

Finding of No Significant Impact

For the

REVISED

INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN 2007-2011

**Marine Corps Base, Camp Lejeune
Onslow County, North Carolina**

Responsible Officer:

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Marine Corps Base
Camp Lejeune, North Carolina**

November 2006

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INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN 2007-2011 MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA

Pursuant to the Council on Environmental Quality regulations in Title 40 Code of Federal Regulations Parts 1500-1508 implementing procedural provisions of the National Environmental Policy Act (NEPA) (42 U. S. Code Part 4321 *et. seq.*), the United States Marine Corps (USMC) gives notice that Marine Corps Base, Camp Lejeune has prepared an Environmental Assessment (EA) for a proposed action to implement its Revised Integrated Natural Resources Management Plan 2007-2011(INRMP).

The purpose of the Revised INRMP (like the original INRMP 2002-2006) is to better integrate sustainable natural resource management with mission support and training requirements and responsibilities that will result in more realistic training opportunities in support of the Base's mission.

The proposed action in the EA consists of natural resources management courses of action that will be taken to support the Base's military training needs as identified in the Revised INRMP. These courses of action will be the basis of specific projects and daily management activities that when executed will support the military mission through natural resources management. The projects are separated into two groups: those that are must-fund projects required to meet recurring natural and cultural resources conservation management requirements (Class 0) or current compliance needs (Class 1) and those that are not must-fund projects but are valid projects that will be funded when funding is available (Classes 2 and 3).

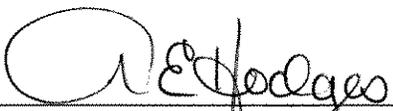
The potential environmental impacts of two alternatives were analyzed in the EA: the no action alternative and the proposed action alternative. The no action alternative would be to continue natural resources management under the original INRMP. The no action alternative would have no significant environmental impacts; but, its implementation would not meet the objectives of the Revised INRMP or the purpose and need for the proposed action.

The proposed action is the preferred alternative. Implementation of the proposed action will promote legal compliance with the Sikes Act Improvement Act of 1997, DoD Conservation Instruction 4715.3, MCO P5090.2A, and amendments contained in the 2004 National Defense Authorization Act (NDAA). The implementation of the Revised INRMP, per the NDAA, provides the Base with the benefit of avoidance of critical habitat designation for endangered species.

The proposed action will have no significant direct, indirect, or cumulative impacts on threatened and endangered species, forest management and forest protection/pest management, wetlands and surface waters, coastal areas, and soils. Neither low income and minority populations nor children will be impacted by the proposed action.

Based on the analysis in the EA, the USMC finds that implementing the proposed action will not have a significant impact on the quality of the human environment. The human environment is the natural and physical environments and the relation of people to those environments. This Finding of No Significant Impact (FONSI) is the appropriate outcome for the EA and hence no environmental impact statement is required. The Base will begin implementation of the Revised INRMP in early 2007. The EA addressing this action is located in Appendix B of the Revised INRMP. The EA and Revised INRMP are also available at: Commanding Officer, Public Affairs Office, Marine Corps Base, Camp Lejeune, North Carolina 28542-0004, telephone (910)451-7440.

17 Jan 07
Date


A.E. HODGES
Colonel, U. S. Marine Corps
Commanding Officer
Marine Corps Base, Camp Lejeune

ENVIRONMENTAL ASSESSMENT

For the

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ACRONYMS AND ABBREVIATIONS	
Acronym and Abbreviation	Definition
AIWW	Atlantic Intracoastal Waterway
BASH	Bird-Animal Strike Hazards
BMP	Best Management Practices
BO	Base Order
CAMA	Coastal Area Management Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CZMA	Coastal Zone Management Act
DoD	Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FONSI	Finding Of No Significant Impact
GSRA	Greater Sandy Run Area
IGIR	Integrated Geographic Information Repository
INRMP	Integrated Natural Resources Management Plan
IR	Installation Restoration
LAV	Light Armored Vehicle
LTA	Landtype Associations
MCAS	Marine Corps Air Station
MCBCL	Marine Corps Base Camp Lejeune
MCO	Marine Corps Order
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NCDWQ	North Carolina Department of Water Quality
NCSHPO	North Carolina State Historic Preservation Office
NCWRC	North Carolina Wildlife Resources Commission
NDAA	National Defense Authorization Act
NEPA	National Environmental Policy Act
NOAA	National Oceanographic and Atmospheric Administration
NRHP	National Register of Historic Places
ORRV	Off-Road Recreational Vehicles
PM10	Particulate matter with a diameter of ten microns or less
RCW	Red Cockaded Woodpecker
REIR	Request for Environmental Impact Review
SAIA	Sikes Act Improvement Act
T&E	Threatened and Endangered
USFWS	United States Fish and Wildlife Service

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CHAPTER 1. PURPOSE AND NEED FOR ACTION

1.1 Introduction

This Environmental Assessment (EA) is an appendix to the Marine Corps Base Camp Lejeune Revised Integrated Natural Resources Management Plan 2007-2011. It is an analysis of the environmental effects of implementing the revised INRMP. The INRMP is an interdisciplinary plan with a goal of supporting the military mission through an integrated natural resources management program. Natural resource programs aboard Camp Lejeune support the military mission by enhancing military training opportunities through managing natural resources.

Marine Corps Base (MCB) Camp Lejeune, NC is the largest Marine Corps amphibious training base in the world and home to 47,000 Marines and Sailors, the largest single concentration of Marines anywhere in the world. Its tenants include the 2nd Marine Division, 2nd Marine Logistics Group (formerly 2nd Force Service Support Group), II Marine Expeditionary Force, and U.S. Naval Hospital, Camp Lejeune. Camp Lejeune encompasses an estimated 143,000 acres including the onshore, near shore, and surf areas in and adjacent to the Atlantic Ocean and the New River. A detailed description of the base facilities and activities can be found in chapters one and two of the INRMP.

Camp Lejeune manages its natural resources through a collaborative effort between civilian natural resource professionals and military personnel. The U.S. Fish and Wildlife Service (USFWS), the North Carolina Wildlife Resources Commission, and the North Carolina Division of Marine Fisheries, as well as numerous other local, state, federal, and military stakeholders have been involved in the development of an integrated approach to natural resource management aboard Camp Lejeune.

Camp Lejeune published its initial INRMP (2002-2006) in November 2001. The Base has determined that the INRMP should be revised. This is consistent with Headquarters Marine Corps guidance that “all INRMPs shall be revised, if necessary, at intervals of not more than five years, and more frequently if warranted by significant changes to the installation’s mission requirements or its natural resources” (Headquarters, U. S. Marine Corps Handbook for Preparing, Revising and Implementing Integrated Natural Resource Management Plans on Marine Corps Installations, May 2004). An EA and Finding of No Significant Impact (FONSI) were prepared to satisfy National Environmental Policy Act (NEPA) requirements for INRMP implementation. The EA and FONSI were included as an appendix in that INRMP. *This* EA is being prepared to analyze and disclose any potential environmental impacts of implementing the revised INRMP.

1.2 Proposed Action

The Commanding Officer of Marine Corps Base Camp Lejeune proposes to integrate natural resources management with the military mission by fully implementing the courses of action presented in the revised INRMP and analyzed in this EA. These proposed actions would be budgeted for and implemented as funding becomes available. See Section 3 of the INRMP for a discussion of funding conservation actions.

Base natural resource program managers have developed comprehensive lists that contain actions they currently do and actions they propose to carry out. These are listed by resource in the INRMP. For threatened and endangered (T&E) species, see pages 4-16 through 4-26. Actions for management of T&E species include improving and protecting habitats and population surveys and monitoring. Species at risk actions are on page 5-5. Migratory birds are on page 6-3 and include actions for habitat conservation and population monitoring. Forest management actions are listed on pages 7-7 through 7-10. Examples include developing and implementing a long-range silvicultural prescription plan. Forest protection actions are on pages 8-6 through 8-8 and include, for example, proposals for developing and implementing a prescribed burning prioritization model and use of mechanical treatments for midstory vegetation control and maintenance. Wetlands management actions are on pages 9-3 and 9-4. These primarily involve wetland delineation and monitoring wetland conditions. Soil management actions are on page 10-4; they are mainly focused on erosion control and shoreline stabilization. Fish and wildlife management actions begin on page 11-8 and include game harvest, habitat monitoring, and stocking managed recreational fishing ponds.

Also in these lists are actions that are meant to improve recreational opportunities, promote Base participation in regional conservation efforts, and provide conservation education and outreach to the military and civilian populations on base.

1.3 Purpose & Need

The primary purpose of the INRMP is to guide the natural resource management program at Camp Lejeune for the next 5-year period (2007 through 2011) in accordance with the Sikes Act Improvement Act (SAIA) of 1997 (Public Law 105-85, Div. B Title XXIX, November 18, 1997, 111 Statute 2017-2019, 2020-2033); Department of Defense (DoD) Conservation Instruction 4715.3; Marine Corps Order (MCO) P5090.2A (Environmental Compliance and Protection Manual); and amendments contained in the 2004 National Defense Authorization Act (NDAA). The INRMP responds to the 2003 USFWS guidelines for managing red-cockaded woodpecker (RCW), a federally listed endangered species, and addresses the new critical habitat authority. The purpose of this EA is to disclose the environmental effects associated with implementation of the revised INRMP.

In order to meet the mission objective of training and maintaining combat-ready troops for expeditionary deployment anywhere in the world, MCB Camp Lejeune needs to provide a variety of environmental conditions in which to train Marines. This goal must be met in a way that provides for sustainable, healthy ecosystems, complies with all applicable environmental laws and regulations, and provides for no net loss in the capability of military installation lands to support the mission of the installation. Chapter

3 of the revised INRMP provides the military mission drivers, or in the NEPA sense, the need, that natural resource management objectives must support in order for the military mission to continue with no net loss. The objectives in each chapter of the INRMP were developed in support of the drivers, or need. Actions are listed for each objective in Table 2.1 of this EA. A comprehensive description of courses of actions is in Appendix C of the INRMP.

An over-riding goal of the proposed INRMP is recovery and conservation of the Red cockaded woodpecker (RCW) in such a manner as to reduce restrictions on the military mission. Many of the actions listed in the INRMP support this key goal. By increasing emphasis on RCW conservation as described in the proposed INRMP, the proposed action will help reduce restrictions to military training and ensure flexibility for future military construction.

1.4 Scope of Environmental Analysis

This section briefly describes the boundaries of analysis used in the EA and issues discovered during scoping. Alternatives eliminated from further study are discussed in section 2.5 of this document. The scope of this EA is to analyze and describe the effects of implementing the proposed action and alternatives, and the reasonably foreseeable impacts associated with those actions.

The INRMP outlines conservation efforts for Camp Lejeune and establishes procedures to ensure compliance with environmental laws and regulations for fiscal years 2007 through 2011. The INRMP considers resources on installation and regional levels.

The process for revising the INRMP provides for input from diverse stakeholders including federal, state and local agency representatives, conservation organizations and interested individuals. As required under the SAIA, this INRMP reflects mutual agreement of the USFWS and the heads of each appropriate state fish and wildlife agency concerning conservation, protection, and management of fish and wildlife resources. It does not replace or affect any federal laws or state responsibility and authority for protecting fish and wildlife resources.

1.4.1 Resource Issues and the Proposed Action

Under NEPA analysis, the proposed action is developed by collaboration and scoping with interested parties. In this case, interested parties included state and federal agencies, on-base military departments, and other individuals. The scoping process is the forum for these parties to raise issues related to social, mission, or environmental concerns that are considered while drafting the proposed action. Section 1.6 of this document discusses scoping.

Because this EA is in support of the INRMP, the scoping for the NEPA process was accomplished in conjunction with scoping for the INRMP. Following is a discussion of issues raised to date during this ongoing process. Because the INRMP is a dynamic document that may be annually reviewed, this section only addresses issues currently identified and under consideration.

Beach nourishment

The municipality of North Topsail Beach is proposing a beach nourishment project that would add sand to the north portion of Topsail Beach and could add sand to the south portion of Onslow Beach. The city is proposing the project be implemented with municipal funds, with the objective of enhancing and preserving recreational and economic activity in the area.

The North Carolina Wildlife Resources Commission (NCWRC) has asked (NCWRC letter of August 10, 2005) MCB Camp Lejeune that this action on Onslow Beach be addressed in the INRMP because creation of artificial dunes or nourishment can negatively affect piping plover and other shorebird habitats.

Critical habitat designation

Federal agencies, including the DoD, are required to comply with the provisions of the Endangered Species Act (ESA). The 2004 National Defense Appropriations Act made specific amendments to the ESA. The ESA was amended to prohibit the designation of critical habitat for an endangered species on a military installation when the Secretary of the Interior determines that the installation's INRMP provides a benefit to that endangered species.

Three criteria have been developed by the Department of the Interior's USFWS to determine if the INRMP provides a benefit to endangered species. The plan must provide a long-term conservation benefit to the species, provide surety that the plan will be implemented, and also ensure the conservation measures proposed will be effective. The designation of critical habitat is detrimental to military operations at installations because that designation would increase restriction on land use for training or development that may interfere with the mission of the facility. Chapter 15 of the INRMP discusses these points in detail. The Environmental Conservation Branch aboard Camp Lejeune is actively collaborating with the local USFWS office to assure this issue is adequately addressed in the revised INRMP.

Training Restrictions

The mission of the Marine Corps has been described as "to win battles and make Marines." The making of combat-ready Marines requires extensive training. Marines train as they fight, and that training requires access to land, sometimes large areas of it. Training can sometimes be destructive to land and its resources. Unless properly managed, Marine Corps lands can become damaged to the point where realistic training can no longer take place. Marine Corps use of land must be sustainable so the Marine Corps may continue to use its lands to train fighting forces. Natural resources managers support the Marine Corps mission by ensuring its lands are managed on a sustainable basis that both supports the mission and protects the resource. The Assistant Chief of

Staff Training and Operations Department aboard Camp Lejeune is interested in maintaining as much land as possible for the training of Marines. Integration of military training and resource management is critical to this end. Increased military training opportunities in red-cockaded woodpecker habitat is part of the scope of the proposed action in this EA.

Other Resources Considered

Potential impacts to the natural environment and the man-made environment are considered in this EA. They include: TE species, species of concern, vegetation, wetlands, coastal zone, surface water quality, air quality, soils and topography, wildlife and fisheries, natural areas, land use, socioeconomics, environmental justice, cultural resources, and the Camp Lejeune roads.

1.5 Decisions To Be Made

An EA is a concise public document that provides sufficient analysis for determining whether the potential environmental impacts of a proposed action are significant. It results in two possible outcomes. If impacts are not significant, the Commanding Officer, MCBCL, can sign a Finding of No Significant Impact (FONSI). If the EA shows that significant impacts would occur if the proposed action were implemented, the Commanding Officer could not sign a FONSI and the Base would have to prepare an environmental impact statement (EIS) to implement the proposed action. The proposed action in this EA is to implement the revised INRMP.

Should the efforts to complete the 2007-2011 INRMP be successful and NEPA documentation completed, the Base would implement the proposed action. If actions are identified that have the potential for environmental impacts, requests for environmental impact review (REIRs) would be prepared and reviewed in accordance with Base Order 11000.1D, Environmental Impact Review Procedures. The REIRs would be reviewed for potential environmental impacts and NEPA documentation requirements by an interdisciplinary team of military trainers, facilities managers, environmental subject matter experts, and legal counsel.

Although the SAIA, DoD Conservation Instruction 4715.3, and MCO P5090.2A, Chapter 11, specify required components of an INRMP and criteria on ecosystem management that must be met, the method of on-the-ground implementation of the INRMP is left up to each installation. This gives resource managers the ability to identify and recommend projects that are beneficial to the specific resources and conditions found at the installation.

1.6 Scoping

Scoping is a collaborative process the lead agency preparing an EA or EIS uses to determine the scope and the important issues related to a proposed action. Those involved in the scoping process for this Proposed Action include federal, state, and local agencies, non-governmental interest groups, staff departments aboard Camp Lejeune, and other interested persons. The issues identified during scoping are used to refine the

proposed action and feasible alternatives. Scoping is encouraged, although not required, during the development of an EA (MCO P5090.2A Chapter 12104.5.c).

The scoping for this EA took place in conjunction with outreach for the INRMP. Interested groups, as described above, were solicited for input and were included in the initial and ongoing scoping process. Camp Lejeune natural resources managers, military trainers, and representatives from all base departments participated in the identification of issues. The scoping record can be found in the revised INRMP file in Camp Lejeune's Environmental Conservation Branch office.

As specified in the SAIA, the public was given an opportunity to comment on the draft INRMP and the draft version of this EA from January 5 through February 6, 2006. Comments received from State and Federal agencies are in Appendix A of the revised INRMP. No comments from individuals were received.

CHAPTER 2. ALTERNATIVES

2.1 Introduction

This chapter describes both the No Action Alternative and the Proposed Action Alternative. This chapter also compares the environmental impacts of the alternatives and how each meets the purpose and need as described in section 1.3 of this EA. It also considers any issues received during scoping or public review of the draft versions of the INRMP and EA.

2.2 Alternative evaluation and selection

Alternatives were evaluated with consideration of several factors. The alternatives were eliminated or considered based on the following criteria:

- Does it meet the Purpose and Need as described in Section 1.3 of this EA?
- Is it consistent with federal, regional, and local stewardship requirements, including but not limited to: Executive Orders, Endangered Species Act, Clean Air Act, Clean Water Act, National Historic Preservation Act, Native American Grave Protection and Repatriation Act?
- Does it ensure no net loss of military installation lands to support the military mission of Camp Lejeune?

2.3 No Action Alternative

Camp Lejeune published its initial INRMP in November 2001 to guide resource management on the installation for the years 2002-2006. Under the No Action alternative, natural resources aboard Camp Lejeune would continue to be managed in accordance with the proposed action alternative that was analyzed in the EA and FONSI for the 2002-2006 INRMP. Changes in military readiness and environmental requirements have occurred since that publication was released. Implementation of the No Action alternative would not address the changes to the military mission and environmental requirements. Implementation of the No Action alternative would not have significant environmental impacts.

2.4 Proposed Action Alternative

The Proposed Action is the preferred alternative in this EA. It is to fully implement the actions listed in Appendix C of the 2007-2011 revised INRMP. Section 1.2 of this EA provides references to Chapters 4-13 of the revised INRMP where Courses of Action are outlined that make up the Proposed Action. The revised INRMP builds on the analysis and implementation of outcomes of the 2002-2006 INRMP and responds to ecological, legislative, and mission changed conditions.

Table 2.1 is a list of actions that are new since implementation of the original INRMP. They were developed to address changes to the military readiness and environmental

requirements. Impacts of these courses of actions are evaluated in this EA. The actions in this table are derived from the comprehensive list of actions in the INRMP chapters and Appendix C of the INRMP. Those lists also include actions that were documented in the original INRMP and EA and continue to be carried out.

TABLE 2.1. Objectives and associated proposed courses of action new since the original INRMP.

OBJECTIVE TES1: Treat RCW partitions as management units for silvicultural practices.

- **Action 4-02:** *Evaluate RCW partitions covered in current forest prescription.*
- **Action 4-03:** *Evaluate high-priority RCW partitions that are outside the timber prescription cycle.*

OBJECTIVE TES2: Manage for 120 acres “good quality” habitat for each partition.

- **Action 4-05:** *Modify Base forest data collection to better quantify variables contributing to good quality habitat*
- **Action 4-07:** *Use mechanical treatments for midstory vegetation control and maintenance.*
- **Action 4-08:** *Promote high-quality RCW habitat through silvicultural activities, including removal of canopy hardwoods and thinning of mature pine stands.*

OBJECTIVE TES3: Promote RCW population growth toward 173 active clusters through cluster management and protection and population manipulation

- **Action 4-11:** *Support population growth through translocation of RCWs.*

OBJECTIVE TES5: Manage Camp Lejeune’s RCW population to increase mission flexibility for future training and range development needs.

- **Action 4-27:** *Implement management strategy which allows for removal of training restriction as population milestones are met.*
- **Action 4-28:** *Promote population growth by placing unmarked clusters in High-Priority Training Zones*
- **Action 4-29:** *Implement relaxed training restrictions within 200 ft cluster buffer*

OBJECTIVE TES6: Continue current management and monitoring of sea turtles on Onslow Beach.

- **Action 4-32:** *Enforce BO 11017.1f*

OBJECTIVE COM1: Integrate consideration of at-risk species and natural communities into management to avoid further restrictions on military training.

- **Action 5-01:** *Designate Conservation Areas (when such protection does not interfere with military training requirements).*

OBJECTIVE FOR3: Integrate mission-critical conservation issues with forest management.

- **Action 4-06:** *Convert offsite species to longleaf pine within the guidelines of the 2003 Recovery Plan for the RCW.*
- **Action 7-09:** *Reduce the number of acres bedded and/or root-raked to minimize disturbance to desired intact ground cover.*
- **Action 7-11:** *Utilize the shelterwood and small patch clearcut methods of natural regeneration for longleaf pine. (Note: The shelterwood method was addressed in original INRMP.)*

OBJECTIVE FOR5: Restore the longleaf pine ecosystem to its historical range by converting offsite species based on the Ecological Classification System.

- **Action 7-15:** *Restore forest structure to a condition more typical of an open longleaf pine stand by thinning to 60 square basal area per acre. (This compares to 80 square feet in the original INRMP.)*
- **Action 7-16:** *Experiment with groundcover restoration by collecting native seeds and broadcast planting on degraded areas.*
- **Action 7-17:** *Experiment with planting of longleaf pine under loblolly pine stands to retain suitable RCW forage habitat.*

OBJECTIVE PRO1: Prescribe fire to promote wildlife habitat, restore natural communities, and manage fuel-loads.

- **Action 8-03:** *Develop and implement the prescribed burning prioritization model.*
- **Action 4-07:** *Use mechanical treatments for midstory vegetation control and maintenance.*

OBJECTIVE PRO4: Mitigate Wildland Fire Hazards in the urban interface.

- **Action 8-11:** *Perform selection harvests and mechanical vegetation control to provide defensible space in identified high hazard areas.*

OBJECTIVE SOI3: Stabilize coastal dunes for training and natural resources.

- **Action 10-06:** *Stabilize, enhance, protect and restore coastal dunes using native vegetation and other approved methods within the training section of the beach.*

OBJECTIVE WLF5: Protect the health and safety of Installation tenants and aircraft from the threats of bird-animal hazards (BASH), disease, animal-vehicle collisions, poisonous plants or animals, and general nuisance situations.

- **Action 11-18:** Implement BASH Program.

OBJECTIVE WLF6: Eliminate invasive exotic species from Camp Lejeune in order to conserve and enhance native flora and fauna and the functional value of natural systems.

- **Action 11-25:** *Implement necessary control actions on known infestations of invasive species*

There are three principal reasons for the revision of the 2001 INRMP. First, the U. S. Fish and Wildlife Service (USFWS) revised the Red-Cockaded Woodpecker (RCW) Recovery Plan. Second, Camp Lejeune has completed its Military Impact Study as detailed in the 1999 RCW Plan. Third, the 2004 National Defense Authorization Act (NDAA) made specific amendments to the Endangered Species Act (ESA) regarding INRMPs and critical habitat on military installations.

The SAIA and USMC require INRMP revision after no more than five years. The INRMP revision also provides an opportunity to re-assess mission needs in light of the 2001 attacks on America. In the aftermath of the September 11, 2001 terrorist attacks, links between sustaining homeland security, ecosystem health, bio-terrorism, and combat readiness have taken on an added and more urgent meaning at military bases across the United States. A more dynamic military mission for Marine combat forces, increased training demand, and new weapons systems have created a need to revise the 2001 INRMP so that it better supports the changing military mission while complying with applicable environmental laws and regulations.

2.5 Courses of Action Considered But Eliminated From Detailed Study

Minimum legal compliance

Limiting implementation of the INRMP to the minimum amount of actions needed to ensure that the base remains in compliance with legal requirements would involve only those projects identified as Class 0 or 1.

Many projects identified as Class 2 or 3 are aimed at conservation education and outreach, population monitoring of non-listed species, designation and development of conservation areas for sensitive species, developing wetland and shoreline restoration areas, and participation in regional conservation groups. Not implementing these projects would detract from the overall success and integration of the resource management program aboard Camp Lejeune. Information regarding project prioritization and funding can be found in section 3.3 of the INRMP.

Revising RCW buffers from 200 to 50 feet

One proposed alternative was to reduce the buffer size around occupied nesting trees. The 200-foot buffer is an activity exclusion zone that essentially removes those lands from training use. This alternative is being modified to allow certain activities within the buffer, rather than decreasing the actual size of the protective exclusion. Managers are currently considering adopting Army guidelines that have already been developed for this scenario, and will continue to work closely with USFWS officials in finalizing this issue to maximize the availability of land for training use while ensuring adequate protection for RCW nesting sites.

Adjusting prescribed burning targets

The Proposed Action for prescribed burning recommends a target of about 25,000 acres. Modification of this target was considered but not developed because the burning of more acres could not be consistently ensured with the current resources available aboard Camp Lejeune, and burning less acres would not fully meet the goal of restoring and emulating a more natural disturbance regime for fire adapted ecosystems on base.

Altering wildlife clearing size

Wildlife clearings are essentially small clear cuts, or “patch cuts” created for the purpose of enhancing wildlife habitat. Habitat is improved in this way by facilitating animal movement and forage opportunities in the created clearings. Wildlife clearings were assessed, and it was determined that the clearcutting of pine stands for species conversion purposes was helping to accomplish wildlife objectives tied to creating forest openings. There are other managed game openings in addition to cutting units. Because timber from clearcuts generates revenue, timber type conversions do not incur the costs that may be associated with creating smaller or more dispersed wildlife clearings, and so those funds may be obligated for other beneficial wildlife projects.

Eliminating ORRV use during summer months at Onslow Beach

In order to protect sensitive and endangered species that regularly and seasonally occupy Onslow Beach, an alternative was proposed to eliminate beach driving during critical months. This alternative was not developed because military training and beach recreation at Camp Lejeune are critical components for the military mission and quality of life for residents at the base. The alternative was modified to create and secure an enforceable Base Order (BO) 11017.1f that regulates recreational motorized traffic use on the beach. Sites occupied by endangered species are clearly marked on the ground, and both personnel involved in military training and recreational use are prohibited from driving on these sites.

2.6 Comparing Alternatives and Predicted Environmental Effects

Environmental effects of implementing the Proposed Action would be similar to those of continuing current management under the No Action alternative. The primary difference between the two alternatives is that the current Proposed Action takes into account recent changes in environmental policy and regional conservation plans, and the increased operational tempo for Marine training aboard Camp Lejeune. The Proposed Action incorporates findings from implementation of the 2002-2006 INRMP. Table 2.2 outlines the differences and effects of the alternatives.

Table 2.2. Comparison of Alternatives

Resource	No Action	Preferred Alternative
<p>TE Species: RCW</p>	<p>Prescribed burning, longleaf restoration, focus on creation of future nesting sites, improve mid and understory condition of loblolly stands with burning and mechanical treatments.</p> <p>Effect: Improve and create habitat.</p>	<p>Actions 4-02, 4-03, 4-05, 4-07, 4-08, 4-11, 4-27, 4-28, 4-29</p> <p>Effect: Improve and create habitat, increased integration and information for decision makers, avoidance of critical habitat designation.</p>
<p>Loggerhead and Green Sea Turtles</p>	<p>Monitoring, nest protection and relocation (if necessary). Individual tagging, data collection, restrict recreational activity during nesting.</p> <p>Effect: Protection of individuals and nesting habitat.</p>	<p>Action 4-32</p> <p>Effect: Protection of individuals and nesting habitat, avoidance of critical habitat designation.</p>
<p>Rough Leaved Loosestrife</p>	<p>Prescribed burning, mowing, protective buffers, and monitoring.</p> <p>Effect: Improve existing habitat and protect individual sites.</p>	<p>Same as No Action, and implement monitoring protocol, survey high probability habitat for occupation prior to management or development, survey/GPS occupied sites.</p> <p>Effect: Improve existing and protect potential habitat, protect individual sites, avoidance of critical habitat designation.</p>
<p>Seabeach</p>	<p>Survey, protect, and monitor occupied</p>	<p>Action 4-32</p>

Amaranth	sites. Effect: Individual site identification and protection.	Effect: Individual site identification and protection, avoidance of critical habitat designation.
American Bald Eagle	Monitor nest sites and establish activity buffers. Effect: Nest protection and gather population information	Same as No Action. Effect: Nest protection and gather population information, avoidance of critical habitat designation.
Piping Plover	Survey and protect occupied sites, monthly monitoring to identify high quality habitat. Effect: Protect occupied habitat, identify potential habitat.	Action 4-32 Effect: Protect occupied and potential habitat, avoidance of critical habitat designation.
American Alligator	Annually survey and record population data. Effect: Gather population information.	Same as No Action. Effect: Gather population information.
Forest Management	The predominant focus in forest management is in conjunction with the RCW Management Plan, focusing on longleaf restoration in areas deficient of future RCW nesting habitat, and management of loblolly stands that will be maintained until 80 years of age. Study and mitigation of the impacts from soil disturbing activities on plants, specifically related to native bunchgrasses and methods of site prep. Hardwood management is focused on improving the quality and quantity of mast producing trees. Effect: Improve and create habitat for TE and other species, restore longleaf pine ecosystems, improve site preparation techniques to reduce ground disturbance.	Actions 4-06, 7-09, 7-11, 7-15, 7-16, 7-17 Effects: Improve and create habitat for TE and other species; restore longleaf pine ecosystems; improve site preparation techniques to reduce ground disturbance; improve information available to decision makers; more flexible longleaf restoration; more older trees on site in natural regeneration; increased emphasis on two-aged and uneven-aged management; increased emphasis on hardwood control.
Forest Protection/Pest Management	Burn target of 25,000 acres annually, rotation of approximately 3 years. Priority is given to areas not burned in the last 5 years, and those areas that would meet multiple management objectives. Access to training areas is increased by close coordination with Range Control. Wildland/Urban interface areas are treated through a variety of techniques. A long-term fire	Actions 8-03, 4-07, 8-11 Effect: Restore natural disturbance cycles for fire dependent systems; improve wildlife habitat and access to training areas. Monitor and control undesirable forest pests. Increase acres treated by incorporating mechanical methods. Improve information available to decision makers.

	<p>effects study has been initiated.</p> <p>Forest pests are managed by monitoring, cut and leave, or cut and remove. Kudzu is prescribed burned and monitored for growth.</p> <p>Effect: Restore natural disturbance cycles for fire dependent systems; improve wildlife habitat and access to training areas. Monitor and control undesirable forest pests.</p>	
<p>Wetland Areas and Surface Water</p>	<p>Continued restoration and monitoring of eroding areas in the uplands that may impact the New River. The identification and use in planning/ implementation of riparian buffers and wetland delineation. Rehab disturbed sites (borrow pit/spoil areas). Soil disturbance study would continue.</p> <p>Effect: Improved water quality and restoration of riparian and upland habitats that affect water quality.</p>	<p>Same as No Action, and continue monitoring of the GSRA Wetland Mitigation Bank created in 2000.</p> <p>Effect: Improved water quality and restoration of riparian and upland habitats that affect water quality.</p>
<p>Coastal Areas</p>	<p>Ensure coordination between base departments on the use/conservation of the beach area. Dune protection and stabilization by planting native grasses. Survey and protect TE species. Enforce base ORRV restrictions. Education about the importance of the beach for mission and TE species.</p> <p>Effect: Protect and enhance coastal habitats and training/recreational access. Protect TE individuals and occupied sites.</p>	<p>Action 10-06</p> <p>Effect: Protect and enhance coastal habitats and training/recreational access. Protect TE individuals and occupied sites.</p>
<p>Soils</p>	<p>Identifying erosion problems and stabilizing areas with problems, including wetland, riparian and coastal areas. Continue soil disturbance study. Continue to coordinate with base departments for roads and trails improvement.</p> <p>Effect: Protect and improve soil conditions, and indirectly protect riparian and coastal habitats</p>	<p>Same as No Action, and rotate areas out of training as needed.</p> <p>Effect: Protect and improve soil conditions, and indirectly protect riparian and coastal habitats. Allow degraded areas to improve.</p>

<p>Wildlife</p>	<p>Prescribe burning, planting/maintaining wildlife clearings, and monitoring. Maintenance of clearings involves limited use of herbicides. BASH and clearzone management occurs as per safety requirements on airfields. Existing wildlife clearings would be improved, increased in total acreage, and utilize mission support openings as wildlife areas.</p> <p>Improve quality and quantity of hardwoods for mast production and habitat.</p> <p>Non-game - Emphasis would be placed on managing certain natural communities for biodiversity and non-game species in addition to bird nest box maintenance and wetland protection.</p> <p>Effect: Habitat improvement and protection for game and non-game species. Ensure biodiversity by habitat management.</p>	<p>Actions 11-18, 11-25</p> <p>Effect: Habitat improvement and protection for game and non-game species. Ensure biodiversity by habitat management and by control of invasive species. Protect populations by limiting undesirable human/wildlife interaction.</p>
<p>Fisheries</p>	<p>Eleven ponds are managed for fisheries. Activities include: aquatic weed control, liming and fertilizing, stocking, setting creel limits, and shoreline vegetation management.</p> <p>Effect: Maintain game fish habitat and recreational opportunities.</p>	<p>Same as No Action, and maintain shoreline depths and water control devices.</p> <p>Effect: Maintain game fish habitat and recreational opportunities.</p>
<p>Natural Areas</p>	<p>Two natural communities are designated; numerous others identified in report from the Natural Heritage Program. Passive management occurs. Natural communities are considered during land management planning analysis and decision-making. Conservation is encouraged. Monitoring identified natural communities would continue.</p> <p>Effect: Conservation of outstanding natural areas.</p>	<p>Action 5-01</p> <p>Effect: Conservation of outstanding natural areas.</p>
<p>Environmental Justice and Children</p>	<p>No effects.</p>	<p>No Effects.</p>

CHAPTER 3. AFFECTED ENVIRONMENT

3.1 Introduction

This chapter provides a description of the environment that would potentially be affected by implementing the no action alternative or the proposed action alternative.

Summary of Effects of Implementation of the INRMP for 2002-2006

Implementation of the original INRMP has yielded many long-term positive outcomes which are now part of the affected environment. For T&E species and sensitive species management, a new Base Order, BO 5090.11 Protected Species Program, has been published that allows resource managers to create and protect new conservation areas for the security of habitats. Additionally, BO 5090.111 Use of Off-Road Recreational Vehicles, creates recreational traffic regulations aimed at conserving habitats on Onslow Beach.

To conserve important ground cover that provides wildlife forage and prevents soil erosion, there has been adaptive revision to the site preparation policy for establishing new plantations associated with pine species conversion. In 2002, the total acres prepared by bedding were 362. In 2004 that number decreased to 34 acres. Mechanical treatments followed by burning for natural regeneration have also decreased from 237 acres in 2002 to 52 acres in 2004.

Accomplishments in forest management and protection included, over the four-year period 2002-2005: thinning 7,114 acres; converting 1,688 acres from loblolly to longleaf pine; and regenerating 699 acres of loblolly pine. Thirty six Southern pine beetle infestations were identified and action was taken on 21 of the sites. Managers also deployed 48 gypsy moth traps annually, in cooperation with the U. S. Forest Service. Capture of two moths was confirmed. Prescribed burning was accomplished on 76,700 acres, with 21,300 of the total acres being conducted in the growing season for ecosystem benefits.

3.2 Natural Resources

3.2.1 Threatened and Endangered Species, Species of Concern

Camp Lejeune currently supports eight federally listed threatened (T) and endangered (E) species. They include:

- Red cockaded woodpecker (RCW) (E)
- green sea turtle (T)
- loggerhead sea turtle (T)
- rough-leaved loosestrife (E)
- seabeach amaranth (T)
- American bald eagle (T)

- piping plover (T)
- leatherback sea turtle (E)

The American alligator, which is found on Camp Lejeune, is federally listed as threatened due to its similarity to the American crocodile. The American alligator is considered recovered, so formal consultation with the USFWS is not required for this species.

The waters off Camp Lejeune provide habitat for endangered species of marine mammals, and endangered sea turtle species. These include:

- fin whale
- humpback whale
- northern right whale
- sei whale
- sperm whale
- West Indian manatee
- leatherback sea turtle
- Kemp's ridley sea turtle
- hawksbill sea turtle

Camp Lejeune has developed specific management needs and monitoring protocols for each federally listed species. Intensity of management for each species varies depending on available scientific knowledge, and the ability of Camp Lejeune to take actions that promote recovery of a listed species. Monitoring intensity depends on the type and amount of information needed to facilitate an effective management program. Specific details on individual species management can be found on pages 4-4 through 4-15 of the INRMP. Camp Lejeune does not actively manage for species inhabiting the ocean waters around the base, but does regularly consult with the National Oceanographic and Atmospheric Administration (NOAA), which is the agency responsible for management of marine species.

In addition to the federally listed species found on Camp Lejeune, several at risk species are also present. An "at risk" species is one that is not federally listed, but is a conservation concern due to its rarity, proportion of the species present at Camp Lejeune, and the potential of the species to disrupt military training if it were listed. A detailed discussion of these species and their management protocols at Camp Lejeune begins on page 5-1 of the INRMP.

Camp Lejeune provides habitat and open space for many migratory birds that move annually within and beyond North America. Primary considerations regarding migratory bird management are compliance with the Migratory Bird Treaty Act; implementation of management actions in accordance with Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds; and the compatibility, contribution, and support of regional migratory and game bird conservation programs. A comprehensive discussion of migratory birds can be found in Chapter 6 of the INRMP.

3.2.2 Vegetation

Camp Lejeune is divided into five Landtype Associations (LTAs). These LTAs are New River East (Stella-White Oak Dissected Lowlands), Coastal Sandridges (Bogue-Topsail Coastal Sandridge), Onslow Maritime Zone, New River West (New River Dissected Uplands), and Great Sandy Run Pocosin (GSRA).

Upland pine flats scattered with shrub-scrub wetlands and bottom hardwood drains typify vegetation east of the New River East LTA. Loblolly pine is the dominant species, followed by longleaf pine. The vegetation in the Coastal Sandridges is characterized by mature longleaf pine with fire maintained herbaceous groundcover. The vegetation within the Onslow Maritime Zone is predominately maritime influenced pine and mixed pine-oak savannas and flatwoods. The barrier island comprised of the beach strand, primary and secondary dune systems, maritime scrub oak communities and tidal salt marsh is included in this LTA. The vegetation within the New River West may be described as predominantly loblolly pine with a prevalent hardwood component in the mid and understory. Bottomland hardwood drainage features also dissect this LTA. Currently, the GSRA can be described as large pocosins surrounded by young (less than 40 years old) loblolly and slash pine plantations, and large cutover areas.

There are approximately 93,000 acres of commercial forestland at Camp Lejeune. Forested areas that are used exclusively for military training (impact areas) are not considered commercial.

The Forest Management Section develops and implements five to seven timber sales annually, treating about 2200 acres. Timber harvesting includes the construction, maintenance, and closure of forest access roads. All harvesting activities are planned with consideration for T&E species, archaeological sites, and protection of soil and water resources.

Camp Lejeune is currently working toward restoration of longleaf pine ecosystems. The historic significance of this species, along with its importance for the RCW makes conversion from loblolly to longleaf pine desirable. A detailed discussion of treatment schedules and methods is available in the Chapter 7 of the INRMP.

Fire and pest control play an important role in forest management. Prescribed fire is regularly used to control hardwood and understory brush, promote ecosystem restoration by emulating natural disturbance regimes, and improve wildlife habitats. Diseases that affect forest trees are not considered problematic on base. Fusiform rust is common, along with the Southern pine beetle. Camp Lejeune also manages a Gypsy moth trapping program in cooperation with the Forest Service. A comprehensive discussion of the prescribed fire program on base begins on page 8-1 of the INRMP, and information regarding forest pest management can be found in Section 8.3.

Exotic and invasive plant species can have significant impacts on native plant communities. They can displace native species, which often results in decreased plant biodiversity and modifications in animal habitat suitability. Exotic plants may also contribute to increased erosion, sedimentation, and susceptibility to wildfire.

Camp Lejeune has several known populations of invasive plant species that are a significant threat to native habitats. Exotic noxious species that are known to be a present threat are kudzu, beach vitex, phragmites, alligator weed, Japanese privet, Japanese honeysuckle, autumn olive, and various lespedeza species. These species are known to have a wide distribution across many regions of the Base.

3.2.3 Wetlands, Coastal Areas, and Surface Water

The total area of wetlands on Camp Lejeune is estimated to be over 55,000 acres, roughly 44 percent of the base land area. Dominant wetland communities include wet pine flatwoods, blackwater bottomland hardwoods, pocosins, small depression ponds, and coastal salt marshes.

Onslow Beach is an 11-mile long barrier island with the New River Inlet at its southern boundary and Bear Inlet at the northern boundary. This area provides the Marine Corps with one of only two major sites in the country for amphibious military training. The beach provides recreation and important habitat for nesting sea turtles, colonial nesting shorebirds, and the threatened seabeach amaranth.

The entire mainside of Camp Lejeune falls within the White Oak River Basin as defined by the North Carolina Department of Water Quality. Most of Camp Lejeune drains into the New River Basin, with small amounts flowing into the Atlantic Intracoastal Waterway, Bear Creek, or Queens Creek. While a small portion of Greater Sandy Run Area (GSRA) drains into the New River, the majority flows into Northeast Cape Fear River, which is part of the Cape Fear River Basin.

The White Oak River Basin lies entirely within the southern coastal plain, and is comprised of four separate river systems and associated tributaries. The four rivers are the New River, the White Oak River, the Newport River, and the North River. The White Oak River Basin also includes Bogue, Back, and Core Sounds and significant portions of the Atlantic Intracoastal Waterway (AIWW).

The New River watershed includes the City of Jacksonville and Camp Lejeune. It is a coastal blackwater river, and is the largest and most populated river in the White Oak Basin. Onslow County contains the entire New River watershed. In total, the watershed consists of 223 stream miles, 22,810 estuarine acres, and 15 miles of Atlantic coastline. Jacksonville and Camp Lejeune comprise the majority of the land in the lower portion of the watershed, defined as below US Highway 17 bridge (NCDWQ, 2001).

3.2.4 Air Quality

The Clean Air Act authorized the Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment.

Under the NAAQS, six criteria air pollutants were identified – nitrogen oxides, sulfur oxides, particulates, carbon monoxide, lead, and ozone. The EPA refers to these substances as criteria air pollutants. They are regulated based on permissible levels related to health. Two standards were developed. The primary standards protect health. The secondary standards prevent damage to the environment or property.

A geographic area that meets or does better than the primary standards for air pollutants is called an attainment area; areas that do not meet the primary standards for each pollutant are called nonattainment areas. Ozone nonattainment areas are categorized based on severity, while carbon monoxide and PM10 (particulate matter with a diameter of ten microns or less) nonattainment areas are categorized as moderate and serious. Camp Lejeune is located in Onslow County, an area in attainment for all criteria pollutants (U.S. EPA 2001). Since Onslow County has been designated by the EPA as an attainment area, the need for a Clean Air Act Conformity determination is not necessary for implementation of the no action alternative or the proposed action alternative.

3.2.5 Soils and Topography

Mainside Camp Lejeune is characterized by poorly drained broad, level flatlands and gently rolling better-drained terrain. East of the New River, the flatlands range in elevation from 25-45 feet. Between New River and US 17, the changes in elevation are more pronounced, with three areas reaching 72 feet in elevation. Wet (hydric) soils are one of the most important management and habitat considerations on the installation. Nearly 30 percent of the soils mainside are classified as hydric, with the most common being Leon fine sand, Mukalee Loam, and Murville fine sand. Common non-hydric soils include well-drained Baymeade fine sand, the moderately well drained Marvyn loamy fine sand, and Onslow loamy fine sand.

In GSRA the land is almost uniformly flat and poorly drained. Elevation ranges from 39 to 69 feet, with the greatest variation in elevation in the eastern portion of GSRA, which drains into the New River. 75 to 80 percent of the soils are classified as hydric, including Croatan Muck, Leon Fine Sand, Muckalee Loam, Murville Fine Sand, Pantego Mucky Loam, Rains Fine Sandy Loam, Torhunta Fine Sandy Loam, and Woodington Loamy Fine Sand. The remaining non-hydric soils, which are most suitable for road and facility development, are more common along the west side and northeastern corner.

3.2.6 Wildlife and Fisheries

Wildlife management aboard Camp Lejeune includes T&E species, species at risk, game and non-game animals, exotic species, and sport fisheries. Management of habitats versus individual species protects the long-term viability of wildlife populations on base. T&E species and at risk species are discussed in section 3.2.1 of this document, and in Chapters 4 and 5 of the INRMP.

Game animals on base include white-tailed deer, black bear, wild turkey, quail, and a variety of waterfowl. Open hunting seasons for game are controlled by state and federal regulations, in conjunction with base programs and policy. The majority of habitat improvement on base is accomplished through forest management. Maintaining quality habitat and improving areas of habitat deficiency are the primary management focus. A complete discussion of game management and resident populations can be found in Chapter 11 of the INRMP.

There are a total of 11 managed freshwater fishing ponds on Camp Lejeune and Marine Corps Air Station (MCAS) New River. The total surface area of the ponds is about 50 acres. Fisheries and pond management is focused on providing safe and accessible recreational opportunities. Managed species include largemouth bass, bluegill, red ear sunfish, and channel catfish. Because the ponds are size and depth limited, management of other species has not been considered.

Freshwater ponds on Camp Lejeune are characteristic of warm water ponds in the southern United States. The ponds are generally shallow, with only a few exceeding 8 feet in depth. Problems inherent to shallow warm water bodies include erratic dissolved oxygen levels, aquatic weed infestation, and limits on fishery potential. Sport fisheries are discussed in Section 11.3 of the INRMP.

In North Carolina there are more than 1,000 non-game animal species. Non-game animals include all those that cannot legally be taken by hunting and fishing. Camp Lejeune conducts and supports studies that help land managers better understand the diversity and distribution of non-game animals on base. Studies include monitoring neotropical migrant birds and surveys for a variety of insects, amphibians, birds, and mammals. Other management activities include the installation and maintenance of bird boxes and making recommendations on new project proposals. The Base's management of resources to maintain training areas in a relatively natural state provides significant benefits to many resident species. See Section 11.4 of the INRMP for more information on non-game animals.

Wildlife management aboard Camp Lejeune also includes wildlife damage management and control. Strategies applied in the integrated wildlife damage framework can be preventative or corrective in nature. Preventative actions include on-site education, frightening techniques to disperse nuisance animals, and basic sanitation around residences to discourage negative wildlife and resident interaction. Corrective actions, including trapping and lethal control, are only applied when preventative measures have

not achieved a satisfactory result. All techniques used on base conform to Federal and State permitting authorities and American Veterinary Medical Association guidelines.

With the aircraft operations at MCAS New River, bird-animal strike hazards (BASH) are a recurring safety issue. Routine control actions in the airfield environment are sometimes more intense than in other areas on base. Baseline information on wildlife populations and seasonal patterns of animal use are important to developing and implementing a successful BASH program. MCAS New River's BASH program is designed to identify and communicate hazards, establish operating procedures to avoid high hazard situations, and establish guidelines to mitigate environmental factors that attract birds to the airfield. The program is implemented via Air Station Order 3710.40B.

3.2.7 Natural Areas

Two natural areas have been designated through a Memorandum of Understanding (MOU, 1985) between the Commanding General, Camp Lejeune and the NC Department of Natural Resources and Community Development. These areas are officially entered on the NC Registry of Natural Heritage Areas. The MOU includes an understanding that the Marine Corps will "refrain from making or permitting changes that substantially and negatively affect the exceptional natural resources for which the designated natural areas are registered." The agreement does not interfere with non-vehicular Marine training and operations aboard the installation. See Section 5.2 of the INRMP.

3.2.7.1 Wallace Creek Cypress Swamp

This 115-acre old growth bald cypress stand is a remnant of the historic millpond that was impounded on Wallace Creek by the old Montford Dam, which was destroyed by Hurricane Hazel in 1954. The forest is a quality example of a blackwater swamp system due to its undisturbed hydrologic condition and maturity. Cypress trees tower over a subcanopy of hardwoods and an open understory with scattered red bays and palmetto palms. The swamp forest provides important habitat for wildlife and connects with the marshes along the New River (MOU, 1985).

3.2.7.2 Longleaf Pine Ridge Savanna

This 26-acre longleaf pine stand on a dry sand ridge is one of the few old growth naturally regenerating longleaf pine forests remaining on the Coastal Plain. This stand was heavily turpented, but has apparently remained uncut since before the 1900s. Other than fire breaks around the stand, and a few shallow firebreaks extending into the stand, there are no signs of human manipulation. The stand supports an active colony of RCW, as well as black bear, deer, and wild turkey. The preserve stands as a historic and natural interpretation and research area (MOU, 1985).

3.3 Human Environment

3.3.1 Land Use

3.3.1.1 Onslow County

Residential development in Onslow County is concentrated in the Jacksonville area and the county's several smaller municipalities. Commercial and industrial uses are concentrated within the incorporated areas, with the city of Jacksonville serving as the county seat of government. Jacksonville is the county's commercial center and accommodates its only industrial park. Strip commercial development is a feature in Jacksonville, particularly along Marine and Western Boulevards. The county airport is Albert J. Ellis Airport, located in western Onslow County on N. C. Highway 111. The airport occupies approximately 700 acres.

Onslow County's Land Use Plan is in conformity with the Coastal Area Management Act (CAMA) (Onslow County, July 1998). The CAMA is North Carolina's implementation of federal requirements of the Coastal Zone Management Act of 1972 (CZMA). The county has zoning control in only one special area, namely Chadwick Shores in Stump Sound Township. The county does require review of planned subdivision development to enforce minimum design standards of the Onslow County Planning Department.

Incorporated areas such as Jacksonville implement their own zoning regulations with an extension of these controls one mile beyond their borders.

3.3.1.2 Marine Corps Base Camp Lejeune

The use of land on Camp Lejeune is generally influenced by the physical features of the land itself and by the operational requirements that relate directly to use. Regulations or legal restrictions, such as explosive safety distances or helicopter approach and clearance zones, are examples of operational requirements that influence development. Table 3.1 separates land use on Camp Lejeune into two categories, cantonment area and training area.

Table 3.1 Camp Lejeune Land Use

Land Use	Acres	Percent
Cantonment	16,477	13
Training Range/Maneuver	109,131	87
Total	125,608	100
Source: Camp Lejeune Geographic Information Systems Office, 2006		

3.3.1.2.1 Cantonment

A cantonment area contains most of the infrastructure on an installation, such as offices, housing, and operational facilities. On Camp Lejeune, the cantonment area includes the following land uses: administrative, community, commercial, urban, residential, training classrooms, utilities, operational, maintenance, storage and supply, medical and dental, recreational, industrial, mining, transportation, and a cemetery. Outdoor recreation opportunities within the cantonment area include the Wallace Creek greenway, a skeet range, two marinas (Gottschalk and Courthouse Bay) and several paved running/walking trails.

3.3.1.2.2 Training Uses

The majority of Camp Lejeune is composed of training ranges and maneuver areas. Camp Lejeune is divided into 93 training areas, which are categorized as either maneuver areas, tactical maneuver areas, or special training areas. The average size of a training area on mainside is approximately 875 acres, ranging in size from 230 to 5300 acres. Camp Lejeune has 55 active range areas and three impact areas. The G-10 Impact Area, 5000 acres, is a bombing and target range that accommodates all indirect artillery firing, all infantry weapons, selected aviation ordnance, and lasers. The N-1/BT-3 Impact Area, also known as Browns Island and approximately 33,500 acres in size (including the over water portion), accommodates air to ground weapons firing, field artillery direct fire, helicopter gunnery, tank fire, LAV fire, and small arms ammunition. The range fan for this impact area extends across the AIWW into the Atlantic Ocean. The K-2 Impact Area, 3900 acres, accommodates air to ground weapons firing, field artillery direct fire, helicopter gunnery, and small arms ammunition.

The Greater Sandy Run Training Area (GSRA) was acquired in 1992. It is the westernmost training area of the Base. It is approximately 41,000 acres, and provides training for joint exercises that require large maneuver areas for tactical training and for newer long-range weapon systems (Camp Lejeune, 1994). Training areas average

approximately 1800 acres in size. Only non-explosive ordnance is used in the GSRA. Additional land reserved for training ranges and maneuver areas includes the area from south of MCAS New River to the Stone Bay Rifle Range and the area between French Creek and Mile Hammock Bay.

Training and maneuver areas are primarily maintained through prescribed fire if the area falls within a portion of the base that receives regular burning. The training and maneuver areas are rehabilitated on a site-by-site basis when a degraded area is reported and the resources are available to conduct restoration efforts. No rotation schedule is used to provide degraded areas an opportunity to revegetate.

3.3.2 Socioeconomics and Demographics

MCB Camp Lejeune is home to the largest concentration of Marines and sailors in the world. The active duty population on base in 2003 was 37,221 officers, enlisted personnel, and students (USMC 2003). On Base civilian employees account for 4,883 personnel. There were over 53,000 dependents of active duty personnel, and over 42,000 military retirees and dependents in the Jacksonville area (USMC, 2003).

The military population of Camp Lejeune has long been an essential component of the demography and economy of both Jacksonville and Onslow County. The County estimates that 90 percent of the military population associated with the base reside within its boundaries (Onslow County, 2000).

Census data for the 2000 racial and ethnic composition of Onslow County and Jacksonville shows similar proportions of white and black populations as for North Carolina as a whole. Persons of Hispanic origin are more numerous in Onslow County and Jacksonville than in the state as a whole, indicating their association with the base.

Camp Lejeune is the leading employer of Onslow County residents. In 2003 the base contributed more than \$2.9 billion to the local economy, mostly in the form of wages and salaries. Onslow County has a different employment character than is found elsewhere in the state. In 2003, government jobs accounted for 31.6 percent of the total jobs in the County, while the state average is 16.8 percent (North Carolina Employment Security Commission, 2005). Trade, transportation and utilities, leisure and hospitality, and public administration all represent a larger share of employment in Onslow County than elsewhere in the state. Table 3.2 shows employment trends for 2003.

Table 3.2 Employment by Principal Industry in 2003

Industry	Percent of Employed Civilian Population	
	Onslow County	North Carolina
Trade, transportation, utilities	24.6	20.1
Education and Health	21.2	20.9
Leisure and Hospitality	14.3	9.2
Public Administration	11.9	5.8
Professional / Business Services	9.4	11.4
Construction	6.5	5.7
Financial Activities	3.6	5.0
Other services	2.7	2.6
Information	2.6	2.1
Manufacturing	2.2	16.2
Natural Resources and Mining	0.6	0.9

Source: Based on North Carolina Employment Security Commission, 2005

3.3.3 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs federal agencies to incorporate environmental justice into their mission and activities. Federal departments and agencies are to accomplish this by conducting programs, policies, and activities that substantially affect human health or the environment in a manner that does not exclude communities from participation in, deny communities the benefit of, or subject communities to discrimination under such actions because of race, color, or national origin.

Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks; requires federal agencies to identify and assess environmental health and safety risks to children. “Environmental health and safety risks” are defined as “risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest.”

Potential impacts of implementing the revised INRMP (proposed action) are evaluated with respect to Executive Orders 12898 and 13045 in Chapter 4 of this document.

Table 3.3 presents the racial and ethnic characteristics of Onslow County as compared to the state of North Carolina. Minority populations represent a relatively small portion of the total population. Compared to the state as a whole, the county has similar population characteristics. The largest difference is in the percent of Hispanic residents in the county as compared to the state. Relative proportions of African Americans, American Indians, and Alaska natives are lower in the county in comparison to the state.

Table 3.3 Racial and Ethnic Characteristics in 2000 (percent)

Jurisdiction	African American	Hispanic/Latino	American Indian, Eskimo, Aleut	Asian, Pacific Islander
Onslow County	18.5	7.2	0.7	1.9
North Carolina	21.6	4.7	1.2	1.5
Source: US Census Bureau, 2005				

Table 3.4 shows Onslow County has lower household and family income than the state as a whole. County percentages of persons and families in poverty are comparable to those of North Carolina.

Table 3.4 Income and Poverty Status, 1999

Jurisdiction	Median Household Income	Median Family income	Persons in Poverty *	Families in Poverty *
Onslow County	33,756	36,692	16,917 (12.9%)	3,994 (10.8%)
North Carolina	39,184	46,355	958,677 (12.3%)	196,423 (9.0%)
* 2000 Income below poverty level. Population for whom poverty status is determined. Source: US Census Bureau, 2002				

3.3.4 Roads

The main road in the vicinity of Camp Lejeune is U. S. Highway 17. The route runs roughly north-south, connecting Jacksonville with Wilmington, N. C. to the south and New Bern, N. C. to the north. Jacksonville is connected to the remainder of the region by US 258/NC 24 northwest to I-40; NC 53 southwest to I-40; and NC 24 east to a series of coastal towns, terminating near Morehead City. Both US 17 and NC 24 are divided, multi-lane facilities with three lanes in each direction in the urbanized area near Jacksonville.

The major road access to Camp Lejeune is NC Highway 24 from US 17. Another access to the base is NC Highway 172 from the north from NC Highway 24 or from the south on US 17. Four gates serve the installation. The main gate is located at NC Highway 24 and Holcomb Boulevard. Triangle Outpost Gate is at Lyman Road and NC Highway 172. Sneads Ferry Gate is at New River and NC Highway 172. Piney Green Gate is at NC Highway 24 and Piney Green Road. All gates are either manned by military police or closed. Access to the Base through these gates requires validated vehicle passes which can be obtained at the Visitor Information Center at the main gate. Travelers along NC Highway 172 can obtain passes to allow them to travel only between Triangle Outpost Gate and Sneads Ferry Gate.

Roads on Camp Lejeune are classified as primary, secondary, and tertiary. Primary roads include the state maintained highways 17, 172, and 24. The secondary and tertiary roads are primarily used by Camp Lejeune authorized personnel for access to training areas, ranges, and impact areas. These roads are also referred to as unimproved roads. Currently there are approximately 222 miles of improved roads and approximately 635 miles of secondary and tertiary roads. Vehicles that typically use the unimproved roads include High Mobility Multipurpose Wheeled Vehicles, pickups, and transport trailers. Tanks use designated tank trails and cross the paved roads only at authorized locations. The Forestry Section is responsible for the construction and maintenance of roads that are required solely for the purpose of accomplishing forest management activities (e.g. timber harvest, prescribed burning, site preparation, etc.). During timber harvesting activities, the timber purchaser/contractor is responsible for road maintenance (under the supervision of the Forestry Section), and for returning the road to pre-timber sale condition.

3.3.5 Cultural Resources

Camp Lejeune is currently consulting with the North Carolina State Historic Preservation Office (NCSHPO) in a re-evaluation of historic architectural properties aboard Base. A consensus determination has been reached between Camp Lejeune and NCSHPO that six historic districts comprised of 129 buildings aboard Base are eligible for listing in the National Register of Historic Places. Consultation regarding two additional historic districts comprised of 42 buildings is ongoing.

Archaeological surveys at Camp Lejeune started in 1979 with researchers from the University of North Carolina at Chapel Hill and have been ongoing since then. Studies identified soil types that possessed a high potential for containing archaeological resources. Overlays were developed to provide information vital to planning archaeological investigations, including extent of previous surveys, presence and severity of ground disturbance activities, depth potential of artifacts at sites, and potential historic archaeological resources.

As a result of these investigations, more than 1,000 ($n > 1,000$) archaeological sites have been identified on Camp Lejeune. A small number ($n < 30$) of these sites have been determined eligible for listing on the National Register of Historic Places (NRHP). A significant number ($n > 800$) have been recommended not eligible for the NRHP and the remainder have yet to be evaluated for NRHP eligibility. Archaeological surveys, testing and further evaluations are currently underway. Archaeological investigations continue in support of the forestry prescription and preparation program. As funds become available, the Base plans to complete survey of all high site probability areas within all forest compartments by FY 2009. Site locations are documented in the Integrated Geographic Information Repository (IGIR) and are updated as new information becomes available. The IGIR is a computer-based digital library containing up-to-date georeferenced information about the Base's man-made and natural environments that is available to Base personnel to aid in management of their respective programs.

3.3.6 Solid Waste Management

The Base operates its own solid waste landfill on Piney Green Road. Its predicted capacity in 2001 was 17 to 20 years (EA for 4th Marine Expeditionary Brigade Complex, MCB, Camp Lejeune, 2004).

Management of hazardous materials and hazardous wastes are subsets of solid waste management aboard the Base. Their management is in accordance with Base Order 6240.5B. The Base has properly trained personnel to respond to spills of hazardous materials and hazardous wastes, including fuels, oils, and sewage.

Scattered across the Base, mostly in or near cantonment areas are Installation Restoration Sites (IR Sites). IR Sites are locations where, in the past, hazardous materials or wastes were discarded. Camp Lejeune researched and inventoried its property for these sites and currently manages clean up and/or monitoring of 43 IR Sites. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulates IR Sites.

CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This section presents an analysis of the potential impacts of implementing the alternatives on the natural resources of Camp Lejeune. Following a format similar to Chapter 3, this chapter discusses the No Action Alternative and the Proposed Action Alternative. Because an ecosystem approach was used to develop the INRMP and alternatives, the effects from implementation of each alternative will be focused on ecosystems. Cumulative effects are addressed at the end of this chapter.

Implementation of the alternatives would have no impacts to geology, groundwater, climate, noise, utilities, or transportation aboard Camp Lejeune, therefore these resources will not be discussed here.

Specific mitigation measures are automatically applied when conducting natural resources management actions. Mitigation measures lessen or eliminate potential environmental impacts. The majority of mitigation measures followed are included in North Carolina's Best Management Practices (BMPs) applied to forest management activities. Other mitigations, as documented in daily burn plans, include self-imposed restrictions related to prescribed fire and wildland fire suppression.

Previous environmental analysis has been completed and documented in both EAs and Biological Assessments for natural resource management actions at Camp Lejeune. This EA incorporates by reference previously prepared EAs for prescribed burning and silvicultural activities aboard Camp Lejeune. This EA also incorporates environmental analysis as documented in Biological Assessments completed for the management of RCW and issues related to dune stabilization at Onslow Beach. All of these documents are available for review by contacting the Environmental Conservation Branch, Installations and Environment Department, Camp Lejeune.

The Proposed Action, as discussed in Chapter 2 of this document, is an extension and update of the No Action Alternative. The Proposed Action builds on the analysis and implementation results of the 2002-2006 INRMP. The No Action alternative for this EA is to continue to manage natural resources in accordance with the original INRMP. Because of this, the environmental effects of the alternatives are expected to be similar to each other and so will be discussed together. If the Proposed Action would have different effects than the No Action alternative, they will be clearly identified at the end of each section.

4.2 Natural Resources

4.2.1 Threatened and Endangered Species, Species of Concern

Implementation of either the proposed action or no action alternative would have beneficial effects on federally protected species. Resident terrestrial species such as the RCW and rough leaved loosestrife would benefit from the conversion of offsite pine

species to longleaf, restoring forest structure, and making fire return intervals shorter. Specifically, installation populations would benefit from the transformation of potential habitat to suitable habitat as management activities restore historic structure and disturbance regimes to forested systems. Seasonal and resident protected species would benefit from enhanced monitoring of habitat use and reproduction, allowing for timely management responses to population trends. Enhanced educational outreach regarding protected species would further conservation management efforts.

State protected and rare species would benefit from implementation as progress towards restoration of pre-settlement conditions will create and enhance essential habitats. Concentrations of rare species occurring in identified natural communities would be considered during project planning, which would result in additional conservation of existing high quality habitats.

Under the Proposed Action, implementation of expanded RCW population and habitat monitoring would be beneficial to the species by helping managers assess and react to population trends and habitat needs. Development of technical tools such as the habitat and population model and GIS layers would benefit the species by improving and integrating the information available to managers for the decision making process.

Additional monitoring and surveys for rough leaved loosestrife under the Proposed Action would be beneficial to that species by providing managers with information regarding the extent and location of occupied and potential habitat which could be used for future planning purposes.

The creation of conservation areas for piping plover under the Proposed Action would ensure protection of the species over the long term.

4.2.2 Vegetation

The fire-adapted terrestrial systems aboard Camp Lejeune would benefit from implementation of either the proposed action or the no action alternative. Applying prescribed fire would gradually decrease the fire return interval so that it becomes closer to pre-settlement disturbance patterns. This would encourage longleaf pine regeneration, which is a longer-lived, more fire resistant species in comparison to loblolly pine. Focusing implementation of the RCW Management Plan in areas that are currently dominated by loblolly pine and deficient in future nesting habitat would create pockets of desirable longleaf pine. This mosaic of pine species would support plant and wildlife species diversity and would help to ensure perpetuation of the pine ecosystem for species dependent on it. Focusing efforts on restoring structure and composition in loblolly stands that would not be converted to longleaf during this planning period would benefit terrestrial species by providing increased sunlight for an herbaceous layer that provides forage for wildlife, habitat for invertebrate and small mammal species, and fuel for prescribed burning.

The retention of loblolly seed trees, where conversion to longleaf is desirable, would potentially slow the rate of successful conversion to longleaf. Camp Lejeune would

apply a flexible management approach to the issue of conversion of loblolly stands to longleaf pine. Factors considered in the decision to leave or remove the loblolly trees are: proximity to nearest active cluster, value of the loblolly trees to the RCW partition, the types of ground cover, type of soil, and other factors. Each proposed conversion would be analyzed on a case by case basis and the deciding factor will be the greatest overall benefit to the RCW. In any event, Camp Lejeune would not convert stands greater than 40 acres in size.

Control of hardwood trees in the midstory and canopy would help achieve “good quality habitat” as defined in the 2003 RCW Recovery Plan. The removal of hardwood by fire or mechanical treatments would temporarily cause direct impacts to vegetation from being crushed by heavy equipment or reduced by prescribed fire. Indirect impacts to vegetation would be beneficial for most herbaceous species. The removal of hardwoods would encourage native grasses and forbs through decreased competition and increased sunlight, with possible growth stimulation from fire.

The initiation or continuation of a research study to analyze impacts from site preparation on native grasses would benefit resources overall by answering questions and clarifying impacts. Adaptive management techniques would continue to be used as data is collected and analyzed. Intensive site preparation would be restricted to the GSRA, research study areas, former agriculture fields, and loblolly dominated RCW partitions. This would limit impacts on terrestrial resources to already disturbed sites (i.e. former agriculture fields and GSRA), and areas in which restoring longleaf would take short-term precedence to preserving the overall longleaf-wiregrass ecosystem.

Herbicides would be used to control aquatic weeds and invasive species, to maintain open areas for access, and to control midstory and canopy hardwood species. Only approved pesticides would be used and they would be applied by qualified applicators according to label directions. For this reason, no significant impacts are expected from the use of herbicides.

The proposed action would incorporate adaptive management techniques to specifically help preserve ground cover by reducing the amount of intensive site preparation whenever possible used to establish new pine plantations and regenerate other treated areas.

4.2.3 Wetlands, Coastal Areas, and Surface Water

Implementation of either the proposed action or the no action alternative would have limited, minor impacts to riparian, wetland, open water, and other aquatic habitats. Minor impacts to wetlands may occur during construction of forest access roads and improvement of existing degraded trails and unimproved access roads adjacent to riparian areas. Many potential impacts would be avoided because best management practices (BMPs) are followed during forest access road construction. Currently employed BMPs would result in minimal or no effects from establishing and maintaining wildlife clearings, and from proposed forest and fire management activities. The use of herbicides for any purpose including aquatic weed control is strictly regulated according

to label directions. For this reason, no significant impacts to wetlands, coastal areas, and surface water are expected from the use of those chemicals.

Other beneficial effects would result from erosion control and shoreline stabilization designed to reduce sedimentation and improve water quality. Upland lime-sink depressions and other depression ponds would benefit from tailored management actions and consideration during land use planning and project development. Continued monitoring of the GSRA Wetland Mitigation Bank created in 2000 would continue as would wetland delineation.

Implementation of either the proposed action or no action alternative would benefit resources in both the barrier island and maritime forest ecosystems of the coastal zone. Efforts to increase educational outreach and enforcement of existing base orders would contribute to conservation of sensitive resources. BMPs applied to proposed forest and fire management actions would minimize impacts in this system.

4.2.4 Air Quality

Implementation of either the proposed action or the no action alternative could potentially cause a temporary negative effect on air quality as a result of prescribed burning. Since the region is currently in attainment status, this temporary increase is not expected to contribute to the area reaching nonattainment. Section 3.2.4 of this document discusses air quality requirements. Prescribed fire would generate smoke that could potentially cause negative impacts to the public, both on and off base. However, prescribed burning is conducted under strict parameters to ensure adequate dispersion of smoke and associated particulate matter.

4.2.5 Soils and Topography

Implementation of either the proposed action or no action alternative would have a beneficial effect on soils by rehabilitating degraded areas, maintaining groundcover that helps reduce surface erosion, and closely monitoring areas for future soil degradation. The use of North Carolina's BMPs would minimize potential impacts from proposed projects, including forest management activities, fire management, establishing and maintaining wildlife clearings, rehabilitating borrow pits and spoil areas, and maintaining roads and unimproved trails. The potential effects and associated mitigation measures for many of the proposed forest and fire management actions are addressed in environmental assessments for prescribed burning and silvicultural activities. These documents conclude that temporary, direct, and indirect impacts to soils may occur from forest and fire management actions. Increased soil disturbance and loss of forest litter may result in slight increases in surface erosion and loss of organic material and other soil nutrients. The use of natural or existing human-created barriers would reduce the amount of soil disturbance from newly plowed fire lines often associated with increased prescribed fire.

New River shoreline stabilization and rehabilitation of upland erosion sites would result in a net benefit to soils by reducing off-site movement of soil.

The Proposed Action would provide an additional benefit to the soil resource by rotating areas out of training use as needed to facilitate recovery of impacted areas.

4.2.6 Wildlife and Fisheries

Implementation of either the proposed action or no action alternative would have a net beneficial effect on those species adapted to a fire maintained ecosystem such as fox squirrel, quail, and, to a lesser degree, wild turkey and white-tailed deer. Density and abundance of some game species may be reduced for those species not truly adapted to a fire maintained ecosystem, but the effects on extant individuals of all species would be positive.

Populations of highlighted game species such as wild turkey would increase in the short term as better quality brood rearing habitat is created through the use of prescribed fire, although there would be a point of diminishing returns related to adequate nesting and forage resources. Turkeys nest best when habitat conditions provide a mix of shrub cover and grass and forb forage (Dickson 1992). Fire in pine stands stimulates grass and forb growth. Although growing season burns may negatively impact individual turkey nests, the resulting benefit to the overall ecosystem would create more favorable conditions for future nesting and foraging (Sweeney and Cole 1997).

Changes in the quantity, distribution, and species of mast producing hardwoods related to mixed-pine hardwood habitats throughout Camp Lejeune are anticipated to change the demographic patterns of all species that are considered mast dependent. These changes would produce both positive and negative effects based upon individual species habitat and forage preferences.

Implementation of either the proposed action or no action alternative would have a positive net effect on wildlife damage control and management actions aboard Camp Lejeune by providing improved integration between base departments. Various game species that pose threats to government property and human health would be fully addressed under BASH programs. See Sections 6.1 and 11.1 of the INRMP.

Implementation of either alternative would have a net beneficial effect on nongame species adapted to fire maintained ecosystems and species considered bottomland/hardwood obligates. These beneficial effects would extend throughout the terrestrial and aquatic communities aboard Camp Lejeune. Implementation would change forest community structure at a slow rate, and create less favorable habitats for many nongame species (including some neo-tropical migrant birds) but would maintain native and migratory populations of these species at levels consistent with ecological carrying capacity as it relates to pre-settlement conditions.

Populations of highlighted nongame species such as Bachman's sparrow may increase due to changing habitat conditions. Programs for the management of other recognizable songbirds, such as bluebirds and purple martins would improve and create better nesting opportunities. The increased use of prescribed fire would have both short and long term negative effects on mid-story and shrub nesting avifauna. Changes in the distribution of

upland hardwood communities are anticipated to change the demographic patterns of all nongame species that favor upland hardwood habitats. These changes would produce both positive and negative effects based upon individual species habitat and forage preferences.

The effects on amphibian and reptile populations are unclear; however, proposed monitoring programs that address species affinities and response to habitat changes would provide scientific data from which to adapt management strategies. Habitat changes are anticipated to be favorable for various reptile species such as the eastern diamondback rattlesnake. Important breeding sites for many amphibians, including the state listed Carolina gopher frog would be highlighted in management programs and would be specifically addressed in proposed forest and habitat management actions.

In addition to the effects above, implementation of the proposed action would directly benefit wildlife by developing educational materials for base residents. This action would be aimed at reducing negative human and wildlife interactions and the necessity for animal curtailment. The proposed action offers the added benefit of managing green tree reservoirs for waterfowl and other species habitat, and the control of invasive species that may out compete native populations.

4.2.7 Natural Areas

Implementation of either the proposed action or no action alternative would benefit both registered and unregistered natural areas through increased awareness of their location and significance, and through the consideration of eight high priority community types.

4.3 Human Environment

4.3.1 Land Use

Land use in Onslow County or the Base would not be impacted by implementing either the no action alternative or the proposed action alternative.

4.3.2 Socioeconomics and Demographics

Implementation of either the no action alternative or the proposed action alternative would not cause socioeconomic impacts to Onslow County and Base communities.

4.3.3 Environmental Justice

Implementation of either the no action alternative or the proposed action alternative would not impact low income, minority populations or children as evaluated in accordance with Executive Orders 12898 and 13045.

4.3.4 Roads

Implementation of either the no action alternative or proposed action alternative would not significantly impact roads. Only temporary forest access roads would be constructed. Existing roads would be maintained.

4.3.5 Cultural Resources

Implementation of either the no action alternative or proposed action alternative would not cause impacts to cultural resources. Consistent with the Base Order 11000.1D Environmental Impact Review Procedures, the Base archaeologist would review any proposal that has the potential to impact cultural resources during the planning phase of the project.

4.3.6 Solid Waste Management

Consistent with the Base's requirement in BO 11000.1D, the appropriate environmental sections would review any proposal that has the potential to impact or be impacted by any solid or hazardous waste unit or IR Site. Implementation of either the proposed action alternative or the no action alternative would not impact or be impacted by the Base's solid waste management program or installation restoration sites (IR).

4.3.7 Cumulative Impacts

The alternatives include actions that may cumulatively contribute to improvements of the condition and viability of natural resources both within and outside of the installation. Regional conservation partnerships, participation in County planning efforts, and the implementation of a Joint Land Use Study can contribute to a regional natural resources conservation network. This could mitigate potential negative impacts associated with economic development and prevent geographic and genetic isolation of plant and animal species that could also interfere with future mission accomplishment.

Ecosystem management as proposed in these alternatives would continue to maintain high quality natural systems aboard Camp Lejeune, providing beneficial qualities to the entire region.

Chapter 5. Persons Consulted

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