, description, cost, relevance to the goals and objectives listed in Section 4, baselines, monitoring and legal requirements. It is the intent of the NASP Complex to implement the projects as described in Appendix A to the greatest extent possible. The implementation of projects is largely dependent upon availability of funds. Recognizing the uncertainties in funding and the possibility of changes to the NASP Complex military mission and its civilian and military staffing, the implementation of projects will proceed as directly and completely as possible. Table A-1 summarizes the projects.

Funding for implementation of the INRMP will come from the Installation, Commander Navy Installations (Major Claimant as appropriate), or NAVFAC natural resources fund sources. Every effort will be made to acquire O & M (N) Environmental, or other funding to implement DoD mandatory projects, in the timeliest manner possible. Stewardship-type projects will be funded through forestry, agricultural outlease, fish and wildlife, Legacy, or other fund sources as funding and personnel resources become available.

Table A-1 NAS PENSACOLA NATURAL RESOURCES PROJECTS							
Project #	Project Description	Page No.	Scheduled Implementation (FY)	Prime Legal Driver	Env Readiness Level (*1)	Budget Criteria (*2)	Fund Source
1	Species Protection and Habitat Development	A-3	2018-2024	4 , 6	4	12101	ENV, STA
2	Pensacola INRMP	A-5	2018-2024	2 , 9	4	12103	ENV
3	Invasive Species Control	A-6	2018-2024	1 , 7	4	12106	ENV, STA
4	Erosion Control for Coastal Zone Protection	A-7	2018-2024	3 , 4	4	12107	ENV, NRR
5	Establish Shoreline Vegetation	A-8	2018-2024	6 , 9	4	12101	ENV, AO, NRR
6	Natural Resources GIS and Mapping	A-9	2018-2024	2 , 4	4	12103	ENV, STA
7	Gopher Tortoise Conservation	A-10	2018-2024	4 , 6	4	12104	ENV, STA
8	Fishery Conservation and Management	A-12	2018-2024	2 , 8	4	12101	ENV, STA, MWR
9	Neotropical Bird Survey	A-13	2018-2024	5 , 6	4	12101	ENV, STA
10	Update Biological Inventory	A-14	2018-2024	4 , 6	4	12101	ENV, STA
11	Forest Administration	A-16	2018-2024	2 , 6	N/A	12037	FOR
12	Forest Product Sales	A-17	2018-2024	2 , 6	N/A	12037	FOR, FR
13	Timber Stand Improvement	A-18	2018-2024	2 , 6	N/A	12037	FOR, FR
14	Construction and Maintenance of Forest Roads	A-19	2018-2024	2 , 6	N/A	12037	FOR, FR
15	Fire Management for Rare Species	A-20	2018-2024	4 , 6	N/A	12037	FOR, FR
16	Marine Species Monitoring and Protection	A-22	2020-2024	4 , 6	4	12101	ENV, STA

(*1) From EPR "Guidebook" ; "N/A" Projects are funded with "Forestry Funds"

(*2) "Guidebook Number" is from Chapter 12 of EPR Guidebook

SOURCE OF FUNDS

AO - Agricultural Outleasing
 ENV - Environmental O&MN
 FOR - Forestry

FR - Forestry Reserve
 LY - Legacy
 MWR - Moral, Welfare & Recreation

NRR - Natural Resources Reserve
 STA - Station O&MN

PRIMARY LEGAL DRIVERS

(1) 7 USC 2814	Federal Noxious Weed Act	(6) 32 CFR 190	Natural Resources Management Program
(2) 16 USC 670a-f	Sikes Act Improvement Act of 1997	(7) EO 13112	Invasive Species
(3) 16 USC 1456	Coastal Zone Management Act	(8) EO 12962	Recreational Fisheries
(4) 16 USC 1531 & 1536	Endangered Species Act	(9) EO 11990	Protection of Wetlands
(5) 16 USC 2912	Fish and Wildlife Conservation Act		

Project No. 1: Species Protection and Habitat Development

- Purpose:** Conduct management and activities to enhance habitat for rare, threatened, and endangered species and natural communities.
- Goal and Objective:** Goal 1, Objective 1.1, Strategy 1.1.1 – Manage Stormwater Runoff.
Goal 1, Objective 1.1, Strategy 1.1.2 – Control Soil Erosion.
Goal 1, Objective 1.1, Strategy 1.1.3 – Implement Pest Mgmt Plan.
Goal 1, Objective 1.1, Strategy 1.1.4 – Assess Wetlands.
Goal 1, Objective 1.2, Strategy 1.2.1 – Control Invasives.
Goal 2, Objective 2.2, Strategy 2.2.1 – Manage Forest Ecosystems.
Goal 3, Objective 3.1, Strategy 3.1.1 – Improve Habitat.
Goal 3, Objective 3.1, Strategy 3.1.2 – Biological Monitoring.
Goal 3, Objective 3.3, Strategy 3.3.1 – Monitor Health of Fauna.
Goal 5, Objective 5.1, Strategy 5.1.2 – Train Conservation Staff.
Goal 5, Objective 5.4, Strategy 5.4.1 – Evaluate and Update INRMP.
- Location:** Complex-wide.
- Description:** This project is recurring Program Management to fund work to improve fish & wildlife habitat and resources for the benefit of protected species as well as game and non-game species, including transient migratory birds.
- This project will involve the activities described below. The need to carry out specific projects in any given year will be determined by the Natural Resources Manager.
- Nest box management: Placing nest boxes for osprey, hawks, owls, migratory waterfowl, and blue birds.
 - Burning specifically to benefit gopher tortoise habitat, pitcher plant prairies, and other plants.
 - Placing signs at gopher tortoise burrows to protect them from mowing activities and educate grounds maintenance personnel.
 - Enhance habitat for pitcher plants at NASP, Saufley Field, and Bronson Field by establishing pitcher plants in clear zones at NASP that are currently being mowed. At Saufley Field and Bronson Field, enhancement would include prescribed burns.
 - Maintain bat habitat at Saufley Field and educate personnel about occurrence and protection of bats.
 - Carry out activities to manage habitat for protected plant species. (i.e. SAVs, *Polygonella macrophylla* and *Chryopsis godfreyi*).
 - Participate in Florida Department of Agriculture initiative to protect honeybee populations. Continue existing efforts to relocate honeybees from facilities to natural areas when needed.
- Baseline:** Existing biological inventories and management activities.

- Monitoring:** Results of specific projects will be monitored as needed. Formal monitoring will be conducted through Project 14, Biological Monitoring.
- Legal Driver(s):** Natural Resources Management Program, 32 CFR 190; Endangered Species Act, 16 U.S.C. 1531 et seq.; Sikes Act Improvement Act of 1997, 16 U.S.C. 670 (a) et seq.; Fish and Wildlife Conservation Act, 16 U.S.C. 2901 et seq.; EO 11990 – *Wetlands Protection*; EO 13112 – *Invasive Species*; OPNAVINST 5090.1D, 12-3.
- Accomplishments:** Activities funded under this project have included prescribed burning for habitat improvement for gopher tortoise, pitcher plants, and other rare and listed species; and nestbox construction for the benefit of migratory birds. This project, in conjunction with Project #7, resulted in five comprehensive installation-wide gopher tortoise surveys resulting in 100 percent surveys on 1,700 acres of gopher tortoise habitat. Over 350 burrows were geo-mapped, and scoped with a burrow camera. Population estimates resulted in a total of 10 areas supporting 80 gopher tortoise (see notes listed on Project #7).
- Over the past five years, prescribed burning was accomplished on 153 acres, Gyrotrac brush clearing was accomplished on 40 acres, and invasive species were controlled on 60 acres, all for gopher tortoise habitat improvement. The NAS Pensacola NRM was also the assigned manager for the Gopher Tortoise Candidate Conservation Agreement (GTCCA) for Commander Navy Region Southeast and completed input for five annual reports to the GTCCA for navy installations having populations of gopher tortoise in the southeast.
- Migratory bird management accomplished included the annual management of 31 osprey nests including 12 artificial nesting platforms. Management included working with USDA Wildlife Services Bird/Animal Aircraft Strike Hazard biologist in support of military aviation safety. In addition, nine Southeastern Kestrels were trapped from aviation areas and relocated.
- Other projects accomplished include surveying for Rare, Threatened, and Endangered Species with a primary focus on shorebirds, sea turtles, flatwoods salamanders, and other amphibious, reptile, and marine life species. Numerous installation construction and repair projects were also reviewed for natural resources and species protection.
- Success story note: The first sea turtle nest on base in 25 years resulted in 82 hatchlings that were captured by National Park Service biologists and transported to the Gulf of Mexico for safe release in August, 2013. INRMP project management allowed for this successful result.

Project No. 2: Pensacola INRMP

Purpose:	To update and revise the INRMP.
Goal and Objective:	Goal 5, Objective 5.1, Strategy 5.1.1 – Adequate Staff. Goal 5, Objective 5.2, Strategy 5.2.1 – Review all Facilities Projects. Goal 5, Objective 5.2, Strategy 5.2.2 – Use INRMP in all Programs. Goal 5, Objective 5.1, Strategy 5.2.3 – Use of GIS for Management. Goal 5, Objective 5.3, Strategy 5.3.1 – Awareness by all Personnel. Goal 5, Objective 5.4, Strategy 5.4.1 – INRMP Update and Revision.
Location:	Complex-wide.
Description:	<p>In accordance with OPNAVINST5090.1B 22-4.1[b], the INRMP will be reviewed on a yearly basis and re-approved every five years. The review process will take into account changes in military mission requirements and legal mandates and information obtained from monitoring programs and surveys. Revisions will be reviewed for consistency with the military mission, federal and state laws, and the ecosystem management goals and objectives of the INRMP.</p> <p>The revision process will be conducted under the direction of the NASP Complex CO; revisions will require consultation with and approval by the NASP Complex CO, the NASP Complex NRM, the Regional NRM, the USFWS, and the FWC.</p>
Baseline:	Existing INRMP; current surveys.
Monitoring:	NA.
Legal Driver(s):	Sikes Act Improvement Act of 1997, 16 U.S.C. 670 et seq.; Executive Order 11990 – <i>Protection of Wetlands</i> ; Executive Order 13112 – <i>Invasive Species</i> ; Executive Order 12962 – <i>Recreational Fisheries</i> ; Section 404 of the Federal Water Pollution Control Act (Clean Water Act), as amended, 33 U.S.C. 1251; DODINST 7310.5; OPNAVINST 5090.1D, 12-3.4; USMC-MCO P5090.2.
Accomplishments:	Over the past five years, NAS Pensacola has completed three minor INRMP revisions and one comprehensive update (2013) as a direct result of annual partnering and INRMP annual reviews by the stakeholders. As a result, species lists, past project summaries, and INRMP structure and organization were all updated. In addition, information regarding climate change was incorporated into the INRMP. As a result, the NAS Pensacola INRMP is updated with current data and information, project lists, and signatures by the stakeholders. The INRMP process achieved by this project has resulted in a document that is mutually agreed upon by the stakeholders with a record of proven benefits to rare, threatened, and endangered species, as well as all other aspects of natural resources.

Project No. 3: Invasive Species Control

Purpose:	To control invasive and exotic plant species at the Complex to acceptable levels to promote native ecosystems. Invasive and exotic plant species identified at the Complex include cogon grass, Japanese climbing fern, tallow tree, mimosa, Chinese privet, and camphor tree.
Goal and Objective:	Goal 1, Objective 1.1, Strategy 1.1.1 – Manage Stormwater Runoff. Goal 1, Objective 1.1, Strategy 1.1.3 – Implement Pest Mgmt Plan. Goal 1, Objective 1.2, Strategy 1.2.1 – Control Invasives. Goal 1, Objective 1.6, Strategy 1.6.1 – Landscape Management. Goal 1, Objective 1.6, Strategy 1.6.2 – Xeriscaping. Goal 1, Objective 1.6, Strategy 1.6.3 – Urban Forestry. Goal 5, Objective 5.1, Strategy 5.1.1 – Adequate Staff. Goal 5, Objective 5.3, Strategy 5.3.1 – Ecosystem Training.
Location:	Complex-wide.
Description:	Control invasive species to protect and enhance native ecosystems. Invasive plants identified at the installation include cogon grass, Japanese climbing fern, Chinese tallow tree, mimosa, Chinese privet, and the camphor tree. The Complex will survey the extent of invasive and exotic species on all properties and develop an invasive and exotic species control plan that will identify and describe invasive and exotic species, and schedule removal. This plan will be implemented to control invasive and exotic species to acceptable levels. The Complex will also consider the applicability of burning or hand clearing in combination with pesticides, as well as non-pesticide removal methods alone.
Baseline:	Baseline will be established during the survey phase of the project.
Monitoring:	NASP Complex will inventory previously treated areas annually to determine the effectiveness of the implemented removal methods.
Legal Drivers:	Executive Order (EO) 13112 – <i>Invasive Species</i> ; Federal Noxious Weed Act of 1974, 7 U. S. C. 2801, Sec. 2814 (a); DOD Pest Management Program; Endangered Species Act, 16 U.S.C. 1531 et seq.; Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. 136; OPNAVINST 5090.1D, 12-3.10.
Accomplishments:	NAS Pensacola has completed 85 acres of invasive species control and re-treatment over the past five years, including cogon grass, Chinese tallow trees, and privet. This project also supports training and certification of installation natural resources personnel as well as their participation in the Six Rivers Cooperative Invasive Species Management Area (CISMA).

Project No. 4: Erosion Control for Coastal Zone Protection

Purpose:	Renourish the beaches and shorelines as needed along the 17 miles of coastline.
Goal and Objective:	Goal 1, Objective 1.1, Strategy 1.1.1 – Manage Stormwater Runoff. Goal 1, Objective 1.1, Strategy 1.1.2 – Control Soil Erosion. Goal 1, Objective 1.1, Strategy 1.1.4 – Assess Wetlands. Goal 1, Objective 1.5, Strategy 1.5.1 – Protect Shorelines. Goal 3, Objective 3.1, Strategy 3.1.1 – Improve Habitat. Goal 3, Objective 3.2, Strategy 3.2.2 – Protect Habitat.
Location:	NASP and Blue Angel Recreation Park (BARP), Bronson Field.
Description:	<p>This project consists of annual coastal zone restoration (addition of sand to beaches to replace sand that has eroded away) as well as habitat and water quality improvement. Beach dune habitat that has been degraded by previous military activities in specific Special Interest Areas (Protected Area P-1 and P-2) as identified in the INRMP will be restored. This project is intended to decrease shoreline pollution, erosion, and improve natural ecosystems and habitat. Although small in scope and costs, the project will develop with time as the dune and vegetation builds, anchoring specific critical areas.</p> <p>This project is not in any way connected to repair of beaches and shorelines damaged by the BP Deepwater Horizon Oil Spill and Cleanup Response.</p>
Baseline:	None.
Monitoring:	There are no requirements directly associated with this project; however, the Installation will generally monitor the condition of the beaches and the need for renourishment.
Legal Drivers:	Endangered Species Act, 16 U.S.C. 1531 et seq.; Soil and Water Conservation Act, 16 U.S.C., Section 590 (a); OPNAVINST 5090.1D, 12-3.8.
Accomplishments:	Since 2008, NAS Pensacola has completed the re-construction of five miles of coastal dune systems damaged by tropical storm activity including three Category 3 hurricanes in 2004 and 2005. The accomplishments resulted in re-forming sand berms and dunes, cleaning out outfall ditches, applying aquatic herbicides to ditch interior sections, and constructing six dune walkovers for recreational and operational access to beachfronts. As a result, shorebird habitat and beach dune vegetation habitats were improved. Following a three year duration of this work on one particular dedicated beachfront, the first sea turtle nest on base in 25 years occurred (see Project #1). This project has also been one of the funding sources for the Installation's Student Conservation Association (SCA) intern program. Interns from the SCA contribute an average of 1200 hours annually supporting the Installation Conservation Program.

Project No. 5: Establish Shoreline Vegetation

Purpose:	To restore coastal ecosystems in areas where erosion has occurred or vegetation has been removed, further enhancing future shoreline stability.
Goal and Objective:	Goal 1, Objective 1.1, Strategy 1.1.2 – Prevent Erosion. Goal 1, Objective 1.2, Strategy 1.2.1 – Control Invasives. Goal 1, Objective 1.3, Strategy 1.3.1 – Floodplain Attenuation. Goal 1, Objective 1.5, Strategy 1.5.1 – Protect Shorelines. Goal 3, Objective 3.1, Strategy 3.1.1 – Improve Habitat. Goal 3, Objective 3.2, Strategy 3.2.2 – Protect Habitat. Goal 5, Objective 5.3, Strategy 5.3.2 – Citizen Participation.
Location:	NAS Pensacola and Blue Angel Recreation Park at Bronson Field.
Description:	This project will establish and maintain sea oats and other native coastal vegetation to foster the restoration of coastal ecosystems and habitats and reinforce shorelines against erosion and pollution. This project will benefit wildlife species through habitat enhancement, and it will decrease the need for future beach renourishment. This project will also enhance habitat for listed species adapted to beach/dune environments.
Baseline:	None.
Monitoring:	Monitoring will be performed annually and after every major storm event. Monitoring will include measures for aerial expansion of plantings.
Legal Driver(s):	Natural Resources Management Program, 32 CFR 190.; Executive Order 11990 (Wetlands Protection); Clean Water Act; Fish and Wildlife Conservation Act; 16 U.S.C. 2901 et seq.; Endangered Species Act, 16 U.S.C. 1531 et seq.; Soil and Water Conservation Act, 16 U.S.C., Section 590 (a); OPNAVINST 5090.1D, 12-3.8.
Accomplishments:	This project has occurred in conjunction with Project #4 and has resulted in the establishment of over 80,000 plantings of strategically designed and placed shoreline plants on dune restoration areas that support a number of shoreline dependent species, both listed and non-listed. The resulting vegetated dunes grow and enlarge and assist in deterring inland damage during heightened tropical storm activity. This project has also been one of the funding sources for the Installation's Student Conservation Association (SCA) intern program. Interns from the SCA contribute an average of 1200 hours annually supporting the Installation Conservation Program.

Project No. 6: Natural Resources GIS and Mapping

Purpose:	Obtain capabilities for color printing, digital photography, GPS mapping, and GPS/GIS mapping for monitoring projects. This also includes other recently-developed tools that would assist in natural resources management.
Goal and Objective:	Goal 3, Objective 3.2, Strategy 3.2.2 – Protect Habitat. Goal 5, Objective 5.1, Strategy 5.1.1 – Adequate Staff. Goal 5, Objective 5.1, Strategy 5.1.2 – Adequate Training. Goal 5, Objective 5.1, Strategy 5.2.3 – Use of GIS for Management.
Location:	Complex-wide.
Baseline:	None.
Description:	<p>Mapping is necessary for implementation of and updates to the INRMP, and proper natural resources management and decision making. Data delivery of mapping in GIS format allows integration of natural resources information with mission objectives, other base activities, web-based information data and links, and other technology. This project is interlinked with other INRMP projects and is a cost efficient method to bring all natural resources programs together to promote proper management as required.</p> <p>Technological improvements will allow the Natural Resources Program to complete monitoring of all projects, produce monitoring reports and public relations products, compete for Navy and DOD awards programs, and prepare grant applications for special programs and projects.</p> <p>The advancement and integration of GIS into all aspects of planning at the NASP Complex would reduce the expected work load for INRMP implementation.</p>
Monitoring:	None.
Legal Driver(s):	Sikes Act Improvement Act of 1997, 16 U.S.C. 670 (a) et seq.; Endangered Species Act of 1973 (ESA) as amended, 16 U.S.C. Section 1531 et. seq.; Section 404 of the Federal Water Pollution Control Act (CWA), as amended, 33 U.S.C. 1251 et. seq.; Executive Order 11988 – Floodplain Management; Executive Order 12962 – Recreational Fisheries, Executive Order 11990 – Wetlands Protection; Executive Order 13112 – Invasive Species; Executive Order 13089 – Coral Reef Protection; reauthorized Magnuson-Stevens Fishery Conservation Act; OPNAVINST 5090.1D, 12-3.
Accomplishments:	This project has resulted in the transition of natural resources data and maps from local historic GIS or other databases to the Navy's GRX system. As a result, natural resources data is accessible to other Installation managers and departments including Environmental, Engineering, Facilities, and Utilities. Specifically, in 2014, all gopher tortoise and forestry data and GIS mapping dating back to 1988 is being consolidated and updated.

Project No. 7: Gopher Tortoise Conservation

Purpose:	To monitor the status and population of gopher tortoises present on the NASP Complex.
Goal and Objective:	Goal 1, Objective 1.4, Strategy 1.4.1 – Mitigate Land Disturbance. Goal 2, Objective 2.2, Strategy 2.2.1 – Manage Forest Ecosystems. Goal 3, Objective 3.1, Strategy 3.1.1 – Burn and Thin Forests. Goal 3, Objective 3.1, Strategy 3.1.2 – Biological Monitoring. Goal 3, Objective 3.2, Strategy 3.2.2 – Enhance Habitat for Species. Goal 3, Objective 3.3, Strategy 3.3.1 – Monitor Health of Fauna. Goal 4, Objective 4.1, Strategy 4.1.2 – Interpretive Outreach. Goal 5, Objective 5.1, Strategy 5.1.2 – Staff Training. Goal 5, Objective 5.2, Strategy 5.2.4 – Honor Agreements (CCA).
Location:	Complex-wide.
Description:	<p>This project is for the purpose of the Gopher Tortoise Candidate Conservation Agreement (CCA) compliance that includes gopher tortoise monitoring and protection from predation. Specific needs are burrow camera monitoring to establish gopher tortoise population numbers and reproductive rates so trend analysis and movement patterns can be assessed. All data deliverables will include GIS data in a compatible format.</p> <p>Goals and objectives of the CCA include range-wide conservation and management and cooperation and collaboration to promote the success of the species. Navy-specific requirements include annual management to protect, conserve, and promote the gopher tortoise. Annual CCA reporting requires verification of the Navy's contribution to the improvement of the gopher tortoise, species and habitat, with respect to the five listing factors found in the ESA.</p>
Baseline:	Existing, most recent surveys.
Monitoring:	Annual monitoring will be performed through contract with local environmental companies or individuals, and in combination with Natural Resources staff and Student Conservation Association volunteers or special interest group volunteers (if available).
Legal Driver(s):	Natural Resources Management Program, 32 CFR 190.; Endangered Species Act, 16 U.S.C. 1535 (g) (1); Sikes Act Improvement Act of 1997, 16 USC 670 (a)-(o); Marine Mammal Protection Act of 1972, 16 USC 1361-1407; Fish and Wildlife Conservation Act, 16 U.S.C. 2901; OPNAVINST 5090.1D, 12-3.5.
Accomplishments:	Gopher tortoise surveys have been conducted on NAS Pensacola at least every two years since 2004. Survey reports were prepared by Student Conservation Association (SCA) participants in 2004 ¹ ,

¹ Davis, B, 2004, Gopher Tortoise Survey, NAS Pensacola, FL, Student Conservation Association, NAS Pensacola Natural Resources Division, 9 pp.

2008², 2011³, and 2012⁴. These surveys focused on NAS Pensacola, with the total number of burrows observed on NAS Pensacola ranging from 124 burrows (41% active) in 2004 to 353 burrows (63% active) in 2012. It is noted, however, that sample effort and area surveyed has increased from 2004 to 2012. The greatest numbers of gopher tortoise burrows have consistently been observed in the clear zone and forests on the southwest portion of Sherman Airfield, particularly along the dirt road connecting the southernmost tip of Runway 01 to Fuel Farm Road. The small forested area directly west of the clear zone was cleared, leaving moderate ground cover and sparse live oaks, and observations suggest recent inhabitation by gopher tortoises. Gopher tortoises have also been observed on the west of the airfield at Bronson Field^{2,5} and four burrows were observed at Saufley Field in 2010⁵.

² Hoggard, B, C.M. Snyder, and M. Tsupros, 2008, Gopher Tortoise (*Gopherus polyphemus*) Survey, Naval Air Station Pensacola and Bronson Field, Escambia County, Florida, Student Conservation Association, NAS Pensacola Natural Resources Division, 19 pp.

³ Belcher, S., C. Schauer, and R. Sheahan, 2011, Gopher Tortoise Survey (*Gopherus polyphemus*), Naval Air Station Pensacola, Escambia County, Florida, Student Conservation Association, NAS Pensacola Natural Resources Division, 15 pp.

⁴ Busam, J, 2012, Gopher Tortoise Survey for Naval Air Station Pensacola, Escambia County, Florida, Student Conservation Association, NAS Pensacola Natural Resources Division, 42 pp.

⁵ Florida Natural Areas Inventory (FNAI), 2010, Rare plant and animal inventory of Naval Air Station Pensacola, Bronson Field, Saufley Field, and Corry Station, Final Report, Tallahassee, Florida.

Project No. 8: Fishery Conservation and Management

Purpose:	To maintain and improve existing recreational freshwater fishing opportunities at NASP, Bronson Field, and Saufley Field for active duty and reserve military personnel, their dependents and accompanied guests; federal civilian employees, their dependents and accompanied guests; and military retirees.
Goal and Objective:	Goal 1, Objective 1.1, Strategy 1.1.2 – Prevent Soil Erosion. Goal 1, Objective 1.5, Strategy 1.5.1 – Protect Shorelines. Goal 4, Objective 4.1, Strategy 4.1.1 – Track Recreational Use. Goal 4, Objective 4.1, Strategy 4.1.2 – Recreational Facilities. Goal 4, Objective 4.1, Strategy 4.1.3 – Improve Rec. Opportunities. Goal 5, Objective 5.3, Strategy 5.3.2 – Citizen Participation.
Location:	NASP (Lake Frederick), Bronson Field (the beaver pond), and Saufley Field (Eightmile Creek) as well as shoreline salt water areas at Blue Angel Recreation Park (Bronson Field) and along the shoreline of NASP.
Description:	This project has four components: 1. Ensure the availability of freshwater fish (such as bass, bluegill, sunfish, and catfish) through stocking, feeding, and fertilization programs in fish ponds and freshwater streams; 2. Perform minor repairs on existing fishing facilities, such as boardwalks and piers; 3. Coordinate fishing regulations with security personnel; and 4. Revise fishing instructions as needed.
Baseline:	None.
Monitoring:	There are no major requirements directly associated with this project, but fisheries management needs will be determined on an annual basis. Also, the Complex will closely monitor the provision of outdoor recreational opportunities and the carrying capacity of the resources being utilized.
Legal Driver(s):	Executive Order (EO) 12962 – <i>Recreational Fisheries</i> .; Sikes Act Improvement Act of 1997, 16 U.S.C. 670 (a) et seq.; Recreation Coordination and Outdoor Recreation - Federal/State Programs Act, U.S.C. 4601; Military Construction Authorization Act – Military Reservations and Facilities- Hunting, Fishing, and Trapping, 10 U.S.C. 2671; Americans with Disabilities Act of 1990, Public Law 101-336; OPNAVINST 5090.1D, 12-3.5.
Accomplishments:	This project has only been funded for two out of ten years. In 2013, funding was used to restore the shoreline along Lake Frederic, a public use freshwater fishery on NAS Pensacola. Encroaching vegetation along the shoreline was mechanically removed, immersed cattails were controlled with an aquatic herbicide, and a rock area was established for canoe and kayak access to the fishery.

Project No. 9: Neotropical Migratory Bird Survey

Purpose:	Complete a migratory bird inventory during the spring and/or fall migration to determine migratory bird species on the Complex and potential migratory bird management practices.
Goal and Objective:	Goal 3, Objective 3.2, Strategy 3.2.1 – Survey for Birds. Goal 3, Objective 3.3, Strategy 3.3.1 – Monitor Health of Fauna. Goal 3, Objective 3.3, Strategy 3.3.2 – Monitor BASH Plan. Goal 5, Objective 5.1, Strategy 5.1.2 – Adequate Training. Goal 5, Objective 5.3, Strategy 5.3.1 – Ecosystem Education. Goal 5, Objective 5.3, Strategy 5.3.2 – Citizen Participation.
Location:	Complex-wide.
Description:	An annual fall and/or spring neotropical migratory bird inventory will be completed on the NASP Complex. This project will include making results of the inventory a GIS data layer. Future surveys should also direct effort to locate any nesting areas on NASP Complex used by State-listed species such as the American oyster catcher, black skimmer, least tern, and snowy plover.
Baseline:	Existing, most recent surveys, summarized in Table 2-6.
Monitoring:	Seasonally, approximately every five years.
Legal Driver(s):	Natural Resources Management Program, 32 CFR 190.; Fish and Wildlife Conservation Act, 16 U.S.C. Sec. 2912; Migratory Bird Treaty Act, 16 U.S.C. 703; Endangered Species Act, 16 U.S.C. 1531 et seq.; DOD 4715, Sikes Act Improvement Act of 1997, 16 USC 670 (a)-(o); OPNAVINST 5090.1D, 12-3.5 (b)(1).
Accomplishments:	Inventories of migratory birds on the NASP Complex was completed in 2014 ⁶ and 2016 ⁷ . The inventories included special effort to assess the presence of rare, threatened, and endangered bird species. Based on results from systematic point count surveys, a total of 135 species were observed across all properties on NAS Pensacola. Four state-listed Threatened Species and two Species of Special Concern were observed on the various properties. No Federally-listed rare, threatened, or endangered bird species were observed. The data derived from these surveys will be used to help avoid, minimize, and mitigate impacts to migratory birds resulting from Navy action on the Complex. The results will also be used to develop and implement BASH plans.

⁶ Gulf South Research Corporation (GSRC), 2015, Inventory of Neotropical Avian Species, Naval Air Station Pensacola, Pensacola, Florida, Final Report, Baton Rouge, Louisiana.

⁷ GSRC, 2017, Biological Inventory Update Naval Air Station Pensacola Complex Pensacola, Florida, Prepared for NAVFAC Southeast, Prepared by GSRC, Baton Rouge, Louisiana.

Project No. 10: Update Biological Inventory

Purpose:	To monitor the status and population of rare, threatened and endangered plant and animal species present on the Complex.
Goal and Objective:	Goal 3, Objective 3.1, Strategy 3.1.2 – Monitoring Program. Goal 3, Objective 3.2, Strategy 3.2.2 – Protect Habitat for Listed Species. Goal 3, Objective 3.3, Strategy 3.3.1 – Monitor Health of Fauna. Goal 5, Objective 5.1, Strategy 5.1.2 – Adequate Training. Goal 5, Objective 5.3, Strategy 5.3.1 – Ecosystem Education.
Location:	Complex-wide.
Description:	This project provides a comprehensive biological inventory/survey of NAS Pensacola and its associated OLF's. The data provided in this survey will provide data that can be used to support NR management and operational decisions. Surveys and inventories will assess the status, numbers, and distribution of species throughout the Complex. Monitoring projects will be completed in accordance with the cooperative agreement between the DoN, FWC, and USFWS. The overall purpose of this project is to ensure that appropriate management practices are established, because the success of these species is largely dependent upon human activities. Future task orders under this project should direct effort to survey for State-listed species such as the Florida pine snake and Southeastern American kestrel.
Baseline:	Existing, most recent surveys, summarized in Tables 2-4 and 2-5.
Monitoring:	During appropriate seasons approximately every five years.
Legal Driver(s):	Natural Resources Management Program, 32 CFR 190.; Endangered Species Act, 16 U.S.C. 1535 (g) (1); Sikes Act Improvement Act of 1997, 16 USC 670 (a)-(o); Marine Mammal Protection Act of 1972, 16 USC 1361-1407; Fish and Wildlife Conservation Act, 16 U.S.C. 2901; OPNAVINST 5090.1D, 12-3.7.
Accomplishments:	NAS Pensacola executed surveys under this project in 1988 ^{8,9} , 1996 ^{10,11,12} , 2006 ¹³ , and 2009 ¹⁴ , and 2016 ¹⁵ . The results of these

⁸ FNAI, 1988a, Report to Florida Game and Freshwater Fish Commission on fall-blooming rare and endangered plant species on Naval Air Station Pensacola and Outlying Field Bronson, Tallahassee, Florida.

⁹ FNAI, 1988b, Survey of Pensacola Naval Air Station and Outlying Field Bronson for rare and endangered plants, Final Report, Tallahassee, Florida.

¹⁰ FNAI, 1997a, Rare Plant, Rare Vertebrate, and Natural Community Survey of Naval Air Station Pensacola and Outlying Landing Field Bronson: Final Report, Tallahassee, Florida.

¹¹ FNAI, 1997b, Rare Plant, Rare Vertebrate, and Natural Community Survey of Naval Technical Training Center Corry Station and Blue Angel Recreation Park: Final Report, Tallahassee, Florida.

¹² FNAI, 1997c, Rare Plant, Rare Vertebrate, and Natural Community Survey of Naval Education and Training Professional Development and Technology Center Saufley Field: Final Report, Tallahassee, Florida.

¹³ FNAI, 2007, Survey of rare plants, natural communities, and gopher tortoises at NAS Pensacola, Bronson Outlying Landing Field, NOLF Saufley Field, Lexington Terrace Housing, and Corry Station, Final Report, Tallahassee, Florida.

¹⁴ FNAI, 2010, Rare plant and animal inventory of Naval Air Station Pensacola, Bronson Field, Saufley Field, and Corry Station, Final Report, Tallahassee, Florida.

surveys are discussed throughout Section 2 of this INRMP and are also summarized in Tables 2-4 and 2-5 of that section.

¹⁵ GSRC, 2017, Biological Inventory Update Naval Air Station Pensacola Complex Pensacola, Florida, Prepared for NAVFAC Southeast, Prepared by GSRC, Baton Rouge, Louisiana.

Project No. 11:

Forest Administration

Purpose:	Manage FMIS database and forestry GIS program, update 10-year forestry plan as needed; and determine annual increment.
Goal and Objective:	Goal 2, Objective 2.1, Strategy 2.1.1 – Use FMP to Manage Forests. Goal 2, Objective 2.1, Strategy 2.1.2 – Train and Certify Foresters. Goal 2, Objective 2.1, Strategy 2.1.3 – Promote Pines & Hardwoods. Goal 2, Objective 2.2, Strategy 2.2.1 – Manage Forest Ecosystems. Goal 2, Objective 2.3, Strategy 2.3.1 – Protect Forest Watersheds. Goal 5, Objective 5.2, Strategy 5.2.3 – Maintain GIS Maps of NR.
Location:	Complex-wide.
Description:	This project includes various duties such as: <ul style="list-style-type: none">▪ Conducting timber inventories,▪ Revising forest stand maps, and▪ Updating FMIS database.
Baseline:	None.
Monitoring:	None.
Legal Driver(s):	Natural Resources Management Program, 32 CFR 190.; Sikes Act Improvement Act, 16 U.S.C. 670 (a) et seq.; OPNAVINST 5090.1D, 12-3.8(j).
Accomplishments:	This project is funded entirely by forestry reimbursable funding from the DOD and Navy Forestry accounts. Labor and project support is funded at NAS Pensacola but also is used to manage the forestry program at NAS Whiting Field. Labor is divided between two staff positions at NAS Pensacola: 40% funding for one forester and 25% for a natural resources manager for forestry duties for a total forestry labor funding of 65%. The remainder funding is provided by Navy Environmental funds. Forestry funds also cover equipment and vehicle costs for forest percentage use of vehicles, limited travel and training, forestry supplies, and fuel. Forest Reserve Account funds (separate and additional funds) also provide for requirements both NAS Pensacola and NAS Whiting Field. This project allows for forest management of 5,000 acres at 19 separate locations in five counties of two states for both NAS Pensacola and NAS Whiting Field. Forestry annual increments (annual budget and work plans) are prepared, management plans and forest inventories are updated, GIS mapping is accomplished, and management actions with regard to listed species, military missions, and community relations are also managed on a daily basis.

Project No. 12: Forest Product Sales

Purpose:	Properly manage forest resources by removing low quality trees, improving ecosystem health, lowering forest stand density, and producing periodic revenue.
Goal and Objective:	Goal 1, Objective 1.4, Strategy 1.4.1 – Mitigate Land Disturbance. Goal 2, Objective 2.1, Strategy 2.1.1 – Use FMP to Manage Forests. Goal 2, Objective 2.1, Strategy 2.1.2 – Train and Certify Foresters. Goal 2, Objective 2.1, Strategy 2.1.3 – Promote Pines & Hardwoods. Goal 2, Objective 2.2, Strategy 2.2.1 – Manage Forest Ecosystems.
Location:	Installation-wide.
Description:	This project involves the periodic sale of forest products including timber and pine straw. Annual salvage contract is available for timber removal from construction sites and/or following natural events such as fire, insect or disease infestations, hurricanes, tornadoes, or other natural disasters. Thinning and pine straw sales will occur in three years of the 10-year plan. Estimated income from forest products is approximately \$2,000 for salvage and \$80,000-\$120,000 for regularly scheduled sales.
Baseline:	The Installation, in coordination with EFD South, will update the FMIS to serve as the baseline for all forestry work.
Monitoring:	Annual monitoring for update of forestry plan.
Legal Driver(s):	Natural Resources Management Program, 32 CFR 190.; Sikes Act Improvement Act, 16 U.S.C. 670 (a)-(o); Military Construction Authorization Act – Sale of Certain Interests in lands, Logs, 10 U.S.C. 2665; Forest Resources Conservation and Shortage Relief Act, 16 U.S.C. 620; OPNAVINST 5090.1D, 12-3.8(j).
Accomplishments:	This project is funded entirely by forestry reimbursable funding from the DOD and Navy Forestry accounts. The objective of timber sales is to properly manage commercial forests for sustained yield of forest benefits including the protection and management of habitat for listed species. In addition, the DOD and Navy Forestry accounts depend on the income from timber sales for solvency. Timber sales are periodic at NAS Pensacola and generally occur every 2-3 years. Hurricane Ivan in 2004 damaged over \$2 million of standing commercial timber at NAS Pensacola and NAS Whiting Field and only \$115,000 value was recovered through salvage operations. In 2008, NAS Pensacola and NAS Whiting Field had their first timber sale since the 2004 hurricane salvage harvesting, and both bases are back on track for periodic timber sales. In the past two years, timber sales at both bases managed by this project have yielded \$117,000 in timber income while contributing to the enhancement of listed species habitat through timber thinnings to control forest cover and stand density.

Project No. 13:

Timber Stand Improvement (Herbicide Application and Fertilization)

Purpose:	Herbicide application and reforestation as a result of hurricanes or unplanned sales.
Goal and Objective:	Goal 2, Objective 2.1, Strategy 2.1.1 – Use FMP to Manage Forests. Goal 2, Objective 2.1, Strategy 2.1.2 – Train and Certify Foresters. Goal 2, Objective 2.1, Strategy 2.1.3 – Promote Pines & Hardwoods. Goal 2, Objective 2.2, Strategy 2.2.1 – Manage Forest Ecosystems. Goal 2, Objective 2.3, Strategy 2.3.1 – Protect Forest Watersheds.
Location:	NASP, Corry Station, and Saufley Field.
Description:	<p>For the purposes of this plan, timber stand improvement (TSI) activities include herbicide application and mechanical treatment to control understory vegetation to improve site quality (see Section 5.2.1). Timber harvesting, Gyrotrac use and prescribed burning may also be considered TSI activities and are addressed in Projects 9 and 12. However, this project is primarily geared toward the use of herbicides relative to stand management.</p> <p>Herbicide applications are scheduled to release young pine stands from competing vegetation and to reduce fuel loads in stands where burning cannot be accomplished. The use of herbicides on forest stands is an infrequent activity and does not contribute significantly to pesticide use on the Installation.</p> <p>Forest fertilization is used to improve timber production rates on average to poor quality sites. Combined with herbicide applications, prescribed burning, and thinning, fertilization will promote the more rapid development of the forest stand so that other ecosystem values can be realized. TSI activities will occur in Years 2007, 2008, 2013, and 2014.</p>
Baseline:	The Installation, in coordination with EFD South, will update the FMIS to serve as the baseline for all forestry work.
Monitoring:	Annual monitoring will occur to ensure effectiveness of herbicide and fertilizer applications and to determine needs for additional unplanned work.
Legal Driver(s):	Natural Resources Management Program, 32 CFR 190.; Sikes Act Improvement Act of 1997, 16 U.S.C. 670 (a)-(o); Environmental Natural Resources Protection Manual, 11015.2; Federal Noxious Weed Act of 1974, 7 U.S.C. 2801; Executive Order 13112 – <i>Invasive Species</i> ; DODINST 7310.5; OPNAVINST 5090.1D, 12-3.8(j).
Accomplishments:	This project has not been funded in recent years. Future plans have aligned this project with the removal of competing vegetation at NOLF Harold for a longleaf pine restoration project.

Project No. 14:

Construction and Maintenance of Forest Roads

Purpose: Maintain forest roads to provide access for management activities.

Goal and Objective: Goal 1, Objective 1.1, Strategy 1.1.5 – Use Forest Mgmt BMPs.
Goal 1, Objective 1.3, Strategy 1.3.1 – Floodplain Attenuation.
Goal 2, Objective 2.1, Strategy 2.1.1 – Use FMP to Manage Forests.
Goal 2, Objective 2.1, Strategy 2.1.2 – Train and Certify Foresters.
Goal 2, Objective 2.1, Strategy 2.1.3 – Promote Pines & Hardwoods.
Goal 2, Objective 2.2, Strategy 2.2.1 – Manage Forest Ecosystems.
Goal 2, Objective 2.3, Strategy 2.3.1 – Protect Forest Watersheds.

Location: Complex-wide.

Description: Maintaining forest roads is necessary for access to conduct INRMP project work. Forest roads are also used by Installation Security and for mission-related activities such as emergency operations. Forest roads are often used as fire breaks and forests stand boundaries. Maintenance includes resurfacing roads with additional crushed rocks or other material.

Baseline: Existing forest roads.

Monitoring: None.

Legal Driver(s): OPNAVINST 5090.1D, 12-3.8(j)

Accomplishments: This project has not been funded in recent years. Installation forces are providing forest road operations until specific funding can be obtained.

Project No. 15: Fire Management

Purpose:	Prescribed fire is the primary management tool for the majority of INRMP goals and objectives. Many forest stands require prescribed burns to promote healthier, more sustainable forest resources, to reduce fuel loads, and to ensure the continuation of fire-dependent plant and wildlife species. In addition, wildland fires must be controlled as needed.
Goal and Objective:	Goal 1, Objective 1.1, Strategy 1.1.5 – Use Forest Mgmt BMPs. Goal 1, Objective 1.4, Strategy 1.4.1 – Mitigate Land Disturbance. Goal 2, Objective 2.1, Strategy 2.1.1 – Use FMP to Manage Forests. Goal 2, Objective 2.1, Strategy 2.1.2 – Train and Certify Foresters. Goal 2, Objective 2.1, Strategy 2.1.3 – Promote Pines & Hardwoods. Goal 2, Objective 2.2, Strategy 2.2.1 – Manage Forest Ecosystems. Goal 2, Objective 2.3, Strategy 2.3.1 – Protect Forest Watersheds. Goal 3, Objective 3.1, Strategy 3.1.1 – Protect Habitat.
Location:	Prescribed burns will be completed every three years in selected stands (see Tables B-3, B-4, B-5 and B-6). Urban forest prescription precautions will be in effect when burning close to base housing, administrative areas, and training areas. In addition, wildland fire control will be administered where needed.
Description:	Fire Management includes prescribed burning and wildland fire control. The Complex will burn forest stands on a three-year rotation or at the discretion of the Natural Resources Manager. On pine sites, burns will be hot enough to kill invasive hardwoods. Burns will be scheduled in the winter to reduce fuel loads to allow growing season burns in subsequent years. Prescribed burns will be scheduled in wetlands for habitat management. Dormant season burns can be alternated with growing season burns as long as fuel loading is reduced first. Wildland fire control will be administered as needed. Existing barriers such as roads and wetlands will be used as fire breaks where feasible, but firebreaks must be established and maintained where existing barriers are not present. Prescribed burning is dependent of weather conditions and mission-related activities. Equipment necessary to conduct fire management includes: Gyrotrac, crawler tractor; transport truck; all terrain vehicles (ATV's); and other fire ignition and suppression equipment. This project includes costs associated with new equipment, PPE and maintenance of existing equipment needed for fire management. Training necessary for fire management is included in Project 24.
Baseline:	The Installation, in coordination with EFD South, will update the FMIS to serve as the baseline for all forestry work.
Monitoring:	Annual review of Forest Management to determine necessary program changes.
Legal Driver(s):	Natural Resources Management Program, 32 CFR 190.; Endangered Species Act, 16 U.S.C. 1531 et seq.; Federal Noxious Weed Act of 1974, 7 U.S.C. 2801; Executive Order 13112 – <i>Invasive</i>

Species; Sikes Act Improvement Act of 1997, 16 U.S.C., 670 (a)-(o); DODINST 7310.5; OPNAVINST 5090.1D, 12-3.8(j).

Accomplishments:

This project is funded entirely by forestry reimbursable funding from the DOD and Navy Forestry accounts. In addition, Forestry Reserve Funding has annually supported this project. The objective this project is to properly manage commercial forests for sustained yield of forest benefits including the protection and management of habitat for listed species. Prescribed Fire is the essential element of not only forest management on Navy lands in the Pensacola-Milton Navy Complex, but is also the primary habitat management tool for many listed species including the gopher tortoise. The Navy's Gyrotrac brush cutting machine is also part of this project along with a forestry bulldozer and other fire management equipment. This project works in conjunction with funding from other sources appropriated funding sources including Projects 1, 3, and 7 in this INRMP.

Project No. 16: Marine Species Monitoring and Protection

Purpose:	To monitor the presence, abundance, and seasonality of rare, threatened and endangered marine animal species that potentially occur adjacent to NAS Pensacola, and to protect them from injury.
Goal and Objective:	Goal 3, Objective 3.1, Strategy 3.1.2 – Monitoring Program. Goal 3, Objective 3.2, Strategy 3.2.2 – Protect Habitat for Listed Species. Goal 3, Objective 3.3, Strategy 3.3.1 – Monitor Health of Fauna. Goal 5, Objective 5.1, Strategy 5.1.2 – Adequate Training. Goal 5, Objective 5.3, Strategy 5.3.1 – Ecosystem Education.
Location:	Marine and riverine habitats in direct proximity to NAS Pensacola.
Description:	This project provides for the assessment of rare marine species occurrence, abundance, and seasonality in the waters adjacent to NAS Pensacola. The project also allows for estimates and mitigation of impacts to such species as the result of Navy facilities operations at the installation. The data provided by this project can be used to support NR management and operational decisions. Monitoring projects will be completed in cooperation with, and input from, the NMFS, FWC, and USFWS. The overall purpose of this project is to ensure that appropriate NR management is maintained to mitigate negative impacts to rare and protected marine species that may result from activities at NAS Pensacola.
Baseline:	No Navy baseline, but existing information could be obtained from FWC sea turtle nesting data, ACOE dredging takes, and local Gulf sturgeon, sea turtle, and manatee research.
Monitoring:	During appropriate seasons, approximately every three-to-five years.
Legal Driver(s):	Natural Resources Management Program, 32 CFR 190.; Endangered Species Act, 16 U.S.C. 1535 (g) (1); Sikes Act Improvement Act of 1997, 16 USC 670 (a)-(o); Marine Mammal Protection Act of 1972, 16 USC 1361-1407; Fish and Wildlife Conservation Act, 16 U.S.C. 2901; OPNAVINST 5090.1D, 12-3.7.
Accomplishments:	This project was added to the INRMP in 2018 at the behest of the NMFS. The earliest possible funding is estimated to be in FY 2020.

B

NASP Complex Forest Management Plan

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Table B-1
STAND INFORMATION (FMIS 024), NASP COMPLEX, FLORIDA

Stand No.	Acres	Cover Code	Origin Code	O Year	Trees per Acre	DBH (in)	Height (ft)	Basal Area	S VOL	% S VOL	H VOL	% H VOL	Growth (RPI)	Year
NAS Pensacola														
1	0	99	1	0	0	0	0	0	0	0	0	0	0.00	1993
2	29	84	1	1947	113	9	49	42	766	95	37	0	14.90	1995
3	0	99	1	0	0	0	0	0	0	0	0	0	0.00	1992
4	0	99	1	0	0	0	0	0	0	0	0	0	0.00	1992
5	0	99	1	0	0	0	0	0	0	0	0	0	0.00	1992
6	4	69	1	1965	250	5	30	34	675	0	90	0	10.00	1987
7	5	69	1	1965	350	6	35	68	1,260	0	180	0	10.00	1987
8	22	117	1	1934	173	9	55	46	685	79	187	0	15.30	1987
9	13	69	1	1967	196	7	42	49	677	0	134	0	6.70	1992
10	6	116	2	1962	218	8	55	74	1,491	18	0	0	6.70	1987
11	4	69	1	1973	275	6	36	57	961	0	23	0	10.40	1987
12	8	84	1	1953	369	8	53	69	1,013	38	193	0	6.20	1987
13	30	117	1	1959	321	6	41	66	994	3	121	0	12.40	1987
14	41	115	1	1944	221	9	57	80	1,358	51	222	0	12.20	1987
15	47	84	2	1977	475	6	34	93	1,710	0	0	0	4.50	1995
16	0	120	1	0	0	0	0	0	0	0	0	0	0.00	1993
17	0	99	1	0	0	0	0	0	0	0	0	0	0.00	1992
18	0	120	1	0	0	0	0	0	0	0	0	0	0.00	1993
19	9	119	1	1955	346	7	48	93	1,107	0	450	0	9.80	1987
20	3	72	1	1965	250	4	25	22	0	0	650	0	8.00	1987
21	7	84	2	1987	870	1	1	5	0	0	0	0	0.00	1987

Key at end of table.

Table B-1
STAND INFORMATION (FMIS 024), NASP COMPLEX, FLORIDA

Stand No.	Acres	Cover Code	Origin Code	O Year	Trees per Acre	DBH (in)	Height (ft)	Basal Area	S VOL	% S VOL	H VOL	% H VOL	Growth (RPI)	Year
22	4	84	2	1982	450	3	25	23	0	0	0	0	5.00	1995
23	19	70	1	1958	164	9	44	46	882	20	30	0	9.80	1987
24	5	113	1	1955	265	7	51	71	1,080	0	90	0	11.00	1987
25	0	99	1	1996	0	0	0	0	0	0	0	0	0.00	1997
26	169	84	2	1977	513	6	39	80	1,847	0	0	0	5.00	1995
27	8	84	1	1950	150	8	60	52	1,013	20	0	0	10.00	1987
28	0	99	1	0	0	0	0	0	0	0	0	0	0.00	1992
29	10	84	1	1950	100	9	60	44	630	20	0	0	10.00	1987
30	21	83	1	1958	95	11	60	63	803	60	19	0	9.90	1991
31	47	84	1	1959	268	9	64	118	1,453	40	0	0	17.20	1991
32	24	70	1	1960	84	10	60	46	477	60	15	0	10.00	1991
33	4	84	2	1982	334	3	24	17	0	0	0	0	5.50	1995
34	6	115	1	1955	326	8	53	90	1,312	21	290	0	14.20	1992
35	16	114	1	1988	0	0	0	0	0	0	0	0	0.00	1995
36	8	69	2	1994	900	1	1	1	0	0	0	0	0.00	1994
37	16	69	1	1940	76	11	58	50	759	60	36	0	16.40	1991
38	31	69	1	1936	188	9	58	67	1,093	34	166	0	19.80	1987
39	9	115	1	1975	600	7	35	160	2,700	0	180	0	6.00	1987
40	4	84	1	1949	207	11	81	82	1,650	42	154	0	8.30	1990
41	9	84	1	1959	363	9	63	140	3,151	9	0	0	12.50	1990
42	2	84	2	1987	740	3	28	36	0	0	0	0	4.20	1995
43	9	84	1	1959	340	10	75	185	3,366	60	0	0	14.00	1987

Key at end of table.

Table B-1
STAND INFORMATION (FMIS 024), NASP COMPLEX, FLORIDA

Stand No.	Acres	Cover Code	Origin Code	O Year	Trees per Acre	DBH (in)	Height (ft)	Basal Area	S VOL	% S VOL	H VOL	% H VOL	Growth (RPI)	Year
44	52	104	1	1940	600	7	50	160	450	10	3,150	0	15.00	1987
45	28	116	2	1981	980	3	24	48	0	0	0	0	4.00	1995
46	12	69	1	1957	77	7	38	58	907	1	17	0	12.30	1987
47	24	117	2	1989	900	1	1	0	0	0	0	0	5.00	1990
48	55	84	1	1955	240	8	58	64	1,089	39	91	3	11.90	1987
49	2	84	1	1983	400	2	20	9	0	0	0	0	5.00	1989
50	23	84	1	1963	236	8	59	82	1,628	28	0	0	5.90	1987
51	3	70	1	1975	200	3	15	10	0	0	0	0	3.50	1992
52	33	84	2	1981	533	4	30	47	670	0	0	0	0.00	1993
53	3	69	1	1942	150	8	43	54	915	7	29	0	12.50	1987
54	4	85	1	1952	111	12	60	75	887	89	623	6	8.30	1987
55	5	112	1	1950	20	6	35	39	0	0	1,080	0	12.00	1987
56	28	115	1	1950	192	7	40	41	499	10	164	0	9.20	1987
57	6	112	1	1950	300	6	35	60	270	0	1,620	0	15.00	1987
58	14	84	1	1950	114	9	47	48	511	63	124	0	10.90	1987
59	17	84	1	1952	320	8	55	112	2,698	10	180	0	15.00	1987
60	26	85	1	1925	170	11	70	78	1,286	68	377	0	15.60	1987
61	9	115	1	1927	192	9	69	76	842	46	574	0	13.90	1992
62	36	84	1	1923	81	12	58	49	831	82	144	3	16.20	1987
63	14	115	1	1934	181	9	60	70	808	40	545	0	7.10	1992
64	26	119	1	1931	214	9	55	82	839	35	581	0	9.20	1992
65	14	70	2	1998	800	0	0	0	0	0	0	0	0.00	1998

Key at end of table.

Table B-1
STAND INFORMATION (FMIS 024), NASP COMPLEX, FLORIDA

Stand No.	Acres	Cover Code	Origin Code	O Year	Trees per Acre	DBH (in)	Height (ft)	Basal Area	S VOL	% S VOL	H VOL	% H VOL	Growth (RPI)	Year
66	17	69	1	1952	339	7	46	92	1,376	9	290	0	9.90	1987
67	54	84	2	1981	580	6	31	94	2,088	0	0	0	5.20	1995
68	5	84	2	1987	560	3	21	28	0	0	0	0	4.20	1995
69	5	84	2	1986	460	2	18	10	0	0	0	0	5.10	1995
70	6	101	2	1987	100	1	1	1	0	0	0	0	0.00	1987
71	3	84	2	1987	490	3	22	24	0	0	0	0	4.30	1995
72	19	70	2	1987	460	2	18	10	0	0	0	0	5.30	1995
73	4	84	1	1961	149	10	56	76	1,337	59	147	0	9.40	1987
74	25	103	1	1935	253	8	58	87	450	0	1,120	0	14.00	1995
75	2	84	1	1996	833	1	3	0	0	0	0	0	5.50	1996
76	38	84	1	1928	303	9	62	106	1,845	33	274	0	13.50	1987
77	2	70	1	1913	338	9	62	128	3,034	36	0	0	12.50	1992
78	17	84	2	1987	780	3	22	38	0	0	0	0	4.70	1995
79	18	84	1	1953	114	11	62	70	1,626	80	52	27	10.90	1987
80	6	85	1	1962	91	10	43	42	324	100	424	0	10.50	1987
81	78	84	1	1953	147	10	67	65	1,394	63	28	7	10.60	1987
82	11	83	1	1950	158	10	51	62	1,204	100	0	0	11.20	1987
83	3	118	1	1954	306	9	64	58	970	47	76	0	7.70	1987
84	4	84	1	1957	126	7	66	28	502	20	0	0	6.30	1987
85	7	84	1	1950	63	14	84	67	1,123	90	0	0	18.40	1991
86	10	84	1	1945	102	12	71	80	1,713	85	13	0	12.00	1991
87	4	84	2	1970	716	5	39	112	1,987	0	0	0	6.40	1987

Key at end of table.

Table B-1
STAND INFORMATION (FMIS 024), NASP COMPLEX, FLORIDA

Stand No.	Acres	Cover Code	Origin Code	O Year	Trees per Acre	DBH (in)	Height (ft)	Basal Area	S VOL	% S VOL	H VOL	% H VOL	Growth (RPI)	Year
88	6	84	1	1990	300	1	2	2	0	0	0	0	0.00	1990
89	0	99	1	0	0	0	0	0	0	0	0	0	0.00	1992
90	0	99	1	1997	0	0	0	0	0	0	0	0	0.00	1997
91	60	84	2	1977	277	4	20	24	210	0	0	0	8.50	1987
92	11	84	1	1956	140	11	64	92	516	70	0	0	12.50	1991
93	12	120	1	1953	194	10	67	74	1,008	65	433	0	8.50	1987
94	5	84	2	1977	430	3	29	21	0	0	0	0	4.60	1995
95	22	112	1	1965	340	6	28	67	0	0	1,530	0	14.00	1987
96	9	84	1	1968	285	8	54	99	1,226	0	0	0	4.20	1995
97	5	84	1	1949	115	13	83	106	2,050	85	48	0	12.10	1991
98	30	84	2	1982	567	2	20	12	0	0	0	0	4.80	1995
99	20	83	1	1947	187	10	62	68	1,289	54	113	0	10.80	1987
100	6	112	1	1955	127	6	30	20	0	0	450	0	12.80	1987
OLF Bronson														
1	146	89	1	1897	80	12	46	47	119	76	774	44	17.00	1986
2	0	99	1	0	0	0	0	0	0	0	0	0	0.00	1992
3	0	99	1	0	0	0	0	0	0	0	0	0	0.00	1992
4	2	103	1	1956	75	7	50	20	0	0	404	0	12.20	1986
5	5	83	1	1942	70	14	72	60	1,200	90	38	0	20.20	1993
6	2	113	1	1965	150	8	55	36	373	18	226	0	9.80	1993
7	75	84	2	1982	352	6	35	69	1,108	0	0	0	2.00	1995
8	1	84	2	1967	150	11	65	92	1,247	75	0	0	10.00	1993
9	23	84	2	1989	850	1	6	1	0	0	0	0	5.20	1989

Key at end of table.

Table B-1
STAND INFORMATION (FMIS 024), NASP COMPLEX, FLORIDA

Stand No.	Acres	Cover Code	Origin Code	O Year	Trees per Acre	DBH (in)	Height (ft)	Basal Area	S VOL	% S VOL	H VOL	% H VOL	Growth (RPI)	Year
10	10	84	1	1978	102	3	20	5	0	0	0	0	4.00	1986
11	0	99	1	0	0	0	0	0	0	0	0	0	0.00	1992
12	11	84	2	1971	250	9	65	90	980	40	0	0	8.10	1993
13	40	84	2	1994	700	1	1	1	0	0	0	0	0.00	1994
14	19	84	1	1960	600	7	60	140	2,600	12	0	0	4.00	1992
15	5	112	1	1993	0	0	0	0	0	0	0	0	0.00	1993
16	8	112	1	1966	50	5	30	14	180	0	360	0	12.50	1986
17	29	84	1	1960	125	8	60	48	1,420	10	0	0	6.00	1992
18	21	84	1	1966	90	9	65	56	540	30	0	0	7.00	1993
19	7	112	1	1966	200	5	35	27	0	0	450	0	15.00	1986
20	0	99	1	1997	0	0	0	0	0	0	0	0	0.00	1997
21	5	84	2	1970	334	6	38	50	744	8	0	0	7.70	1992
22	0	99	1	1997	0	0	0	0	0	0	0	0	0.00	1997
23	50	83	1	1961	60	9	60	27	800	10	0	0	6.00	1992
24	13	84	1	1966	55	8	60	20	623	0	0	0	6.00	1992
25	1	84	1	1961	115	8	50	40	619	0	0	0	6.00	1992
26	3	112	1	1966	250	3	25	13	0	0	90	0	9.00	1986
27	7	102	1	1966	131	7	45	35	235	0	236	0	6.00	1986
28	19	84	1	1972	65	9	55	35	360	0	0	0	5.00	1993
29	3	84	2	1989	780	1	8	1	0	0	0	0	6.00	1989
30	4	84	1	1987	300	1	2	0	0	0	0	0	0.00	1992
31	6	112	1	1976	350	3	25	17	0	0	0	0	8.50	1986
32	15	70	2	1989	970	0	0	0	0	0	0	0	0.00	1989

Key at end of table.

Table B-1
STAND INFORMATION (FMIS 024), NASP COMPLEX, FLORIDA

Stand No.	Acres	Cover Code	Origin Code	O Year	Trees per Acre	DBH (in)	Height (ft)	Basal Area	S VOL	% S VOL	H VOL	% H VOL	Growth (RPI)	Year
33	12	84	2	1989	660	1	7	1	0	0	0	0	5.50	1989
34	11	70	2	1989	830	0	0	0	0	0	0	0	0.00	1989
35	12	84	2	1989	810	1	7	1	0	0	0	0	5.60	1989
36	11	84	2	1994	800	1	1	1	0	0	0	0	0.00	1994
37	7	70	2	1998	870	0	0	0	0	0	0	0	0.00	1998
Corry Station														
1	2	84	1	1959	140	11	55	74	1,464	57	190	0	7.00	1987
2	0	99	1	1997	0	0	0	0	0	0	0	0	0.00	1997
3	2	84	2	1966	175	9	61	75	1,940	30	0	0	7.40	1995
4	5	84	2	1972	306	8	60	106	2,754	10	0	0	6.90	1995
5	2	84	2	1971	248	8	65	87	1,872	25	0	0	6.00	1995
6	2	84	2	1971	72	9	61	48	1,107	40	0	0	3.80	1995
7	1	84	2	1966	148	9	62	74	1,864	40	0	0	6.70	1995
8	3	84	2	1967	324	8	62	106	2,480	30	0	0	9.20	1995
9	6	84	2	1967	192	9	67	85	2,285	40	0	0	5.60	1995
10	5	84	2	1967	353	8	61	112	1,788	20	0	0	10.50	1995
11	14	84	2	1967	161	11	66	860	2,173	60	0	0	10.60	1995
12	3	84	2	1965	187	9	66	83	1,756	40	0	0	6.10	1995
13	9	84	2	1971	153	9	62	87	1,927	30	0	0	4.00	1995
14	10	84	2	1972	108	9	56	60	1,261	20	0	0	4.10	1995
15	7	84	2	1966	321	9	65	130	3,200	40	0	0	6.50	1995
16	2	84	2	1966	381	8	65	133	2,915	18	0	0	8.30	1990
17	2	84	2	1967	264	8	55	105	2,430	13	0	0	5.70	1990

Key at end of table.

Table B-1
STAND INFORMATION (FMIS 024), NASP COMPLEX, FLORIDA

Stand No.	Acres	Cover Code	Origin Code	O Year	Trees per Acre	DBH (in)	Height (ft)	Basal Area	S VOL	% S VOL	H VOL	% H VOL	Growth (RPI)	Year
18	2	84	2	1967	273	9	70	124	2,920	40	0	0	6.70	1990
19	2	84	2	1967	201	10	71	109	2,793	80	0	0	7.50	1995
20	7	84	2	1971	140	9	55	62	1,764	40	0	0	4.20	1995
21	5	84	2	1966	241	10	74	120	3,900	80	0	0	6.20	1995
22	11	84	2	1965	145	9	66	74	1,827	40	0	0	7.00	1995
23	1	84	2	1966	222	7	49	59	1,164	0	0	0	8.30	1990
24	1	84	2	1967	151	8	56	49	966	0	0	0	10.00	1990
25	2	84	2	1967	298	8	58	88	2,066	4	0	0	9.20	1990
Saufley Field														
1	57	83	1	1945	146	11	64	69	1,466	73	222	30	8.00	1995
2	5	81	2	1991	680	1	6	4	0	0	0	0	3.00	1994
3	4	83	1	1964	76	8	37	18	363	31	0	0	11.30	1988
4	3	81	2	1991	560	1	5	3	0	0	0	0	4.00	1994
5	43	102	1	1945	115	8	50	40	289	0	433	0	14.50	1986
6	42	70	1	1945	99	11	61	51	1,146	74	21	0	11.50	1986
7	3	112	1	1942	307	7	59	80	1,609	13	0	0	9.10	1986
8	9	70	1	1931	58	12	58	45	1,039	97	0	0	12.90	1986
9	3	102	1	1957	548	8	50	160	90	50	3,075	0	10.00	1988
10	6	113	1	1950	149	9	66	54	995	56	86	0	8.70	1986
11	0	99	1	0	0	0	0	0	0	0	0	0	0.00	2000
12	3	83	2	1974	123	5	30	18	289	0	0	0	7.30	1986
13	1	71	1	1969	20	7	35	6	69	0	36	0	8.10	1988

Key at end of table.

Table B-1
STAND INFORMATION (FMIS 024), NASP COMPLEX, FLORIDA

Stand No.	Acres	Cover Code	Origin Code	O Year	Trees per Acre	DBH (in)	Height (ft)	Basal Area	S VOL	% S VOL	H VOL	% H VOL	Growth (RPI)	Year
14	3	81	2	1991	600	1	6	3	0	0	0	0	3.00	1994
15	0	99	1	0	0	0	0	0	0	0	0	0	0.00	2000
16	0	99	1	0	0	0	0	0	0	0	0	0	0.00	2000
17	5	84	2	1972	417	4	30	36	292	0	0	0	4.80	1989
18	0	99	1	0	0	0	0	0	0	0	0	0	0.00	2000
19	2	114	1	1959	171	12	58	64	646	100	652	29	9.80	1986
20	2	83	2	1950	369	9	69	150	3,924	34	58	0	8.50	1986
21	0	99	1	0	0	0	0	0	0	0	0	0	0.00	2000
Total	2,487	--	--	--	--	--	--	--	--	--	--	--	--	--

Key:

Cover Codes:

69 = sand pine
 70 = long leaf pine
 71 = longleaf pine and scrub oak
 72 = southern scrub oak
 81 = loblolly pine
 83 = long leaf pine/slash pine
 84 = slash pine
 85 = slash pine/hardwood
 89 = live oak
 99 = no tree cover; deleted stand
 101 = bald cypress
 102 = bald cypress/water tupelo

103 = water tupelo/swamp tupelo
 104 = sweetbay/swamp tupelo/redbay
 112 = titi swamp
 113 = sand pine/long leaf pine/live oak
 114 = brush
 115 = sand pine/hardwood
 116 = sand pine/slash pine
 117 = sand pine/long leaf pine
 118 = sand pine/eastern red cedar
 119 = sand pine/ live oak
 120 = slash pine/long leaf pine/hardwood

Origin Codes:

1 = natural stand with no evidence of artificial regeneration.
 2 = stand originating from planted stock.
 3 = stand created by seeding.

Origin Year = Year of stand origin. Subtract from present year to get stand age.

Trees per Acre = Number of live trees of commercial species qualifying as desirable or acceptable trees.

DBH = Diameter at breast height in inches.

Height (ft) = Total tree height in feet rather than merchantable height.

BA = Basal area to nearest whole foot.

S VOL = Softwood volume to nearest cubic foot per acre.

H VOL = Hardwood volume to nearest cubic foot per acre.

Growth (RPI) = Average number of rings per inch for the last inch of diameter growth at DBH.

Table B-2

NAVY REGIONAL COMMAND 10-YEAR FOREST MANAGEMENT PLAN SUMMARY

Location	Action	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
NAS PENSACOLA	Forest Thinnings Prescribed Burning Reforestation											
OLF BRONSON	Forest Thinnings Prescribed Burning											
SAUFLEY FIELD	Forest Thinnings Prescribed Burning											
CORRY STATION	Forest Thinnings (TSI)											
TOTALS	Forest Thinnings Prescribed Burning Reforestation (TSI)											

Numbers indicate planned acres

Table B-3

NAVY REGIONAL COMMAND 1-YEAR FOREST MANAGEMENT PLAN
NAS PENSACOLA

Stand	Acres	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Remarks
1	0												Stand Deleted
2	29												
3	0												Stand Deleted
4	0												Stand Deleted
5	0												Stand Deleted
6	4												
7	5												
8	22												
9	13												
10	6												Stand Deleted
11	4												Stand Deleted
12	8												Stand Deleted
13	30												Stand Deleted
14	41												
15	47												
16	0												Stand Deleted
17	0												Stand Deleted
18	0												Stand Deleted
19	9												
20	3												No Mgt This Period
21	7												
22	4												
23	19												
24	5												
25	0												Stand Deleted

Key at end of table.

Table B-3

NAVY REGIONAL COMMAND 1-YEAR FOREST MANAGEMENT PLAN
 NAS PENSACOLA

Stand	Acres	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Remarks
26	169												
27	8												
28	0												
29	10												
30	21												
31	47												No Mgt This Period
32	24												
33	4												
34	6												
35	16												No Mgt This Period
36	8												No Mgt This Period
37	16												Stand Deleted
38	31												No Mgt This Period
39	9												No Mgt This Period
40	4												
41	9												
42	2												
43	9												
44	52												
45	28												
46	12												Replant to Longleaf
47	24												
48	55												
49	2												
50	23												

Key at end of table.

Table B-3

**NAVY REGIONAL COMMAND 1-YEAR FOREST MANAGEMENT PLAN
NAS PENSACOLA**

Stand	Acres	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Remarks
51	3												
52	33												
53	3												
54	4												
55	5												
56	28												
57	6												Replant to Longleaf
58	14												No Mgt This Period
59	17												No Mgt This Period
60	26												
61	9												No Mgt This Period
62	36												
63	14												No Mgt This Period
64	26												
65	14												
66	17												Replant to Longleaf
67	54												
68	5												
69	5												
70	6												
71	3												
72	19												
73	4												
74	25												
75	2												

Key at end of table.

Table B-3

NAVY REGIONAL COMMAND 1-YEAR FOREST MANAGEMENT PLAN
 NAS PENSACOLA

Stand	Acres	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Remarks
76	38												
77	2												
78	17												
79	18												Salvage
80	6												
81	78												
82	11												
83	3												
84	4												Salvage
85	7												Salvage
86	10												
87	4												Salvage
88	6												
89	0												Stand Deleted
90	0												Stand Deleted
91	60												Salvage
92	11												
93	12												Salvage
94	5												Salvage
95	22												No Mgt This Period
96	9												Salvage
97	5												Salvage
98	30												
99	20												
100	6												
Total Acres	1607												

R018 = Forest thinning; R022 = Site preparation, planting, prescribed burn; R044 = Prescribed burn; R054 = Timber stand improvement

Table B-4

NAVY REGIONAL COMMAND 1-YEAR FOREST MANAGEMENT PLAN
 CORRY STATION

Stand	Acres	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Remarks
1	2												
2	0												Stand Deleted
3	2												
4	5												
5	2												
6	2												
7	1												
8	3												
9	6												
10	5												
11	14												
12	3												Reduce acreage
13	9												Reduce acreage
14	10												Reduce acreage
15	7												
16	2												
17	2												
18	2												
19	2												
20	7												
21	5												
22	11												
23	1												
24	1												
25	2												
Total Acres	106												

R018 = Forest thinning; R022 = Site preparation, planting, prescribed burn; R044 = Prescribed burn; R054 = Timber stand improvement

Table B-5

NAVY REGIONAL COMMAND 1-YEAR FOREST MANAGEMENT PLAN

SAUFLEY FIELD

Stand	Acres	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Remarks
1	57												
2	5												
3	4												
4	3												
5	43												No Mgt This Period
6	42												
7	3												No Mgt This Period
8	9												
9	3												No Mgt This Period
10	6												No Mgt This Period
11	0												Stand Deleted
12	3												
13	1												No Mgt This Period
14	3												
15	0												Stand Deleted
16	0												Stand Deleted
17	5												
18	0												Stand Deleted
19	2												
20	2												
21	0												Stand Deleted
Total Acres	191												

R018 = Forest thinning; R022 = Site preparation, planting, prescribed burn; R044 = Prescribed burn; R054 = Timber stand improvement

Table B-6
NAVY REGIONAL COMMAND 1-YEAR FOREST MANAGEMENT PLAN
OLF BRONSON

Stand	Acres	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Remarks
1	146												No Mgt this Period
2	0												Stand Deleted
3	0												Stand Deleted
4	2												No Mgt This Period
5	5												
6	2												
7	75												
8	1												
9	23												
10	10												
11	0												Stand Deleted
12	11												
13	40												No Mgt This Period
14	19												
15	5												No Mgt This Period
16	8												No Mgt This Period
17	29												No Mgt This Period
18	21												
19	7												
20	0												Stand Deleted
21	5												
22	0												Stand Deleted
23	50												
24	13												
25	1												No Mgt This Period
26	3												No Mgt This Period
27	7												No Mgt This Period

Key at end of table.

Table B-6

NAVY REGIONAL COMMAND 1-YEAR FOREST MANAGEMENT PLAN
OLF BRONSON

Stand	Acres	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Remarks
28	19												
29	3												
30	4												No Mgt This Period
31	6												No Mgt This Period
32	15												
33	12												
34	11												
35	12												
36	11												Precommercial Thin
37	7												
Total Acres	583												

R018 = Forest thinning; R022 = Site preparation, planting, prescribed burn; R044 = Prescribed burn; R054 = Timber stand improvement

C

**Outdoor Recreational Opportunities
at the NASP Complex**

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TABLE C-1. CONCENTRATED OUTDOOR RECREATION OPPORTUNITIES AT NASP

Activity	Description	Management	Size of Area	Regulations Fees	Public Access	Carrying Capacity	Education Program	Needs/ Recommendations
Camping	Oak Grove Family Campground located on Pensacola Bay offers both RV and tent camping and cabins. A group camping area is available at the Bayou Grande Family Picnic Center.	Moral Welfare and Recreation Department (MWR).	48 RV 14 tent 12 cabins Scattered Primitive	Yes – See Text.	No	General guidelines for the state of Florida, four to seven camping units per acre.	No	Add ten new RV sites and eight new cabins to Oak Grove, replace water and electric hook-ups and install sewer to RV sites, renovate the bathhouse, plant screening vegetation around tent area and consider putting Oak Grove on a reservation system.
Picnicking	Three main facilities – Family Picnic Center, Barrancas Beach, and Oak Grove Family Camp. Individual sites can be found throughout the Installation.	Grounds maintenance and MWR.	Eight sites large enough to accommodate groups and numerous individual sites.	No	Yes	Recommended use guidelines – 8 users per picnic table per day.	No	Expand picnic facilities at the museum. Look into refurbishing the picnic area at NATTC and making it accessible for large groups.
Fitness/Jogging Trails	Primary jogging trail is the Captain Tom Anderson trail; the Sunec'ke Nature trail and the Lighthouse trails are also used frequently. A fitness trail is located along Radford Boulevard.	Active trail maintenance program.	Round trip length of jogging trail is 8 miles. The fitness trail consists of 17 stations and is 1.2 miles.	No	Yes	Recommended use guidelines – 138 users per mile of trail.	No	Consider expanding the existing jogging trail.
Swimming	Barrancas Beach, beautiful location on Pensacola Bay, includes areas for volleyball and picnicking.	MWR	1,500 feet of waterfront, white sand beach.	No	No	General use guidelines for Florida: 2.5 linear feet of beach per user per day.	No	Implement a plan to construct a permanent restroom facility at Barrancas Beach.
Archery	Not currently offered.	NA	NA	NA	No	NA	NA	Archery should be considered as a low cost outdoor recreation activity. A survey should be conducted to determine interest.
Boating (Motor)	Sherman Cove Marina offers boat launching, boat storage and rental equipment. The Sailing Facility also offers boat launching.	MWR	Three boat ramps, numerous storage facilities.	Yes	No	Florida's recommended use guidelines – 108 users per ramp per day.	No	Maintain existing program, continue providing and requiring a Captain's Class license for all persons renting boats.
Recreational Gardening	None currently available.	NA	NA	NA	No	NA	NA	Establish garden rental plots. Funds can be used to supplement the program.
Outdoor Education & Interpretation	No formal program currently exists.	NA	NA	NA	Yes	NA	NA	A program should be developed that focuses on the Trout Point and Bayou Grande Nature trails.
Off-Road Vehicles	None	NA	NA	NA	NA	NA	NA	NA

Source: NPS 1999a

TABLE C-2. DISPERSED RECREATION OPPORTUNITIES AT NASP

Activity	Description	Management	Units	Regulations Fees	Public Access	Carrying Capacity	Education Program	Needs/ Recommendations
Hunting	Not Authorized	NA	NA	NA	NA	NA	NA	NA
Fishing	Excellent opportunities for both saltwater, in Pensacola Bay and freshwater at Lake Frederic.	Natural Resource Management (NRM)	Saltwater, unlimited; freshwater 1.2 acres.	YES, state regulations and license. No fees.	No	Unlimited	None currently.	Maintain Allegheny pier, & consider user fees. Survey users to determine if needs are being met.
Hiking	Four existing nature trails and the walking/jogging trail.	NRM	Approximately eight miles.	None	Yes	20 users per mile of trail per day.	None	Encourage use of existing trails for hiking.
Nature Study	Significant, well developed nature trails.	NRM	Approximately five miles.	None	Yes	Same as hiking.	None currently.	Extend Big Lagoon Nature Trail approximately 1/8 mile to connect with the Trout Point Nature Trail.
Bicycling	Limited use on roads, no designated trails.	NRM	All open Installation roads.	None	Yes	General use guidelines for Florida, 80 users/mile/day.	None	Develop a base-wide multi-purpose/mountain bike trail. Consider adding a bicycle lane along Radford Boulevard.
Non-Motorized Boating/Canoeing	Installation Sailing Facility, Sherman Cove Marina and the family picnic center at Bayou Grande.	NRM	Three facilities.	Rental fees.	No	General use guidelines for Florida, 180 users/boat ramp lane/day.	None	Encourage expanded non-motorized boating use on Bayou Grande. Expand storage/mooring spots at the Sailing Facility.
Watchable Wildlife	Currently none.	None	NA	NA	NA	NA	NA	Follow the proper procedures to have Trout Point NT established as a Watchable Wildlife Area.

Source: NPS 1999a

TABLE C-3. CONCENTRATED OUTDOOR RECREATION OPPORTUNITIES AT NTTC CORRY AND BARP

Activity	Description	Management	Size of area	Regulations Fees	Public Access	Carrying Capacity	Education Program	Needs/ Recommendations
Camping	None *. RV, tent both individual and group and cabins **.	Morel Welfare and Recreation Department (MWR).	125 RV and tent sites, large group area, and 7 cabins.	Yes – See text.	No	General, four to seven camping units per acre.	None	Maintain existing program, continue plans to add campsites and cabins.
Picnicking	Pavilions and several individual tables *. Cabanas, and individual tables throughout **.	Grounds maintenance * MWR **	Three pavilions * Four cabanas **	None * Yes **, entrance fees.	No	Recommended use guidelines: 8 users per picnic table per day.	None	Evaluate existing picnic areas to determine if demand exceeds availability.
Fitness/Jogging Trails	Walking jogging trail and fitness trail *. None designated **	Active trail maintenance program.	Approximately four miles.	None	No	Recommended use guidelines: 138 users per mile of trail.	None	Promote and maintain existing trails and develop a map for trail locations *. Provide a jogging lane along the park road **.
Swimming	None * Beach swimming **	MWR	Two separate areas, approximately .3 miles.	Yes, entrance fees.	No	General use guidelines for Florida, 2.5 linear feet of beach per user per day.	None	Maintain existing program, try to alleviate the problems with beach erosion. Continue with plans to develop the "Bay Walk".
Archery	None, currently.	NA	NA	NA	NA	NA	NA	Archery should be considered as a low cost recreation activity *. Survey for interest.
Boating (Motor)	None * Boat ramps and boat rentals **	MWR	Two ramps.	Yes, see text.	No	Florida's recommended use guidelines, 108 users/ ramp/ day.	NA	Maintain existing program.
Recreational Gardening	None, currently.	NA	NA	NA	NA	NA	NA	Establish garden rental plots. Funds can be used to supplement program *.
Outdoor Education & Interpretation	None, the Installation lacks adequate resources, however, significant opportunities exist at BARP.	NA	NA	NA	NA	NA	NA	Significant resources are available for interpretation **
Paintball Warfare	Provided approximately twice per month *.	Liberty Recreation	Three acres, natural resource.	Yes	No	Unknown	None	Maintain existing program.
Challenge Ropes Course	None	NA	NA	NA	NA	NA	NA	Great program, resource exist on the Installation. Research in-depth, get advice from a reputable company before starting *.
Orienteering	None	NA	NA	NA	NA	NA	NA	Develop course and brochure with map at BARP, use SCA's.

* Indicates NTTC Corry Station.

** Indicates Blue Angel Recreation Park. If no asterisk statement applies to both areas.

Source: NPS 1999b

TABLE C-4. DISPERSED RECREATION OPPORTUNITIES AT NTTC CORRY AND BARP

Activity	Description	Management	Size of area	Regulations Fees	Public Access	Carrying Capacity	Education Program	Needs/ Recommendations
Hunting	Not authorized.	NA	NA	NA	NA	NA	NA	NA
Fishing	None *, Saltwater opportunities in Perdido Bay, access from pier, beach and boat **.	NRM, updated regulations will be included in NAS Pensacola.	1 pier, 1 mile of coast and unlimited access to Perdido Bay **.	YES, state regulations and license. Entrance fees **.	No	Unlimited	None	Re-establish freshwater fishing at the old abandoned swimming pool, develop a management program. Publicize fishing opportunities more **
Hiking	None designated. The walking/ jogging trail is used *.	NRM	4 miles *.	None *, Entrance fees **	No	20 users per mile of trail per day. SNT = 30 users/day	None	Designate the walking/ jogging trail for hiking *. Designated multi-purpose trails throughout BARP, provide access to adjacent natural resource areas.
Nature Study	None currently.	NRM	NA	NA	No	Same as hiking.	NA	Provide access to the Jones Swamp State Preserve *. Develop nature study areas in conjunction with parts of the hiking trails **.
Bicycling	Limited, use roads, bicycles are rented at BARP.	NRM	All open, Installation roads	None *, Entrance fees **	No	General guidelines for Florida, 80 users/ mile/day.	None	Add a bicycle lane along the Installation streets. Designate new trails as multi-purpose.
Non-Motorized Boating/ Canoeing	None *, Boat ramp access to Perdido Bay, MWR rents canoes, kayaks and sailboats **.	MWR	Two boat ramps **.	Entrance fees, and rental fees, see text **.	No	General use guidelines for Florida, 108 users/boat ramp lane/ day **.	None	Maintain existing program **.
Watchable Wildlife	Currently none.	None	NA	NA	NA	NA	NA	Work on developing viewing areas, then evaluate if a Watchable Wildlife program is feasible **.

* Indicates NTTC Corry Station.

** Indicates Blue Angel Recreation Park. If no asterisk statement applies to both areas.

Source NPS 1999b

TABLE C-5. CONCENTRATED OUTDOOR RECREATION OPPORTUNITIES AT NETPDTA SAUFLEY

Activity	Description	Management	Units	Regulations Fees	Public Access	Carrying Capacity	Education Program	Needs Recommendations
Camping	Primitive along the Saufley Nature Trail	NRM and local Scouts	5 sites	General primitive camping guidelines apply, no fee.	Yes, by special request.	Limited	None	Encourage all groups to use. Contact local Scout leaders for assistance in maintaining area.
Picnicking	6 Gazebos around office area. Dispersed throughout Installation.	Active management for site upkeep by maintenance staff.	6 gazebos, plus.	None	No	Recommended use guidelines: 8 users per picnic table per day.	None	Install electrical outlets and lighting at the large picnic gazebo.
Fitness/Jogging Trails	Perimeter road used for jogging. 20 station fit trail located near administration area.	Active trail maintenance program.	Perimeter road, 4.5 miles. Fit trail, 1.5.	None	No	Recommended use guidelines: 138 users per mile of trail.	None	Promote existing trails better. Develop a map for trail locations.
Archery	None, currently.	NA	NA	NA	NA	NA	NA	Archery should be considered as a low cost recreation activity. The old pistol range could be used for this. Survey for interest.
Boating (Motor)	None, Sufficient areas do not exist.	NA	NA	NA	NA	NA	NA	NA
Recreational Gardening	None, currently.	NA	NA	NA	NA	NA	NA	Establish garden rental plots. Funds can be used to supplement program.
Outdoor Education & Interpretation	None	NA	NA	NA	NA	NA	NA	Develop a program focusing on the natural resources found around the Saufley Nature Trail.

Source: NPS 1999c

TABLE C-6. DISPERSED RECREATION OPPORTUNITIES AT NETPDT C SAUFLEY

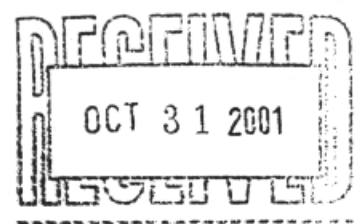
Activity	Description	Management	Units	Regulations Fees	Public Access	Carrying Capacity	Education Program	Needs/ Recommendations
Hunting	Not Authorized	NA	NA	NA	NA	NA	NA	NA
Fishing	Fresh Water fishing opportunities exist.	NRM See Exhibit B	Eight-mile Creek	YES, state regulations and license. NO base fees.	YES By request.	Limited capacity on the nature trail, unlimited elsewhere	None	Develop trails for access to Perdido Bay and Elevenmile Creek. Promote fishing opportunities.
Hiking	Saufley Nature Trail (SNT).	NRM	1.5 miles	None	YES By request.	20 users per mile of trail per day. SNT = 30 users/day	None	Expand Saufley Nature Trail and develop trail to Perdido Bay.
Nature Study	Saufley Nature Trail. Developed plant identification brochure.	NRM	1.5 miles	None	YES By request.	Same as hiking.	None	Expand the SNT and use the available resources there as the building stones for development of an Environmental Education Program.
Bicycling	Limited, use Installation roads (Perimeter).	NRM	All open, Installation roads	None	No	Unlimited	None	Add a bicycle lane along the Installation streets. Designate new trails as multi-purpose.
Non-Motorized Boating/Canoeing	None	NA	NA	NA	NA	NA	NA	NA
Watchable Wildlife	Currently none.	None	NA	NA	NA	NA	NA	Submit applications to designate the Saufley Nature Trail as a Watchable Wildlife Area.

Source: NPS 1999

D Fish and Wildlife Agency Correspondence



DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
P.O. BOX 190010
2155 EAGLE DRIVE
NORTH CHARLESTON, S.C. 29419-9010



11015/43
Code ES13
October 24, 2001

Mr. Nick Wiley, Chief
Bureau of Wildlife Management, Division of Wildlife
Florida Fish & Wildlife Conservation Commission
620 South Meridian Street
Tallahassee, FL 32399-1600

SUBJ: INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN (INRMP)
FOR THE NAVAL AIR STATION PENSACOLA (NASP) COMPLEX,
PENSACOLA, FLORIDA

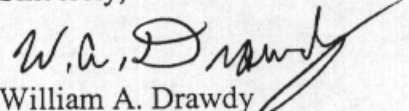
Dear Mr. Wiley:

The enclosed final version of the NASP Complex INRMP has undergone an extensive review and comment period by the United States Fish & Wildlife Service (USFWS) and the Florida Fish & Wildlife Conservation Commission (FFWCC). Comments provided by these agencies are included in this INRMP as Appendix D. For your review, a table of the Navy response to the FFWCC comments is provided as an attachment.

We feel that the comments identified by the fish and wildlife agencies have been addressed appropriately within the INRMP document. Please review the correspondence from the agencies and provide concurrence by endorsing the signature page at the beginning of the document.

If you should have any questions, please contact David Trimm or Patty Valentine-Darby at (850) 435-8925.

Sincerely,


William A. Drawdy
Head, Natural Resources Branch

Enclosure:
Final Version of the NASP Complex INRMP

**FFWCC Agency Review Comments on the Proposed Integrated Natural Resources Management Plan
for NAS Pensacola Complex, Pensacola, Florida (see attached pages for entire FFWCC comment).
Comments Received October 2001**

Reviewer	Comment	Response
Lamonte	Section 1.5.2 Function and Use of the INRMP ... Text of the draft plan is inconsistent with the SAIA.	Comment pertains to Section 1.5.2 on page 1-9. We agree that one sentence in these two paragraphs seemed contradictory. To address this comment, the following sentence has been deleted from this section: "It is not necessarily the function of the INRMP to define specific projects for specific locations, nor to define specific practices or schedules for the individual components of natural resources management, which include land management, forestry, fish and wildlife, and outdoor recreation."
Lamonte	Section 3.8 Vegetation and Wildlife The statement "Although natural resources management seeks to improve ecosystems... cannot be obtained under current land use." ...seems contrary to developing a natural resources plan.	Comment refers to the last sentence of Section 3.8 on page 3-17. We agree that this sentence could be misconstrued. As mentioned in the sentences above this comment, only 7.5% of the land area remains in natural communities. According to the present land use, converting this entire area back to its original ecosystem quality would be impractical. The verbage has been changed to avoid miscommunication on the mission of the INRMP. The sentence now reads, "Natural resources management seeks to improve ecosystems, and return them to previous ecosystem quality to the extent practicable within the constraints of military mission requirements."
Lamonte	Section 4, Strategy 1.1.5 While BMPs do provide a baseline for timber management activities, BMPs often fall short of the mark when it comes to management to enhance forest habitats for wildlife. Forest management activities may have to go beyond BMPs to achieve objectives for wildlife.	Comment refers to Strategy 1.1.5 on page 4-6 of the INRMP. We agree that forest management must go beyond using BMPs. There are many goals, objectives, strategies, projects, and initiatives listed on the pages following 4-6 that focus on managing forests to provide wildlife habitat (e.g., see Objective 2.2 and its strategy, projects, and initiatives).
Lamonte	Section 4, Strategy 1.4.1 ...No mention is made in this strategy of re-using already disturbed but no longer functional areas. Impacts to natural areas would be avoided by removing decommissioned buildings and structures and using those locations for new facilities.	Comment refers to Strategy 1.4.1 on page 4-9. The recommendation was incorporated into the INRMP by adding an item to the Site Plan Activity Guidelines in Section 5.5, mentioned in Initiative (1). The following was added to the Site Plan Activity Guidelines on Page 5-81 (i.e., third bullet): <ul style="list-style-type: none"> ▪ Whenever possible, previously disturbed areas or decommissioned/vacant buildings or structures will be given a first priority for use when siting new facilities.
Lamonte	Section 4, Strategy 2.1.1 and 2.1.3 ...seem to emphasize maximum timber production. The integrated plan should use forest management and its silvicultural practices to maintain some timber production and enhance the habitat for wildlife.	We disagree that the emphasis of the forest management program at NASP is emphasizing maximum timber production. An 80-year rotation with only light thinnings scheduled once per location during the 10-year INRMP period is not concentrating on timber. Sixty-five percent of the forested areas are previous plantation sites that are overstocked with timber. The wildlife benefits to thinning are mentioned on p. 5-41. Thinning also reduces cover to enhance gopher tortoise habitat. These areas are the ones targeted for thinnings (not clearcuts), and, as seen in Appendix B, thinning will only occur one in ten years at Saufley, Corry, and Bronson, and two times in 10 years for NASP. Emphasis on timber production would be a 30-year rotation, with thinnings every year, clearcuts every year, and numerous site preparation and reforestation projects. This is not the case at the NASP Complex.

**FFWCC Agency Review Comments on the Proposed Integrated Natural Resources Management Plan
for NAS Pensacola Complex, Pensacola, Florida (see attached pages for entire FFWCC comment).
Comments Received October 2001**

Reviewer	Comment	Response
Lamonte	<p>Strategy 3.2.2, Initiative 2 Refers to using the Commission's "habitat relocation and management guidelines" for listed species. It is unclear what guidelines this initiative refers to. Also, the Commission does not necessarily recommend relocation as the solution to listed species/development conflicts.</p>	<p>The comment pertains to Initiative 2 of Strategy 3.2.2 on page 4-17. To address the comment, this initiative was modified (i.e., made more general). Relocation of an animal would only be conducted if necessary, in coordination with the appropriate agency(ies), and in compliance with applicable laws. Initiative 2 was modified to read:</p> <p>"The NASP Complex will use FFWCC guidelines for the protection of listed species from proposed development or land clearing impacts. The NASP Complex will consult with FFWCC, USFWS, and/or Southern Division's wildlife biologists to implement this initiative."</p>
Lamonte	<p>Section 4, Strategy 3.3.1 Initiative 1 Discusses educating the public about potential wildlife problems and diseases. I would encourage.. personnel to educate the public on feral cat issues ...</p>	<p>Comment refers to p. 4-18. Presently, in Washington D. C., there is a draft of a Navy-wide feral cat policy in review. Any policy that is accepted on this issue will be added to the five-year update to the INRMP.</p>
Lamonte	<p>Section 5.1.4 Stormwater and Water Quality control ...other management issues... one that is not mentioned is wildlife management. This is particularly true for Saufley field where, up until recently, bats utilized stormwater drainage facilities. This issue should be addressed here (and under Section 5.3 Fish and Wildlife) to make sure future bat colonies are not impacted by maintenance of stormwater facilities..</p>	<p>We agree that personnel who work with stormwater and water quality control should be educated on the possibility of wildlife in stormwater drainage facilities. A bullet was added under "other management issues" on p. 5-21 that states: Train and educate all contract and department personnel on actions that may directly or indirectly affect wildlife (i.e. Actions that may affect bats living in stormwater drainage facilities, etc.)</p> <p>In Section 5.3, p. 5-56, "and prevent disturbance of known colonies" was added to the end of the second bullet.</p>
Lamonte	<p>Section 5.2 Forest Management 1st comment: This section is lacking in measurable goals and objectives. This section needs to provide more detailed discussion of desired future conditions and maintenance and enhancement for wildlife.</p>	<p>Comment refers to Section 5.2, which starts on page 5-36. We disagree with much of this comment (as discussed below), but agree that the goal of the program (already stated in Section 4) should be reiterated at the beginning of Section 5.2 on page 5-36. The following language was added to Section 5.2: "The NASP Complex will protect and enhance forest resources by practicing ecologically-sound forest management leading to sustained yield of quality forest products, watershed protection, and wildlife habitat protection and management. Ecologically-sound stewardship involves managing forestland for various components, including forest products, wildlife habitat, aesthetics, and recreation. Components of the NASP Complex annual work plan generally include prescribed burning, timber sales, timber inventory, site preparation, and reforestation. To protect and enhance forest resources, the Complex will implement the strategies, projects, and initiatives described in Section 4 of the INRMP.</p>

**FFWCC Agency Review Comments on the Proposed Integrated Natural Resources Management Plan
for NAS Pensacola Complex, Pensacola, Florida (see attached pages for entire FFWCC comment).
Comments Received October 2001**

Reviewer	Comment	Response
Lamonte	<p>Section 5.2, Forest Mgmt. 2nd Comment: Caution should be used when implementing site preparation activities...These areas may contain flatwoods salamanders...</p>	<p>No site preparation activities are scheduled for the NASP Complex in the INRMP's 10-year period. If site preparation becomes an unscheduled activity, the Navy will work with the USFWS to ensure protection of any threatened species.</p> <p>In addition, the FNAI (1997) has found no evidence of flatwoods salamanders on the NASP property. In Table 3-3, the flatwoods salamander is mentioned as a <i>typical</i> species found in a particular habitat, which doesn't necessarily mean that they are found in that area.</p>
Lamonte	<p>Section 5.2, Forest Mgmt. 3rd Comment: This section states that wetlands will be used as firebreaks. Tying in to wetland areas to create firebreaks can prove detrimental to that wetland system. Wetland systems require periodic fire and establishment of permanent firebreaks at wetlands can be detrimental.</p>	<p>Firebreaks are a necessary part of prescribed burning. Firebreaks are primarily established on the property boundary to prevent the escape of fire to adjacent lands. Firebreaks are not intentionally tied into wetlands. It is the desire of the Natural Resources Program to introduce fire, a natural component of the system, into wetlands.</p> <p>No changes were made to the INRMP based on this comment.</p>
Lamonte	<p>Section 5.2, Forest Mgmt. 4th Comment: Fertilization of forest stands implies that forest stands are being managed to maximize timber production rather than supporting ecological restoration goals.</p>	<p>Fertilization is a practice used in timber management; it will increase the health of the trees by decreasing their susceptibility to insects and disease. As shown in Appendix B of the INRMP, only 386 acres (out of 8,423) would be fertilized over the 10-year period.</p>
Lamonte	<p>Section 5.3.2 Wildlife Habitat Management and T & E Species This section is too vague. There are no specific measurable objectives for management of any of the listed species included in this plan. There is no information provided on the locations of listed species on NASP, current population levels, or recent trends in populations of listed species...</p>	<p>Comment refers to pages starting on 5-55. To reiterate the goals and objectives of wildlife habitat management, parts of goal 3 on p. 4-14 are repeated as an intro to this section. "The goal of wildlife management (as outlined on p. 4-14) is to protect, maintain, and restore native communities for plant and animal life, while improving the quality of life and ensuring the continuation of the military mission. The ecological integrity of wetland and upland communities will be maintained for the protection of native plant and animal species, including numerous federally and state listed species. Threatened, endangered, and species of special concern will be preserved and protected to ensure no reduction in species numbers or population sizes."</p> <p>Specific information on locations, population levels, etc. is not in the scope of the INRMP. Much of this information can be found in detail in the FNAI</p>

**FFWCC Agency Review Comments on the Proposed Integrated Natural Resources Management Plan
for NAS Pensacola Complex, Pensacola, Florida (see attached pages for entire FFWCC comment).
Comments Received October 2001**

Reviewer	Comment	Response
		for NASP. Management practices pertaining to listed species can also be found in Section 3.8.2 (p. 3-17) and in Appendix A under Projects 13, 14, and 15.
Lamonte	<p>Section 5.3.3 Wildlife Damage and Diseases and Nuisance Wildlife 1st Comment: On Page 5-67, several species are referred to as nuisances...The language here should make it clear that not all squirrels or coyotes...are nuisances.</p>	<p>This comment was incorporated, and the first sentence of the paragraph under Nuisance Wildlife and BASH (page 5-67) now reads: "Animals such as mice and rats, raccoon, opossum, armadillo, coyote, and squirrel may cause problems in urban/developed areas (such as when they occur in high numbers or in certain locations), and may be considered nuisance wildlife under such circumstances. Some birds, such as house sparrows, starlings, pigeons, grackles, and crows, may also be considered nuisance wildlife in some instances.</p>
Lamonte	<p>Section 5.3.3 Wildlife Damage and Diseases and Nuisance Wildlife 2nd Comment: The statement "Migratory birds are protected under the Migratory Bird Treaty Act, while many non-migratory game birds are protected by state law," is incorrect. Non-migratory game birds are protected under the federal Migratory Bird Treaty Act as well.</p>	<p>Comment refers to a sentence on page 5-70. To incorporate this comment, the sentence was changed to read: "Migratory birds, and certain other birds, are protected under the MBTA."</p>
Lamonte	<p>Section 6.2.1 Protected Area 1 (P-1) and Section 6.2.2 Protected Area 2 (P-2) No mention is made in this plan of protection and management of shorebird nesting areas in dune habitat areas of P-1 and P-2....</p>	<p>Comment refers to page 6-3 and 6-6. A bullet in both of these sections applies to this idea generally and states "Projects will be implemented to protect and enhance natural communities and habitat for rare species;" Now at the end of both of these bullets is the parenthetical addition "(for example, shorebird nesting areas, etc.)." References to the protection of nesting shorebirds and the improvement and protection of dune habitats are found in Appendix A under Projects 3, 4, 14, and 15.</p>
Lamonte	<p>Section 6.3.2 Operational Protected Area 3 (OP-3) ..forest stands on OP-3 will be managed for commercial production. Yet, the plan goes on to say that this area will be enhanced for wildlife including gopher tortoises...How will commercial forestry practices be compatible with management for wildlife?</p>	<p>As mentioned in the comments on Section 4, Strategies 2.1.1 and 2.1.3, NASP is not emphasizing commercial production in their forest management. The reduction in overstory through thinning is a harvesting option that will improve habitat for gopher tortoises by allowing sunlight to penetrate and allowing the groundcover and understory to flourish. In conjunction with prescribed burns, this strategy will help restore the environment to a closer representation of the natural community. Also, for most of the thinnings, only one will occur in each area for the 10-year period and each will only be about 2 weeks in duration. Every effort during this time period will be made to protect existing gopher tortoise populations.</p>

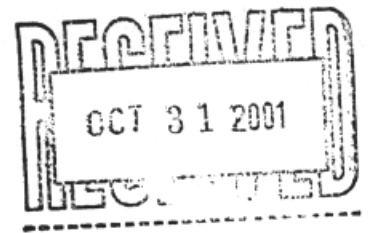
**FFWCC Agency Review Comments on the Proposed Integrated Natural Resources Management Plan
for NAS Pensacola Complex, Pensacola, Florida (see attached pages for entire FFWCC comment).
Comments Received October 2001**

Reviewer	Comment	Response
Lamonte	<p>Section 6.3.3 Protected Area 3 (P-3) ... several listed wading bird species utilize Beaver Pond for foraging and some utilize it for nesting... outdoor recreation will be enhanced in this area...the plan should include management activities to ensure increased outdoor recreation does not cause disturbance to the heronry during the breeding season.</p>	<p>The creation of nature trails and increased fishing opportunities will only occur on a small portion of the Beaver Pond and will be created on a not-to-interfere basis. The heronry will have the majority of the pond still available during breeding and other seasons.</p>
Lamonte	<p>Section 6.5.1 Operational Protected Area 5 (OP-5) This section briefly discusses a possible project to maintain bat habitat on this area... Any stormwater management or maintenance of stormwater drains should be conducted so as to preclude or minimize impacts to bats...</p>	<p>This comment was previously addressed with the additions to Section 5.1.4 above. The following addition was also made to the last sentence on p. 6-24 under "other management practices": ", including stormwater drainage systems."</p>
Lamonte	<p>Other Mention is made in several sections of the plan of use of habitats by migratory birds. However, no mention is made of impacts to migratory birds from communication towers on site or of ways to minimize such impacts. This issue should be addressed in this plan. Siting and operation of communication tower facilities should follow the guidelines established by the USFWS...</p>	<p>To incorporate this recommendation, a bullet item was added to the list of Site Plan Activity Guidelines (to minimize impacts to the Complex's environmental and ecological resources) on page 5-81. The bullet begins "Implement guidelines recommended by the USFWS for reducing impacts to migratory birds (especially night-migrating species) from new communication towers..."</p>
Lamonte	<p>Other No mention is made in this plan of habitat management for roof-nesting least terns... Although not natural nesting habitat, these man-made nesting areas are important for this listed species...</p>	<p>Least terns were found on the beach areas during the 1996 FNAI survey, but none were found nesting on rooftops. According to FNAI, no roofs in NASP or Bronson are suitable for support of these colonies. Roof-nesting least terns have not been seen on NASP since the 1980s (per Mark Gibson, Natural Resources Manager).</p>

END OF COMMENTS



DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
P.O. BOX 190010
2155 EAGLE DRIVE
NORTH CHARLESTON, S.C. 29419-9010



11015/43
Code ES13
October 22, 2001

U.S. Fish & Wildlife Service
Attn: Tom Sinclair, Regional Sikes Act Coordinator
1875 Century Boulevard, Suite 250
Atlanta, GA 30345

SUBJ: INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN (INRMP)
FOR THE NAVAL AIR STATION PENSACOLA (NASP) COMPLEX,
PENSACOLA, FLORIDA

Dear Mr. Sinclair:

The enclosed final version of the NASP Complex INRMP has undergone an extensive review and comment period by the United States Fish & Wildlife Service (Panama City Field Office) and the Florida Fish & Wildlife Conservation Commission. Comments provided are included in this INRMP as Appendix D.

We feel that the comments identified by the wildlife agencies have been addressed appropriately within the INRMP document. Please review the correspondence from the wildlife agencies and provide concurrence by endorsing the signature page at the beginning of the document.

If you should have any questions, please contact David L. Trimm or Patty Valentine-Darby at (850) 435-8925.

Sincerely,

William A. Drawdy
Head, Natural Resources Branch

Enclosure:
Final Version of the NASP Complex INRMP



STATE OF FLORIDA

DEPARTMENT OF COMMUNITY AFFAIRS

"Dedicated to making Florida a better place to call home"

JEB BUSH
Governor

STEVEN M. SEIBERT
Secretary

October 9, 2001

Mr. Gene Stillman
Ecology and Environment, Inc.
1950 Commonwealth Lane
Tallahassee, Florida 32303

RE: U.S. Department of the Navy - Environmental Assessment for the Implementation of the Integrated Natural Resources Management Plan - Naval Air Station Pensacola Complex - Pensacola, Escambia County, Florida
SAI: FL200106150380C

Dear Mr. Stillman:

The Florida State Clearinghouse, pursuant to Presidential Executive Order 12372, Gubernatorial Executive Order 95-359, the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§ 4321, 4331-4335, 4341-4347, as amended, has coordinated a review of the above-referenced project.

Based on the information contained in the environmental assessment for the implementation of the integrated natural resources management plan and the enclosed comments provided by our reviewing agencies, the state has determined that the above-referenced project is consistent with the Florida Coastal Management Program.

Thank you for the opportunity to review this project. If you have any questions regarding this letter, please contact Ms. Jasmin Raffington at (850) 922-5438.

Sincerely,

Shirley W. Collins, Acting Administrator
Florida Coastal Management Program

SWC/cc

Enclosures

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Phone: 850.488.8466/Suncom 278.8466 FAX: 850.921.0781/Suncom 291.0781
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CRITICAL STATE CONCERN FIELD OFFICE
2796 Overseas Highway, Suite 212
Marathon, FL 33050-2227
(305) 289-2402

COMMUNITY PLANNING
2555 Shumard Oak Boulevard
Tallahassee, FL 32399-2100
(850) 488-2356

EMERGENCY MANAGEMENT
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(850) 413-9969

HOUSING & COMMUNITY DEVELOPMENT
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Comments from Florida Fish and Wildlife Conservation Commission

**Naval Air Station Pensacola Complex
Integrated Natural Resources Management Plan
2001-2010**

Comments by Karen M. Lamonte, Bureau of Wildlife Diversity Conservation

Section 1.5.2 Function and Use of the INRMP

The Sikes Act lists required elements of INRMPs. These include "establishment of *specific* natural resource management goals and objectives and time frames for proposed actions." Therefore the statement in the plan, "It is not necessarily the function of the INRMP to define specific projects for specific locations, nor to define specific practices or schedules for the individual components of natural resources management," is inconsistent with the Sikes Act.

Section 3.8 Vegetation and Wildlife

This section states, "Although natural resources management seeks to improve ecosystems, a return to previous ecosystem quality cannot be obtained under current land use." This statement implies that little, if any, attempt will be made at restoration of undeveloped areas. This seems contrary to the intent of developing a natural resources management plan.

Section 4 Natural Resources Goals, Objectives, and Strategies

Strategy 1.1.5 calls for using BMPs for forest management activities. While BMPs do provide a baseline for timber management activities, BMPs often fall short of the mark when it comes to management to enhance forest habitats for wildlife. Forest management activities may have to go beyond BMPs to achieve objectives for wildlife.

Strategy 1.4.1 outlines initiatives to minimize impacts of future development on site. However, no mention is made in this section of re-using already disturbed but no longer functional areas. Impacts to natural areas would be avoided by removing decommissioned buildings and structures and using those locations for new facilities.

Strategy 2.1.1 and Strategy 2.1.3 seem to emphasize maximum timber production. This does not seem to fit with ecological restoration goals. Additionally, fertilization of forest stands, site preparation work, road construction, and firebreak use and management should be conducted in a manner that is supportive of habitat restoration rather than strictly supportive of timber production objectives. The integrated plan should use forest management and its silvicultural practices to maintain some timber production and enhance the habitat for wildlife.

Strategy 3.2.2 – Initiative 2 refers to using the Commission’s “habitat relocation and management guidelines” for listed species. It is unclear what guidelines this initiative refers to. Also, the Commission does not necessarily recommend relocation as the solution to listed species/development conflicts.

Strategy 3.3.1 – Initiative 1 discusses educating the public about potential wildlife problems and diseases. I would encourage natural resources personnel to educate the public on feral cat issues and the threat feral cats pose to wildlife and humans. The American Bird Conservancy’s *Cats Indoors!* program is particularly good.

Section 5.1.4 Stormwater and Water Quality Control

This section specifies other management issues that may be applicable to stormwater management. One item that is not mentioned is wildlife management. This is particularly true for Saufley Field where, up until recently, bats utilized stormwater drainage facilities. This issue should be addressed here (and under Section 5.3 Fish and Wildlife) to ensure that future bat colonies are not impacted by maintenance of stormwater facilities as has happened previously causing the abandonment of the colony.

Section 5.2 Forest Management

This section is lacking in measurable goals and objectives. This section needs to provide more detailed discussion of desired future conditions and maintenance and enhancement for wildlife.

Caution should be used when implementing site preparation activities. These areas may contain flatwoods salamanders which have declined in part due to silvicultural site preparation activities.

This section states that wetlands will be used a firebreaks. “Tying in” to wetlands areas to create firebreaks can prove detrimental to that wetland system. Wetland systems require periodic fire and establishment of permanent fire breaks at wetlands can be detrimental to that system. This is particularly true in areas containing flatwoods salamanders. The practice of tying in to wetlands should be reevaluated here.

Fertilization of forest stands implies that forest stands are being managed to maximize timber production rather than supporting ecological restoration goals.

Section 5.3.2 Wildlife Habitat Management and Threatened and Endangered Species

This section is too vague. There are no specific measurable objectives for management of any of the listed species included in this plan. There is no

information provided on the locations of listed species on NASP, current population levels, or recent trends in populations of listed species. This section should be much more detailed with measurable goals and objectives for listed species management.

Section 5.3.3 Wildlife Damage and Diseases and Nuisance Wildlife

On page 5-67, several species are referred to as nuisances. This language is misleading. The language used here should make it clear that not all squirrels or coyotes or opossums or crows are nuisances. But rather, that sometimes these animals in certain concentrations or in certain locations may constitute a nuisance. The language used here wholly characterizes all of these species as nuisances, which is untrue.

The statement, "Migratory birds are protected under the Migratory Bird Treaty Act, while many game birds are protected by state law," is incorrect. Non-migratory game birds are protected under the federal Migratory Bird Treaty Act as well.

Section 6.2.1 Protected Area 1 (P-1) and Section 6.2.2 Protected Area 1 (P-2)

No mention is made in this plan of protection and management of shorebird nesting areas in dune habitat areas of P-1 or P-2. Areas with shorebird nesting should be identified and protected from disturbance during the breeding season.

Section 6.3.2 Operational Protected Area 3 (OP-3)

This section specifies that the forest stands on OP-3 will be managed for commercial production. Yet, the plan goes on to say that this area will also be enhanced for wildlife including gopher tortoises. While commercial forestry isn't necessarily exclusive of wildlife, oftentimes management practices for commercial production are not very conducive to wildlife. How will commercial forestry practices be compatible with management for wildlife?

Section 6.3.3 Protected Area 3 (P-3)

This section states that several listed wading bird species utilize Beaver Pond for foraging and some utilize it for nesting. This section goes on to say that outdoor recreation will be enhanced in this area through the creation of nature trails near Beaver Pond and increased fishing opportunities. Although these outdoor recreation opportunities are not incompatible with wildlife use of the area, the plan should include management activities to ensure increased outdoor recreation does not cause disturbance to the heronry during the breeding season.

Section 6.5.1 Operational Protected Area 5 (OP-5)

This section briefly discusses a possible project to maintain bat habitat on this area. This is a good goal. The bat habitat of concern here is the man-made storm drains that occur under the runways. Any stormwater management or maintenance of stormwater drains should be conducted so as to preclude or minimize impacts to bats. This type of planning may have prevented the disturbance of the bat colony that caused abandonment of the site by the bats in 1999.

Other

Mention is made in several sections of the plan of the use of habitats by migratory birds. However, no mention is made of impacts to migratory birds from communication towers on site or of ways to minimize such impacts. This issue should be addressed in this plan. Siting and operation of communication tower facilities should follow the guidelines established by the U.S. Fish and Wildlife Service. These guidelines should be followed at new facilities, and lighting should be retrofitted at existing facilities. Additionally, decommissioned tower facilities should be removed since they are a potential migratory bird hazard.

No mention is made in this plan of habitat management for roof nesting least terns (*Sterna antillarum*). In the past, buildings in the Pensacola NAS complex have hosted least tern colonies. Although not natural nesting habitat, these man-made nesting areas are important for this listed species. Rooftop nesting habitat should be maintained and building managers should be educated about issues regarding this species.



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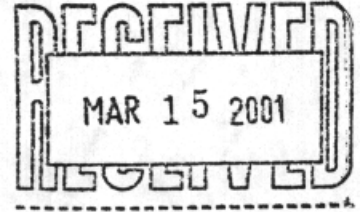
United States Department of the Interior

FISH AND WILDLIFE SERVICE

Field Office
1612 June Avenue
Panama City, FL 32405-3721

Tel: (850) 769-0552
Fax: (850) 763-2177

March 13, 2001



David L. Trimm
Project Manager
Ecology and Environment, Inc.
220 West Garden Street, Suite 404
Pensacola, Florida 32501

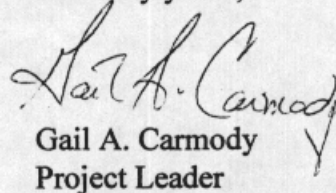
FWS Log # 4-P-00-029
INRMP for NAS Pensacola Complex
Public Review Draft
Santa Rosa County, Florida

Dear Mr. Trimm:

This is in response to the public review draft of the Integrated Natural Resources Management Plan (INRMP) for Naval Air Station (NAS) Pensacola Complex. The draft was transmitted to this office on February 9, 2001. The Fish and Wildlife Service provided comments to the preliminary draft in a letter dated January 30, 2001.

It appears that our earlier recommendations have been incorporated into the public review draft. We look forward to receiving the final plan for signature and to future coordination in implementing the plan. If you have any questions or comments, please contact Mr. Hildreth Cooper at extension 221.

Sincerely yours,


Gail A. Carmody
Project Leader



IN REPLY REFER TO:

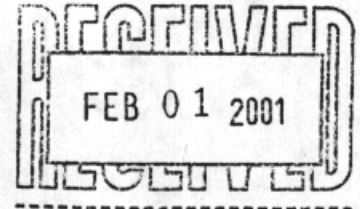
United States Department of the Interior

FISH AND WILDLIFE SERVICE

Field Office
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Tel: (850) 769-0552
Fax: (850) 763-2177

January 30, 2001



Mr. Michael Letson
Project Manager
Ecology and Environment, Inc.
220 West Garden Street, Suite 404
Pensacola, Florida 32501

Re: FWS# 4-P-00-029
INRMP for NAS Pensacola Complex
Review of Draft Plan
Escambia County, Florida

Dear Mr. Letson:

The Fish and Wildlife Service (Service) has evaluated the above-cited plan. The following additional information is provided to assist in preparing the final Integrated Natural Resources Management Plan (INRMP) for the Naval Air Station Pensacola (NASP) Complex. Our report is submitted in accordance with provisions of the Sikes Act amendments.

The plan provides an excellent framework for future management of the natural resources of the NASP Complex. It accurately identifies important natural resource components and presents a practical program for implementation of specific management projects. Additional information we would like to see in the plan is divided into three categories:

- submerged aquatic vegetation (SAV)
- piping plovers
- sea turtles

For your information, enclosed is a map of SAV in the project area. The map was produced by the U.S. Geological Survey using 1992 aerial photography. Extensive beds of healthy seagrass occur primarily in Protected Area 1 (P-1). Sherman Cove is particularly notable for the presence of continuous seagrass beds in an area that supports high recreational boating use. Elements of the INRMP that could address seagrass conservation should be expanded. As with the other elements, there are several places within the plan where descriptions of the resources and

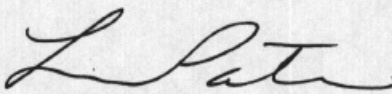
discussion of projects should occur. Potential projects that would address seagrass management include improved channel marking, warning signs or buoys in shallow areas, and informational signs at access points.

The plan notes that migratory bird censuses are conducted primarily in cooperation with the local chapter of the Audubon Society through their Christmas bird count. This activity occurs at an ideal time to locate wintering piping plovers (*Charadrius melodus*). The Service has recently proposed listing of critical habitat for piping plovers. Additional information from NASP would assist with management of this species throughout its range. We recommend that future bird censuses include a special element to emphasize piping plovers. We have enclosed a survey data form for piping plovers.

Previous correspondence from the Service included information regarding impacts of NASP operations to natural resources "off-site." In particular, it has been documented that outdoor lighting at NASP has caused disorientation for nesting and hatchling sea turtles at Gulf Islands National Seashore (GINS). We encourage the natural resources staff at NASP to work with GINS and the Service to identify potential solutions. It appears that the INRMP would be an appropriate mechanism for pursuing this effort.

We appreciate the opportunity to provide comments about the draft INRMP. We look forward to further coordination. Please contact Mr. Hildreth Cooper of this office (ext. 221) if you have any questions or comments.

Sincerely yours,


for Gail A. Carmody
Project Leader

Enclosures

HC/kh/c:/endspp/4p00029-1.wpd



ecology and environment, inc.

International Specialists in the Environment

220 West Garden Street, Suite 404

Pensacola, FL 32501

Tel: (850) 435-8925, Fax: (850) 435-9135

October 27, 2000

Mr. Rick McCann
Florida Fish & Wildlife Conservation Commission
620 S. Meridian Street
Tallahassee, FL 32399-1600

Re: Preliminary Draft Integrated Natural Resources Management Plan, Naval Air Station
Pensacola Complex

Dear Mr. McCann,

Per previous correspondence, E & E and the Navy would appreciate your review, comments and suggestions on the enclosed Preliminary Draft Integrated Natural Resources Management Plan for the Naval Air Station Pensacola Complex.

If you have questions concerning the document please feel free to give me a call at (850) 435-8925.

Sincerely,

David L. Trimm
Project Manager

dlt

cc: A. Johnson (SOUTHDIV)
G. Gallagher (E & E)
D. Heatwole (E & E)
file



ecology and environment, inc.

International Specialists in the Environment

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Pensacola, FL 32501

Tel: (850) 435-8925. Fax: (850) 435-9135

October 27, 2000

Ms. Gail Carmody
U.S. Fish and Wildlife Service
1612 June Avenue
Panama City, FL 32405-3721

Re: Preliminary Draft Integrated Natural Resources Management Plan, Naval Air Station
Pensacola Complex

Dear Ms. Carmody,

Per previous correspondence, E & E and the Navy would appreciate your review, comments and suggestions on the enclosed Preliminary Draft Integrated Natural Resources Management Plan for the Naval Air Station Pensacola Complex.

If you have questions concerning the document please feel free to give me a call at (850) 435-8925.

Sincerely,

David L. Trimm
Project Manager

dlt

cc: A. Johnson (SOUTHDIV)
G. Gallagher (E & E)
D. Heatwole (E & E)
file



IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Field Office
1612 June Avenue
Panama City, FL 32405-3721

Tel: (850) 769-0552

Fax: (850) 763-2177

November 30, 1999



Mr. Michael Letson
Project Manager
Ecology and Environment, Inc.
220 West Garden Street, Suite 404
Pensacola, Florida 32501

Re: FWS# 4-P-00-029
INRMP and EA for Pensacola NAS
Initial Request for Information
Dated October 14, 1999
Escambia County, Florida

Dear Mr. Letson:

The Fish and Wildlife Service (Service) has evaluated the above-cited request. Based on a recent telephone discussion, it appears that you have accurately anticipated most of our comments. The following additional information is provided to assist with your studies for the Integrated Natural Resources Management Plan (INRMP) for the Naval Air Station (NAS) Pensacola Complex. We understand that the INRMP for the Whiting Field Complex will be prepared separately. Our report is submitted in accordance with provisions of the Sikes Act amendments.

Enclosed is a table of threatened, endangered, and other special status species likely to occur in Escambia County, Florida. The table is a combination of species occurrence and habitat information developed by the Florida Natural Areas Inventory (FNAI), and species status data compiled by the Florida Fish and Wildlife Conservation Commission (FWCC).

The FNAI is a statewide database housing extensive information on the occurrence of rare and endangered species and high quality natural communities in Florida. The FNAI can be contacted at 1018 Thomasville Road, Suite 200-C, Tallahassee, Florida 32303, (850) 224-8207. The FWCC may have additional information on state-listed species and important habitats. The FWCC Environmental Services Division is located at 620 South Meridian Street, Tallahassee, Florida 32399-1600, (850) 488-6661. We suggest coordinating with the FNAI and the FWCC.

We have in the past worked closely with the Natural Resources staff at NAS regarding wildlife and habitat conservation issues. Important natural resources at NAS include the following:

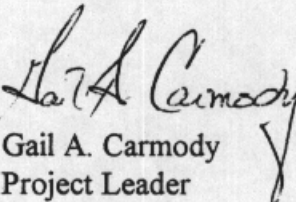
- Freshwater wetlands
- Seagrass beds
- Estuarine marshes
- Coastal habitats and listed species

The INRMP should pay particular attention to these habitats and their conservation, restoration, and management. In addition, we would like to see an evaluation of secondary impacts of facility operations on these habitats that are located in the vicinity of NAS. Significant secondary impacts include the construction of housing and infrastructure in Southwest Escambia County to accommodate NAS personnel. Cumulative impacts to wetland resources in the vicinity have been of particular concern to the Service.

Other "off-site" impacts to natural resources have been documented at nearby Gulf Islands National Seashore (GINS). GINS staff has reported disorientation of nesting and hatchling sea turtles caused by lighting from NAS. This information was recently provided to you by Mr. Mark Nicholas of GINS. The INRMP should evaluate opportunities to work cooperatively with the Service and GINS in reducing light disorientation.

We appreciate the opportunity to provide preliminary comments and we look forward to further coordination. Please contact Mr. Hildreth Cooper of this office (ext. 221) if you have any questions or comments.

Sincerely yours,


Gail A. Carmody
Project Leader

Enclosures

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Florida Fish and Wildlife Conservation Commission

James L. "Jamie" Adams, Jr.
Bushnell

Barbara C. Barsh
Jacksonville

Quinton L. Hedgepeth, DDS
Miami

H.A. "Herky" Huffman
Deltona

Thomas B. Kibler
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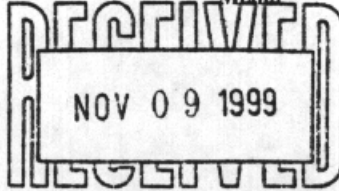
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November 3, 1999

Mr. Michael Letson
Ecology and Environment, Inc.
220 West Garden Street, Suite 104
Pensacola, FL 32501

Re: Naval Air Station Complex,
Pensacola, FL

Dear Mr. Letson:

Your letters of September 18, 1999, and October 14, 1999, to Dr. Allan Egbert have been referred to me for response. In your letters, you requested (1) input concerning natural resources in the vicinity of Pensacola Naval Air Station, (2) a point of contact for consultation during the development of a natural resources management plan and an environmental assessment, and (3) the person ultimately responsible for the approval of the plan by our agency. The Office of Environmental Services (OES) of the Florida Fish and Wildlife Conservation Commission (FWC) is the part of our agency responsible for intergovernmental coordination on matters such as those described in your letter. Although we typically have no authority for approval of plans such as the one you describe, we are more than willing to provide you with information concerning fish and wildlife resources in the study area and to coordinate the review of the eventual documents within FWC. I am designating Mr. Rick McCann as our point of contact for this project. You may contact Mr. McCann in writing at the address above or by calling 850-488-6661.

If you need additional information concerning this matter, please contact either me or Mr. McCann at your earliest convenience.

Sincerely,

Bradley J. Hartman, Director
Office of Environmental Services

ENV 1-1
cc: Mr. Rick McCann

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