

FINAL

**INTEGRATED
NATURAL
RESOURCES
MANAGEMENT
PLAN
2018-2022**



FORT RUCKER, ALABAMA

**NATURAL RESOURCES BRANCH
ENVIRONMENTAL AND NATURAL RESOURCES DIVISION
DIRECTORATE OF PUBLIC WORKS**

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**INTEGRATED NATURAL RESOURCES
MANAGEMENT PLAN****FORT RUCKER, ALABAMA****APPROVAL**

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

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This Integrated Natural Resources Management Plan will become effective upon the date subscribed by the last signature and shall continue in full force for a period of five years or until terminated by written notice to the other parties by any of the parties signing this agreement. This agreement may be amended or revised by agreement between the parties hereto. Action to amend or revise may originate with any of the other participating agencies.

INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

FORT RUCKER, ALABAMA

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EXECUTIVE SUMMARY

The primary purpose of this Integrated Natural Resources Management Plan (INRMP) is to integrate the management and conservation of natural resources with the military mission and land use needs of Fort Rucker, in Dale County, Alabama. This INRMP has been developed to meet the statutory regulations of the Sikes Act Improvement Act (SAIA) of 1997, Department of Defense instructions, and U.S. Army guidance. In cooperation with federal and state agencies, and incorporating public input, Fort Rucker will endeavor to conserve, protect, and manage fish and wildlife resources on the installation.

This INRMP identifies goals, objectives, and strategies for the management of Fort Rucker's natural resources for the next 5-year period, 2018 through 2022. Management practices and projects have been identified to support the strategies and accomplish the goals and objectives of the INRMP. The program serves to integrate Fort Rucker's natural resources management in a manner that is consistent with maintaining high quality training land to support Fort Rucker's critical military mission. The recommended management practices and projects take into consideration and are consistent with the military mission requirement for the use of land within the boundaries of Fort Rucker. The boundaries of the installation are within southern Alabama and include 15 stagefields, five basefields, and one forward arming/refueling point. Fort Rucker's land area is used for the military mission, a majority of which includes uses for runway surface zones, administrative and industrial support facilities, airfield drainage, and recreation. Management practices and projects in the INRMP focus on support of fulfillment of the military mission, management and restoration of natural resources in a sustainable manner, recovery of threatened and endangered species, and a variety of natural resource based recreational opportunities. This INRMP provides a discussion of environmental stewardship initiatives for natural communities, efforts to control invasive and exotic animal and plant species, and prevention of conditions that contribute to a bird/wildlife aircraft strike hazard potential. The goals, objectives, strategies, recommended management practices, and projects of this INRMP include:

- Implement an Ecosystem Management strategy
- Conduct forest and fire management activities to support desired training conditions and minimize hazards
- Control wildfires to protect the public and mission assets
- Control invasive non-native species to prevent degradation of training areas
- Support erosion control efforts of the Integrated Training Area Management (ITAM) program through reforestation
- Support animal and vegetation control efforts of the Wildlife Aircraft Strike Hazard (WASH) program around airfields

- Coordinate with United States Fish and Wildlife Service (USFWS) to complete Endangered Species Act (ESA) Section 7 consultations for activities affecting federally listed species
- Provide input on natural resources considerations and impact minimization measures on proposed projects and activities during the National Environmental Policy Act (NEPA) process
- Educate installation personnel on natural resources laws and regulations as well as necessary steps required to minimize impacts on natural resources
- Provide professional enforcement of natural resources related laws and regulations
- Manage and monitor protected and at risk species
- Conduct prescribed fires to support native species and habitats and to reduce natural fuel loads
- Conduct longleaf pine restoration in priority areas through seedling plantings and prescribed fire
- Manage forested areas in a manner that provides quality habitat for wildlife while allowing the sustainable harvest of wood-products
- Protect and restore water resources and wetlands
- Control invasive non-native plants and animals to prevent impacts to native species
- Protect and manage areas of special ecological concern
- Protect cultural resources during natural resources management activities
- Conduct management activities to maintain quality habitats for hunting, fishing, and other outdoor recreation activities
- Monitor fish and game species and manage them on a sustainable, carrying capacity basis
- Promote hunting and fishing awareness, and provide conservation education opportunities
- Maintain infrastructure and facilities that support fishing, hunting, and other natural resource-based recreation

All requirements set forth in this INRMP requiring the expenditure of funds are expressly subject to the availability of appropriations and the requirements of the Anti-Deficiency Act (31 U.S.C. Section 1341). No obligation undertaken by Fort Rucker under the terms of this INRMP will require or be interpreted to require a commitment to expend funds not obligated for a particular purpose.

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1.0 OVERVIEW

1.1 Purpose

This Integrated Natural Resources Management Plan (INRMP) guides implementation of the natural resources program at Fort Rucker, Alabama from 2018 through 2022. The program serves to integrate Fort Rucker's natural resources management in a manner that is consistent with maintaining high quality training land to support Fort Rucker's critical military mission.

1.2 Scope

The INRMP is designed to act as a guiding document for the management of natural resources at Fort Rucker, Alabama (**Figure 1-1**) and its numerous satellite installations as depicted in **Figure 1-2**. The main Fort Rucker Reservation is located in Coffee and Dale Counties. Satellite installations are scattered across Barbour, Coffee, Dale, Geneva, and Houston Counties; and include 15 stagefields, five basefields, and one forward arming/refueling point, Molinelli. The INRMP provides information for the internal and external organizations including active duty units, National Guard and Reserve Components, directorates, private groups, individuals, and state and federal agencies with interest in the management of Fort Rucker natural resources.

1.3 Goals

1.3.1 Provide natural resources expertise and management services to support fulfillment of the military mission

- Implement an Ecosystem Management strategy to provide realistic training environment
- Conduct forest and fire management activities to support desired training conditions and minimize hazards
- Control wildfires to protect the public and mission assets
- Control invasive non-native species to prevent degradation of training areas
- Support erosion control efforts of the Integrated Training Area Management (ITAM) program through reforestation
- Support animal and vegetation control efforts of the Wildlife Aircraft Strike Hazard (WASH) program around airfields
- Coordinate with United States Fish and Wildlife Service (USFWS) to complete ESA Section 7 consultations for activities affecting federally listed species
- Provide input on natural resources considerations and impact minimization measures on proposed projects and activities during the National Environmental Policy Act (NEPA) process
- Educate installation personnel on natural resources laws and regulations as well as necessary steps required to minimize impacts on natural resources

- Provide professional enforcement of natural resources related laws and regulations

1.3.2 Manage and restore natural resources in a sustainable manner and promote recovery of threatened and endangered species

- Implement an Ecosystem Management strategy
- Manage and monitor protected and at risk species
- Conduct prescribed fires to support native species and habitats and to reduce natural fuel loads
- Conduct longleaf pine restoration in priority areas through seedling plantings and prescribed fire
- Manage forested areas in a manner that provides quality habitat for wildlife while allowing the sustainable harvest of wood-products
- Protect and restore water resources and wetlands
- Control invasive non-native plants and animals to prevent impacts to native species
- Protect and manage areas of special ecological concern
- Protect cultural resources during natural resources management activities

1.3.3 Provide a variety of natural resource-based recreational opportunities to the public

- Conduct management activities to maintain quality habitats for hunting, fishing, and other outdoor recreation activities
- Monitor fish and game species and manage them on a sustainable, carrying capacity basis
- Promote hunting and fishing awareness, and provide conservation education opportunities
- Maintain infrastructure and facilities that support fishing, hunting, and other natural resource-based recreation

Specific objectives are provided for each program element in Section 4.0.

1.4 Responsibilities

There are numerous people and organizations responsible for successful natural resources management at Fort Rucker. Below is a list of stakeholders, as well as brief descriptions of their responsibilities.

1.4.1 Fort Rucker Personnel

1.4.1.1. Commanding General/Commandant

The Commanding General commands the U.S. Army Aviation Center of Excellence and Fort Rucker, and bears ultimate responsibility for management of natural resources on Fort Rucker (Army Regulation [AR] 200-1, Environmental Quality, Environmental Protection and Management).

1.4.1.2. Assistant Commandant

The Assistant Commandant serves as the principal assistant to the Commanding General/Commandant for command and management of the U.S. Army Aviation Center and Fort Rucker. He directs and is responsible for all aspects of training conducted at Fort Rucker.

1.4.1.3. Chief of Staff

The Chief of Staff serves as principal assistant to the Commanding General/Commandant in matters pertaining to plans, training, mobilization, and security, including ITAM.

1.4.1.4. Garrison Commander

The Garrison Commander serves as major assistant to the Commanding General/Commandant and Chief of Staff in matters pertaining to information management, logistics, contracting, public safety, human resources, community and family activities, and public works. Many of these programs are included in the INRMP, and the Garrison Commander is responsible for its implementation.

1.4.1.5. Director of Public Works

The Director of the Directorate of Public Works (DPW), acting through the chief of the Environmental and Natural Resources Division, is responsible for managing the Natural Resources program; ensuring that Natural Resources personnel are properly trained; developing and implementing programs to inventory, delineate, and classify natural resources; submitting Garrison Environmental Requirements Build (GERB) and annual work plans, reviewing all environmental documents, construction designs, and proposals to ensure that guidance from the INRMP is followed and that natural resources are protected; and coordinating with local, State, and Federal governmental and civilian conservation organizations (AR 200-1).

1.4.1.6. Environmental and Natural Resources Division

Responsibilities of the Chief, Environmental and Natural Resources Division include the identification and protection of cultural resources and compliance with the NEPA. The Chief, Environmental and Natural Resources Division, acting through the Chief of the Natural Resources Branch, carries out all other DPW responsibilities for the management of natural resources addressed in this INRMP.

The Chief, Natural Resources Branch, carries out natural resource management functions assigned to the Natural Resources Branch.

1.4.1.7. Director of Plans, Training, and Mobilization

The Director of the Directorate of Plans, Training, Mobilization and Security (DPTMS), acting through various division chiefs, is principal assistant to the Garrison Commander for planning, estimating, coordinating, integrating and supervising: military training, installation schools, mission and mobilization planning, troop movements, aviation operations, range operations, emergency operations, force modernization and integration activities, and more.

Training Division, DPTMS, is directly responsible for implementation and/or support of portions of this INRMP that directly affect or interact with training responsibilities including: operating and maintaining the Fort Rucker Range Complex, associated training facilities, field training sites, and range equipment; preparing, maintaining, and enforcing Post Range Regulations (Fort Rucker Regulation [FR Reg.] 385-1); providing overall coordination for implementing Fort Rucker's ITAM program; coordination, design and implementation of range development plans; developing and executing ITAM program requirements; and coordinating with DPW regarding activities that may affect fish and wildlife, forestry, wetlands, or cultural resources; and for posting a daily briefing of available hunting areas.

1.4.1.8. Director of Family and Morale, Welfare and Recreation

The Director of Family and Morale, Welfare and Recreation (DFMWR) establishes procedures for and governs various aspects of installation Morale, Welfare and Recreation activities. The Chief, Community Recreation Division, develops and executes the Community Recreation Program, manages all attendant facilities, and monitors the Outdoor Recreation Council. Responsibilities of the Outdoor Recreation Branch include: planning and implementing the installation Outdoor Recreation Program in accordance with AR 215-1; supervising, maintaining, and collecting fees for outdoor recreation activities; printing, issuing, and, if necessary, collecting fees for hunting and fishing permits; planning and conducting group and special hunting and fishing events; participating in national and state-sponsored hunting and fishing events such as National Fishing Week and National Hunting and Fishing Day.

1.4.1.9. Director of Public Safety

The Director of Public Safety (DPS) is responsible for providing military police and fire protection support to the installation. Natural resources functions within DPS are conducted by the Military Police Activity's Operations Division, which includes a Game Warden Section. Specific responsibilities of the Game Warden Section include: enforcing Federal, State, and Installation laws and regulations pertaining to fish and wildlife, cultural resources, ensuring that Fort Rucker wildlife law enforcement personnel are trained and qualified, and coordinating with other State and Federal law enforcement agencies for completion of wildlife law enforcement duties and responsibilities.

1.4.1.10. Public Affairs Office

The Public Affairs Office (PAO) is responsible for promoting an understanding of Army Aviation, the Aviation Branch, and Fort Rucker to the public and providing professional public affairs advice and support. The PAO is important in disseminating information

critical to the success of the program. Specific responsibilities include providing news releases and public information notices of activities important to the Installation or community, including National Hunting and Fishing Day and National Fishing Week and assisting DPW in promoting, publishing, and promulgating fish and wildlife information for public release.

1.4.1.11. Army Contracting Agency

The Army Contracting Agency provides centralized contracting support to the U.S. Army Aviation Center of Excellence and Fort Rucker, satellite/tenant activities, and activities/units in Fort Rucker's area of responsibility. Programs funded by this mechanism include contract support to DPW for management of land, forest, and fish and wildlife; contract support to DPTMS for ITAM implementation; contract support to the Directorate of Contracting for the Army for implementation of the outdoor recreation program; and providing contract support to DPS with implementing natural resource law enforcement responsibilities.

1.4.1.12. Garrison Safety Office

The Garrison Safety Office (GSO) plans, organizes, directs, evaluates, and implements safety programs. Responsibilities included in this INRMP are establishing limits and coordinating with DPTMS, DFMWR, DPW, and the Outdoor Recreation Advisory Council regarding: the number of hunters that can safely be allowed in each training area at one time, developing and implementing hunter and water safety education programs; and determining the type of weapons that can be safely used by hunters in each training area.

1.4.1.13. Outdoor Recreation Advisory Council

The Outdoor Recreation Advisory Council is a non-governing advisory body that fosters and promotes growth of the Outdoor Recreation Program. The Council has the authority to monitor, evaluate, and recommend changes to outdoor recreation programs. Given subsequent approval of Council recommendations by the Garrison Commander, changes are published in applicable governing regulations by the proponent agencies. The Chairperson is appointed by the Garrison Commander, and voting members consist of Garrison Command, 110th Aviation Brigade, WOCC, 1st Aviation Brigade, DENTAC, USAARL, NCOA, USACRC, USAAMC, ATSCOM, ACLC, BOSS, a Retire Representative, and a Family Member Representative. Advisory members (non-voting) of the Council include the Installation CSM, Hunter Safety/Education, DPTMS Training Division, Skeet/Trap Range, DPW Natural Resources, DPS Game Warden, DFMWR Outdoor Recreation, Community Recreation, GSO, RMO, Staff Judge Advocate (SJA), IG, USASAM, PAIO, IRAC, DES, and DOTD. A representative of the civilian hunting community and any interested person(s) are invited to attend council meetings.

1.4.1.14. Other Installation Organizations

Implementation of the INRMP will require as-needed assistance from other directorates and organizations. Such organizations include the Directorate of Logistics (supply and transportation), Directorate of Resource Management (budget, personnel, and equipment authorizations), Aviation Training Brigade (aerial survey support), 6th Weather Flight,

18th Weather Squadron (Air Force Composite Command), Fort Rucker Veterinary Treatment Facility, and the Gulf Coast Veterinary Services Support District (disposal of dead animals).

1.4.2 Other Defense Organizations

1.4.2.1 Installation Management Command (IMCOM) Directorate – Training

The U.S. Army Installation Management Command is located at Fort Sam Houston, Texas. On Nov. 1, 2016, IMCOM established three functionally-aligned directorates, co-located with Forces Command (IMCOM-Readiness), Training and Doctrine Command (IMCOM-Training), and Army Material Command (IMCOM-Sustainment). The directorates will be more efficient and improve mission command through unity of purpose, a smaller number of garrisons to manage, and similar demographics of communities. The directorates will solve functional challenges for garrison commanders, coordinate IMCOM HQ support, and drive/assess garrison execution of service delivery.

The modern IMCOM formation also includes the two overseas IDs (IMCOM Europe and IMCOM Pacific) and the U. S. Army Environmental Command.

As the needs and resources of the Army change, IMCOM remains committed to delivering installation series and sustaining facilities in support of senior commanders to enable a ready and resilient Army.

1.4.2.2 U.S Army Environmental Command (USAEC)

The U.S. Army Environmental Command (USAEC) is a subordinate Command to the Installation Management Command (IMCOM) and provides environmental services and solution in support of the Army's Environmental Program enabling Army readiness and sustainability. USAEC provides technical expertise on environmental quality and technology and manages the environmental cleanup programs. Focus areas include assessing and improving installations' environmental performance; evaluating and transferring best management practices and technologies to enhance environmental stewardship; and assimilating, analyzing, and communicating environmental information.

1.4.2.3 U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) manages one of the largest federal environmental missions: restoring degraded ecosystems; constructing sustainable facilities; regulating waterways; managing natural resources; and, cleaning up contaminated sites from past military activities. USACE's environmental program provides technical management, design and execution of a full range of environmental protection, cleanup and sustainability activities.

1.4.2.4 U.S. Army Environmental Training Support Center

The Environmental Training Support Center specializes in providing material for the Environmental Awareness program within ITAM.

1.4.2.5. Medical Command/U.S. Army Public Health Center (USAPHC)

The Medical Command/U.S. Army Public Health Center (USAPHC) identifies and assesses current and emerging health threats, develops and communicates public health solutions, and assures the quality and effectiveness of the Army's Public Health Enterprise. USAPHC provides support in the areas of medical entomology, environmental health engineering, sanitation, veterinary, industrial hygiene and occupational health and preventative medicine readiness planning and training.

1.4.3 Other Federal Agencies

1.4.3.1. U.S. Fish and Wildlife Service

The USFWS, Department of the Interior, provides technical guidance to Fort Rucker for the management of its natural resources, particularly management of endangered and threatened species through the Daphne, Alabama field office. AR 200-1, The Fish and Wildlife Coordination Act (16 United States Code [USC] §661), and Section 7 of the Endangered Species Act provide guidance to be followed by Fort Rucker when dealing with the U.S. Fish and Wildlife Service for endangered species management.

The USFWS is a signatory cooperator in implementation of this INRMP in accordance with the Sikes Act. **Appendix 2** contains specific items of that agreement among the USFWS, Alabama Department of Conservation and Natural Resources, and Fort Rucker as required by the Sikes Act.

1.4.3.2. U.S. Geologic Survey

The U.S. Geologic Survey (USGS), Department of the Interior installed the geographic information system (GIS) at Fort Rucker. Under a recent federal organizational change, the USGS also operates a Cooperative Fisheries and Wildlife Unit at Auburn University that has provided natural resource management assistance to Fort Rucker on a number of occasions, notably in identification of factors limiting bobwhite quail on the reservation.

1.4.3.3. Natural Resources Conservation Service, U.S. Department of Agriculture

The Natural Resources Conservation Service (NRCS) conducted the soils surveys for Barbour, Coffee, Dale, Geneva, and Houston counties which include lands owned by Fort Rucker. The NRCS is available to assist with designing erosion control and Land Rehabilitation and Maintenance (LRAM) projects. This agency may also be used to assist with GIS database development, especially regarding soils. In the past, NRCS has worked with DPW, Natural Resources to provide a training event and project tour for local landowners that showcased completed conservation projects on the Installation. NRCS has also completed rotorwash design and repair on Hooper Field.

1.4.3.4. U.S. Environmental Protection Agency

As the nation's major regulatory and advisory body for environmental matters, the U.S. Environmental Protection Agency (USEPA) impacts virtually every program on Fort Rucker. Its regulations and recommendations form the framework of almost every environmental document drafted, but USEPA is not directly involved with INRMP

development and implementation. USEPA Region 4 is responsible for issuing permits for sediment control on Fort Rucker.

1.4.3.5. Animal Plant Health Inspection Service US Department of Agriculture (USDA)

Animal Plant Health Inspection Service (APHIS) has provided guidance in the past to Fort Rucker regarding their feral pig invasive species management program. APHIS stated in a 2013 letter that, to trap the greatest numbers of feral pigs, other hunting pressures should be decreased during trapping seasons. APHIS has provided coordination, manpower and equipment to support the planned reduction of feral pigs, coyotes and other predator species.

1.4.4 State Agencies

1.4.4.1. Alabama Department of Conservation and Natural Resources

The Alabama Department of Conservation and Natural Resources (ADCNR), Division of Wildlife and Freshwater Fisheries provides support to Fort Rucker's natural resources management program in the areas of fisheries, game, and law enforcement. The State District Fisheries Biologist (Enterprise, Alabama) provides technical assistance and advice on matters such as lake restocking, fertilization, aquatic weed control, feeding programs, population survey, fish diseases, fish parasites, and fish kills. The State District Game Biologist (Enterprise, Alabama) provides technical assistance and advice on matters concerning game and non-game wildlife species, such as fish and wildlife conservation program development, population surveys, habitat manipulation, habitat maintenance, and predator control. Division of Wildlife and Freshwater Fisheries assistance is also provided in the trapping and removal of feral pigs and predator coyotes as well as in relocation of nuisance alligators through a specified State-licensed trapper.

The ADCNR, through the Commissioner of its Division of Wildlife and Freshwater Fisheries, is a signatory cooperator in implementation of this INRMP (16 USC 670a). **Appendix 2** contains specific items of that agreement among the ADCNR, USFWS, and Fort Rucker, as required by the Sikes Act.

1.4.4.2. Alabama Department of Environmental Management

The Alabama Department of Environmental Management (ADEM) provides policy clarification and limited technical assistance in the areas of environmental protection and pollution control and abatement.

1.4.4.3. Alabama Department of Public Health

The Alabama Department of Public Health conducted a deer encephalitis study in southern Alabama in 1995, which involved Fort Rucker.

1.4.5 Universities

Regional universities have provided specialized expertise to help manage natural resources on Fort Rucker. Auburn University (Auburn, Alabama) has used Fort Rucker for a number of graduate studies, notably on white-tailed deer productivity and the effect

of feral dogs on white-tailed deer (Section 3.4.3.1.). Fort Rucker continues to work with Auburn University wildlife biologists on issues related to deer herd management. Auburn University also performs soil testing for Fort Rucker on an as-needed basis under a blanket contract. A study on the interactions between white-tailed deer and habitat on Fort Rucker was done by a University of Tennessee (Knoxville) graduate student. The Southeast Cooperative Wildlife Disease Studies Group (University of Georgia at Athens, Georgia) assists with deer herd health checks on Fort Rucker. Troy State University assisted with the biodiversity study (Mount and Diamond, 1992) on Fort Rucker.

1.4.6 Contractors

Fort Rucker uses contractors for many programs associated with natural resources, including INRMP preparation, collection of biological data, wildlife food planting, NEPA documentation, groundwater testing, and cultural and archaeological surveys.

1.4.7 Other Interested Parties

The National Wild Turkey Federation provided funds to help establish “walk-in” wild turkey management areas on Fort Rucker. Local Boy and Girl Scout organizations have provided volunteer assistance for the interpretative component of Fort Rucker’s natural resources conservation efforts.

1.5 Authority

This INRMP was developed to meet requirements of the Sikes Act (16 USC 670a et seq.) as amended by the Sikes Act Improvement Act (SAIA) of 1997; Department of Defense Instruction (DoDI) 4715.03, Department of Defense Manual (DoDM) 4715.03, *Natural Resources Conservation Program*; and AR 200-1, *Environmental Quality, Environmental Protection and Enhancement*.

The Sikes Act states that “consistent with the use of military installations and State-owned National Guard installations to ensure the preparedness of the Armed Forces, the Secretaries of the military departments shall carry out the program required by this subsection for:

- The conservation and rehabilitation of natural resources on such installations;
- The sustainable multipurpose use of the resources on such installations, which shall include hunting, fishing, trapping, and non-consumptive uses and;
- Subject to safety requirements and military security, public access to military installations to facilitate the use.”

An INRMP should also “to the extent appropriate and applicable”, provide for-

- Fish and wildlife management, land management, forest management, and fish- and wildlife-oriented recreation;
- Fish and wildlife habitat enhancement or modifications;
- Wetland protection, enhancement, and restoration where necessary for support of fish, wildlife, or plants;

- Integration of, and consistency among, the various activities conducted under the plan;
- Establishment of specific natural resource management goals and objectives and time frames for proposed action;
- Sustainable use by the public of natural resources to the extent that the use is not inconsistent with the needs of fish and wildlife resources;
- Public access to the installation that is necessary or appropriate for the use described [above]; subject to requirements necessary to ensure safety and military security;
- Enforcement of applicable natural resource laws (including regulations);
- No net loss in the capability of the installation lands to support the military mission of the installation and;
- Such other activities as the Secretary of the military department determines appropriate.”

The Sikes Act also provides for:

- Regular review of this INRMP and its effects, not less often than every five years
- Provisions for spending hunting and fishing permit fees exclusively for the protection, conservation, and management of fish and wildlife, including habitat improvement, and related activities in accordance with the INRMP
- Exemption from procurement of services under Office of Management and Budget Circular A-76 and any of its successor circulars
- Priority for contracts involving implementation of this INRMP to state and federal agencies having responsibility for conservation of fish and wildlife

DoDI 4715.03, *Natural Resources Conservation Program*, provides instruction applicable to all Department of Defense (DoD) installations regarding natural and cultural resource management. This instruction assigns responsibilities and procedures necessary to implement the Sikes Act and other policy regarding natural resources management.

AR 200-1 *Environmental Quality, Environmental Protection and Enhancement* outlines army specific policies for “preserving, protecting, conserving, and restoring the quality of the environment”. According to AR 200-1, an INRMP should serve as an “adaptive plan for managing natural resources to support and be consistent with the military mission while protecting and enhancing those resources for multiple use, sustainable yield, and biological integrity” for the installation commander.

Additionally, this plan is compatible with the Installation Real Property Master Plan (RPMP) and Operations of the US Army Aviation Center of Excellence and Fort Rucker. This plan describes how Fort Rucker will implement provisions of AR 200-1 and local regulations; most notably FR Reg. 215-1 (*Hunting, Fishing, Water Safety, and Trapping*) and portions of *Range and Training Area Regulation* FR Reg. 385-1.

1.6 Stewardship and Compliance

The Army's Strategy for the Environment (2004) establishes a long-range vision that enables the Army to meet its mission today and into the future by placing a focus on sustainability and community partnerships. The Strategy applies community, regional, and ecosystem approaches to managing the natural resources on installations. The programs and actions outlined in this INRMP are designed to not only achieve compliance with applicable laws and regulations, but also to outline a program that will help Fort Rucker accomplish its environmental stewardship goal of sustaining lands needed to accomplish the military mission in the future, safeguard human health, enhance the natural environment, and improve quality of life for soldiers and their families, as well as the surrounding community.

1.7 Review, Update, and Revision Process

Natural resources management is a dynamic process. Therefore, management plans often require updates and changes.

INRMP Reviews

Pursuant to the Sikes Act, DoDI 4715.03, and AR 200-1, the INRMP will be reviewed for operation and effect no less than every 5 years by Fort Rucker, USFWS, and ADCNR. This review will be documented and signed by these parties. The INRMP review will determine whether the existing INRMP meets Sikes Act requirements and contributes to the conservation and rehabilitation of natural resources on the installation. Fort Rucker will update or revise the INRMP as necessary based on the results of these reviews.

Per DoDI 4715.03, the plan will be reviewed annually to include an evaluation of the following metrics for assessing the effectiveness of the INRMP in applying conservation efforts to ensure no net loss of military training capability at Fort Rucker.

- INRMP project implementation;
- Federally listed species and critical habitat;
- Partnerships effectiveness;
- Fish and wildlife management and public use;
- Team adequacy;
- Ecosystem integrity and,
- INRMP impact on the installation mission.

The USFWS and ADCNR may be invited to participate in the annual review, but it is not required. The installation is not required to invite the public to review or to comment on the decision to continue implementing an existing INRMP that has not been updated or revised.

INRMP Updates

An INRMP "update" is any change to the INRMP that, if implemented, is not expected to result in consequences materially different from those in the existing INRMP and analyzed in an existing NEPA document. These are minor edits to address new information or management priorities. Such changes will not result in a significant environmental impact,

and the installation is not required to invite the public to review or to comment on the decision to continue implementing the updated INRMP.

The process for reviewing and concurring on minor changes or “updates” to the existing and approved INRMP will follow DoD’s streamlined review process as described in the *Mutual Department of Defense and U.S. Fish and Wildlife Service Guidelines for Streamlined Review of Integrated Natural Resources Management Plan Updates* (DoD, 2015). These guidelines clarify and describe the process for reviewing and concurring on updates to existing INRMPs, as described in the *Memorandum of Understanding between the US. Department of Defense and the US. Fish and Wildlife Service (USFWS) and the Association of Fish and Wildlife Agencies for a Cooperative Integrated Natural Resource Management Program on Military Installations* (Tripartite MOU, July 2013). The process is outlined as follows:

Draft Review

When Fort Rucker determines that an INRMP update is appropriate, they notify the USFWS and ADCNR as soon as possible, but no less than 30 days prior to submitting a draft update for review. The completed draft is then sent to both agencies. The USFWS staff will review the draft and respond to the installation within 15 days of receipt. The USFWS field office and ADCNR will provide comments (if any) on the draft update to the submitting installation within a maximum of 60 calendar days, unless a longer review timeline is agreed upon. If review cannot be completed in this timeframe, the USFWS and/or ADCNR will notify the Fort Rucker and provide an alternate timeline. If the parties cannot agree on a timeline, the Regional Sikes Act Coordinator may be brought in to help complete the review. If USFWS and/or ADCNR do not provide notification that an alternative timeline is needed within 60 days, Fort Rucker may, at its discretion, finalize the update. If there is a disagreement concerning the methods proposed in an INRMP update, all efforts will be made by Fort Rucker, USFWS, ADCNR, and Regional Sikes Act Coordinator to resolve those issues within the agreed upon review timelines.

Final Update and Concurrence

Once complete, Fort Rucker submits the final update to the USFWS, ADCNR, and the Sikes Act Coordinator. The USFWS and ADCNR will respond and provide signature on the final update within a maximum of 60 calendar days of receipt unless the parties agree that a longer timeline for review is acceptable. If ADCNR and/or USFWS are unable to provide signature coordination within the applicable timelines, that agency will advise the Fort Rucker, as well as the Regional Sikes Act Coordinator, as to why the review and signature process cannot be completed within the designated timeframe and offer an alternate date by which it can be completed. The Regional Sikes Act Coordinator will then coordinate to ensure review and comment on the final update, discuss comments with the Regional Director, and prepare the Regional Director’s response to DoD, if needed. The USFWS field office will return the original concurrence letter or signature page to Fort Rucker, and provide a copy to the Regional Sikes Act Coordinator and to the ADCNR.

Once finalized, the updated INRMP will be considered reviewed for operation and effect, and will restart the five-year window for being compliant.

INRMP Revisions

During the review process, Fort Rucker, USFWS, and ADCNR will determine whether the existing INRMP needs formal revision. Changes that are expected to result in significant biological differences from those identified in the existing INRMP typically require a formal revision, rather than an update, of the INRMP, as well as appropriate consideration under the NEPA.

Changes that necessitate new natural resources management actions, such as changes to the military mission, the condition of the land, or the status of the species present and not previously considered by the parties to the INRMP when the plan was last approved and/or reviewed as to operation and effect, will require an INRMP revision. All such revisions require approval by all parties to the INRMP, and Fort Rucker will conduct a new or supplemental environmental impact analysis of the proposed action under NEPA, and make the INRMP and the environmental document available for public review and comment, as appropriate.

During the revision process, the current INRMP will remain in effect, as will the applicable natural resource laws and regulations.

1.8 Management Strategy

The programs and projects outlined in this INRMP form the basis of Fort Rucker's management strategy for maintaining ecosystems and their components as well as providing sustainable military training. Focusing on management at an ecosystem level allows Natural Resources to maximize biodiversity, improve habitat for wildlife, minimize invasive species, create healthy forest systems, reduce accelerated erosion, and maintain a robust recreational program.

1.9 Other Plan Integration

This INRMP serves as the primary document for natural resource management at Fort Rucker. Installation projects will be reviewed to ensure that they are consistent with the goals and management strategies outlined in this INRMP. A number of plans have been developed for the management of specific resources, as listed below:

- **Integrated Cultural Resources Management Plan:** The DPW Environmental and Natural Resources Division (ENRD) reviews all proposed installation projects for impacts on existing cultural sites. All cultural sites are identified and protected in the field during all Land Management operations.
- **U.S. Army Aviation Center of Excellence Installation Command Plan:** ENRD maintains daily interaction with the command to ensure all command priorities are recognized and implemented. As the command changes, ENRD programs are reviewed for compliance and priority.
- **Integrated Wildland Fire Management Plan:** ENRD applies planned forestry management practices to avoid and prevent wildfires. The plan is a comprehensive, operational guide to land management activities that describes the interface and actions of all involved in a wildfire response. ENRD applies

preventative wildfire measures throughout the year in prescribe burning 9,000 acres annually.

- **Real Property Master Plan:** ENRD maintains awareness of current and long range installation infrastructure planning. Timber sales are projected well in advance along with impacts on all existing ecosystems.
- **Range Complex Master Plan:** ENRD maintains awareness of current and long range installation infrastructure planning. Timber sales are projected well in advance along with impacts on all existing ecosystems.
- **WASH (Wildlife Aircraft Strike Hazard) Plan:** ENRD maintains a current awareness of all wildlife impacts on training lands especially airfields. ENRD has recently developed a working relationship with USDA / APHIS to address roosting pigeons inside airfield hanger space. The WASH program and plans are maintained and reviewed annually.
- **Pest Management Plan:** The PMP is a working document that is utilized by ENRD on a daily basis in combating invasive plant and animal species on all installation lands. Herbicide reduction methods using physical and mechanical methods are considered on all land management projects.
- **Soil Erosion and Sediment Control Plan:** All soils on the installation are very fragile and most are considered to be HEL (Highly Erodible Land). Soil limitations and capabilities are considered in all project work that may require soil disturbance. Forestry BMP's (Best Management Practices) and civil engineering principals are required for the stabilization of most installation soils. Turbidity testing of installation surface waters has been completed to determine compliance with Alabama Water Quality Standards.
- **NEPA Documentation:** ENRD reviews and documents NEPA on all work requests submitted into the DPW system.
- **Installation Range Complex Master Plan:** ENRD reviews and provides comments annually in updating the Range Master Plan. Erosion control, spillage management and reporting, endangered species management and invasive plant and animal species management are among the greatest concerns needing improvement.

1.10 Installation Information

1.10.1 General Description

Fort Rucker is located in the East Gulf Coastal Plain approximately 25 miles northwest of Dothan, Alabama, between the cities of Daleville, Enterprise, and Ozark. The main reservation lies in southeastern Coffee and southwestern Dale counties, Alabama, comprises 57,772 acres, and averages 17 miles long by 9 miles wide (**Figure 1-3**). Fort Rucker encompasses an additional 5,479 acres of satellite properties in seven Alabama counties, including 1,463 acres of leased land located off the reservation (Ranchino, 2016a). (**Figure 1-2**).

Figure 1-3 shows the general layout of the main Fort Rucker reservation. Land usage at Fort Rucker may be categorized as aviation basefields, stagefields, Remote Training Sites, such as the AGRC Aerial Gunnery Range Complex, Unit Training Areas, Small Arms ranges, and the cantonment area. Range and training areas constitute the major portion of land use with 51,735 acres (DPTMS, 1994) available for ground maneuver training and operations (including the 13,159-acre impact area). Training areas and firing ranges are used extensively throughout the year by soldiers assigned to Fort Rucker, active Army units from other installations, U.S. Army Reserve, National Guard, and U.S. Air Force units (Higginbotham /Briggs and Associates, 1991).

1.10.1.1. Aviation Training Facilities

To achieve its aviation training mission, Fort Rucker utilizes aviation facilities of several types located both on and off the main military reservation. Because requirements for training areas and airspace cannot be met on the Fort Rucker reservation alone, an additional 3,628 acres of government-owned land and 1,463 acres of leased land located off the reservation also are utilized. (Ranchino, 2016a)

Aviation facilities that are remote from the main post that are used in support of aviation training are heliports categorized either as basefields or stagefields. Basefields serve as home-ports for helicopters and have a full range of maintenance and classroom facilities as well as helicopter parking and refueling areas. Stagefields are used primarily for practicing standard maneuvers, such as takeoffs, turns, landing, and hovering, as well as emergency maneuvers, but not for basing of aircraft. As a general rule, helicopters return to designated basefields following practice at stagefields.

Three active basefields (Hanchey, Knox, and Lowe Army Heliports), four of 15 active stagefields (Ech, Hatch, Hooper, and Tabernacle), and one forward arming/refueling point (Molinelli) are located on the main Fort Rucker reservation.

Many of the principal aviation training facilities are located off the Fort Rucker main reservation. **Figure 1-2** shows the location of these satellite facilities in relation to the Fort Rucker main reservation. Cairns Army Airfield and Shell Army Heliport as well as 11 active stagefields are not located on the main Fort Rucker Military Reservation. Guthrie Basefield is not included in this discussion because it is inactive. The following paragraphs provide a description of these facilities. The satellite facilities are used primarily for aviation training. The list of satellite aviation stagefields is provided in the following table.

Table 1-1 Satellite Aviation Flight Facilities

Area	Acreage	County
Allen Stagefield	114	Houston
Brown Stagefield	176	Coffee
Cairns Army Airfield	1,326	Dale
Goldberg Stagefield	101	Dale
High Bluff Stagefield	190	Geneva
Hunt Stagefield	153	Dale
Louisville Stagefield	104	Barbour
Lucas Stagefield	180	Coffee
Runkle Stagefield	235	Coffee
Shell Army Heliport	312	Coffee
Skelly Stagefield	195	Coffee
Stinson Stagefield	191	Coffee
Toth Stagefield	128	Houston

In addition to basefields and stagefields, there also are approximately 65 tactical training sites both on and off the reservation. Most off-reservation sites are located on leased property or public land. These sites are used for activities such as low-level navigation (day and night), operation in confined areas, and advanced tactical maneuvers. Fort Rucker has also developed an extensive system of airspace corridors and special visual flight rule (VFR) routes to promote the safe and efficient flow of traffic during VFR conditions. There are four active corridor/route systems, corresponding to Cairns Army Airfield (AAF) and Lowe, Shell and Hanchey Army Heliports.

Local aviation training areas are used by Fort Rucker aircraft. Within these are designated areas of operation (AOs) that provide for the separation of aircraft and different types of aviation training. Combined with the areas on and adjacent to the Fort Rucker Military Reservation, these AOs encompass approximately 9,000 square miles including all of southeast Alabama, a portion of southwest Georgia, and the northern portion of the Florida panhandle. The Army owns or leases only approximately 100 square miles of the AOs. The Army depends heavily on the cooperation of the civilian sector to accomplish its aviation-training mission.

1.10.1.2. Ground Maneuver Training Facilities

Fort Rucker affords terrain suitable for units up to battalion size to conduct training for extended periods. Terrain and vegetation lend themselves to exercises such as selection and occupancy of defensive positions, concealment and camouflage, limited patrolling, and some tactical movement. More extensive maneuver is possible with a fair degree of realism for smaller units (Higginbotham/Briggs and Associates, 1991).

The road and trail network throughout the training areas permit cross-country movement of all classes of tactical vehicles. Bridges on dirt roads extending north from the vicinity of Lowe Army Heliport have been constructed with load capacities sufficient to pass tanks and self-propelled artillery. A concrete turning pad has been constructed across State Highway 27 to permit passage of tracked vehicles into areas north of Highway 27. Access to all-weather roads is possible throughout the training area system (Higginbotham/Briggs and Associates, 1991)

The area available for ground maneuver training is sub-divided into 49 training areas to permit several training activities to occur at the same time. Tracked vehicles are permitted to operate in certain designated areas with other areas set aside for wheeled vehicles only. The terrain is well suited for most non-firing tactical type exercises and is heavily used by the Aviation School and other units. Communications training, bivouac, land navigation, vehicle operator cross-country driving; survival, evasion, resistance, and escape; medical field operations, potable water production, and forward air traffic control are the main categories of exercises conducted. At full capacity, Lake Tholocco offers 690 acres of water surface for training. Although used primarily for recreation, it also affords an opportunity to conduct CH-47 helicopter float and recovery training and could support engineer rafting training (Higginbotham/Briggs and Associates, 1991).

The Alabama Army National Guard (ARNG) has conducted tracked-vehicle training activities on the reservation and also operates a Unit Training and Equipment Site, a fenced compound for storage and maintenance of ARNG vehicles. ARNG vehicles use a 1.5 mile Test Track to exercise and test vehicles. These facilities are used for training reserve duty personnel on weekends throughout the year (Rust Environment and Infrastructure, 1999).

1.10.1.3. Training Ranges

Firing ranges for military training at Fort Rucker are located in the northern portion (Land Management Unit [LMU] 1) of the installation, around the periphery of the common impact area, which allows all ranges to be used at the same time. Included in this area are 20 firing ranges, including but not limited to, a range for use of privately-owned weapons, a demolition training area, a movement-to-contact range, an ambush range, a squad live-fire range, a dedicated aerial gunnery range (with well-distributed firing points for 20 and 30mm guns and 2.75 inch folding fin aerial rockets), 15 field artillery firing points, and one field artillery observation post (**Figure 1-4**).

1.10.2 Regional Land Uses

The following discussion is limited to the seven southeast Alabama counties (Barbour, Coffee, Dale, Geneva, and Houston) influenced by the socioeconomic impact of Fort Rucker. Predominately rural in nature, these counties make up the Southeast Alabama Economic Development District, which has been classified as a long-term Economically Distressed Area by the Southeast Alabama Regional Planning and Development Commission.

The area around Fort Rucker has traditionally relied on farming for income, and it remains an important part of the economy. Manufacturing is now the leading employment sector

for the seven county region followed by trade (wholesale and retail) and government. The forest industry is a major component of the manufacturing sector in the area.

There are four state parks and two significant open space recreational areas in the region (Conecuh National Forest and Eufaula National Wildlife Refuge). Two wildlife management areas administered by the state (Barbour Wildlife Management Area and Geneva State Forest Wildlife Management Area) also occur in the area (**Figure 1-1**). In the vicinity of Fort Rucker, only six cities have the necessary finances to support comprehensive municipal recreation programs (Rust Environment and Infrastructure, 1999).

The seven-county area experienced an almost 30% increase in population in the period from 1970-2014 with the greatest rate of growth (60 %) in Houston County. The Dale County population declined by almost 10 % following the Vietnam Conflict, largely due to a decrease in activities at Fort Rucker, and has decreased approximately 7% in the period between 1970 and 2014. During 2000-2014, population in the area increased by less than 1% (US Census Bureau, 2015).

Major population centers within a 30-mile radius of Fort Rucker are listed in the following table.

Table 1-2 Major Population Centers

Name	Population 2014 US Census estimates
Dothan	68,409
Enterprise	27,772
Ozark	14,700
Daleville	5,142
Geneva	4,454

1.10.3 Abbreviated History and Pre-Military Land Use

The following provides a summary of land uses on the Fort Rucker property prior to military acquisition, along with a brief history of the military activities that have occurred at Fort Rucker. A more complete history is available in the Integrated Cultural Resources Management Plan Update (Fort Rucker, 2016) and in the Final Environmental Assessment of the Implementation of the Updated Integrated Cultural Resources Management Plan (CH2M, 2016).

As part of the New Deal Program, marginal farmland was taken out of production and overall agricultural production was decreased. One such project was the Pea River Land Use project, which included the USDA purchase of the land that was to become Fort Rucker.

Between 1936 and 1938, ownership of 31,760 acres in Dale and Coffee counties was transferred to the federal government. In 1940, this land was leased to the State of

Alabama as a recreational facility (Pea River State Forest). Although the lease was for 50 years, it contained a provision allowing the federal government to retake possession at any time (McGee, 1987; Dothan Progress Ltd., 1995).

With the approaching war in Europe, the Alabama Department of Conservation turned over approximately 25,000 acres of the Pea River State Forest to the Alabama National Guard for use as an artillery firing range, and in July 1941, the War Department announced the Pea River Project as a training site for some 30,000 infantrymen. In August 1942, the Pea River Project was transferred from the Department of Agriculture to the War Department with the provision that it be returned when no longer needed for military purposes (McGee, 1987; Dothan Progress Ltd., 1995).

In January 1942, the U. S. government took possession of 29,055 acres of land in Dale County between the existing Pea River Project and Atlantic Coast Line Railroad between Newton and Enterprise to create the Ozark Triangular Division Training Camp (McGee, 1987; Dothan Progress Ltd., 1995). The camp was officially opened on May 1, 1942, and was used to train infantry, tank, and Women's Army Corps units. In September 1942, the U.S. Government took possession of an additional 1,259 acres south of Daleville for development of an air base designated as Ozark Army Airfield (later renamed Cairns Airfield). After the war, Camp Rucker was inactive from March 1946 until August 1950. During the Korean conflict, the 47th Infantry Division at Fort Rucker trained replacement troops for combat in Korea.

Camp Rucker was inactivated in June 1954 after the Korean conflict ended, but was reopened to prepare for movement of the Army Aviation School to Camp Rucker. On October 26, 1955 the post was given permanent status with the name change from Camp Rucker to Fort Rucker.

The first Aviation officer basic and advanced courses began at Fort Rucker in 1984 followed by a gradual consolidation of all aviation related activities to the installation. In 1986, the U.S. Army Air Traffic Control Activity became part of the branch, and in 1987 a Non-Commissioned Officer academy was established at Fort Rucker. In 1988, the Army Aviation Logistics School was incorporated into the Aviation Branch.

Presently, Army Aviation continues to train for infiltration, reconnaissance, evacuation, and strike missions of unconventional warfare.

1.10.4 Military Mission

The primary mission of the U.S. Army Aviation Center of Excellence (USAACE) is to produce aviation soldiers for the world's premier aviation force. The main objective of Fort Rucker's mission is to provide the Army installation capabilities and services while supporting expeditionary operations and provide a quality of life for Soldiers and Families during their service. (U.S. Army, 2016)

The Fort Rucker population consists of 13,662 military and civilian personnel. Additionally, 7,660 retired military and family members live in the Fort Rucker Service Area. Major troop units assigned to the U.S. Army Aviation Center of Excellence and Fort Rucker include the 1st Aviation Brigade and the 110th Aviation Brigade. (Ranchino, 2016b)

The 110th Aviation Brigade conducts flight training. Each of three subordinate battalions is responsible for flight training operations at one of three Fort Rucker basefields: the 1st Battalion, 14th Aviation Regiment at Hanchey Army Heliport; the 1st Battalion, 223rd Aviation Regiment at Cairns AAF; and the 1st Battalion, 212th Aviation Regiment at Lowe Army Heliport. A fourth battalion, the 1st Battalion, 11th Aviation Regiment, located on main post, provides air traffic control services for Fort Rucker and performs maintenance on tactical navigation aids.

1st Aviation Brigade units are responsible for conducting a wide range of activities. Units of the Brigade provide advanced individual training in air operations and aviation maintenance fields, conduct officer basic and advanced courses and warrant officer military development training, and operate numerous tactical simulation facilities. Units of the brigade also include the 98th Army Band.

The Fort Rucker team is made up of approximately 36 organizations. These organizations are multi-command, multi-service (Active Duty, Reserve Component and National Guard), and multi-missioned (military, civilian and contractor). To carry out our missions, Fort Rucker supports a daytime population of about 13,854, including over 5,000 people in uniform, over 8,000 civilian and contract employees and over 2,900 Family members on post.

Fort Rucker's training area and airspace and land availability encompasses 27 counties in three states. Flight training is spread across five basefields, one forward arming fuel point, 17 stagefields and approximately 89 remote training sites. Leased sites are not included within this INRMP in terms of management of natural resources, as they are maintained in accordance with the lease agreements.

In addition to operations and training activities of the U.S. Army Aviation Center of Excellence, there are more than 30 other tenants and activities on the installation. Tenant activities include Air Force undergraduate and conversion helicopter pilot training; operation of the U.S. Army Combat Readiness (Safety) Center; research on air crew training and performance; operation of the Army School of Aviation Medicine, the Army Aeromedical Center, and the Army Aeromedical Research Laboratory (Higginbotham/Briggs and Associates, 1991).

Fort Rucker utilizes leased sites to support its military mission. These sites total 1,463 acres and are located in Alabama and Florida. Leased sites are not included within this INRMP in terms of management of natural resources, as they are maintained in accordance with the lease agreements.

1.10.5 Operations and Activities

Habitat types and associated flora and fauna of the Fort Rucker reservation are impacted at negligible to moderate levels by the current level of training. Training activities involving tracked and wheeled vehicles and impacts of ordnance on the gunnery-range complex can destroy vegetative cover and de-stabilize soil surfaces such that they readily erode during rainfall events. In addition, rotor wash at helicopter hover points is a major cause of wind erosion. The large area affected by these activities, combined with the erodible nature of soils throughout the reservation, make erosion a major issue at Fort Rucker (Rust Environment and Infrastructure, 1999). Ground disturbing activities near wetlands,

streams, or other water bodies can be particularly damaging, and result in erosion, sedimentation, and direct impacts to sensitive natural resources. Uncovered areas begin to erode quickly, and unless repair and control measures are taken, the damage becomes extensive (Higginbotham/Briggs and Associates, 1991). Damage caused by the training mission is repaired or rehabilitated under the LRAM component of ITAM.

Within the impact area on Fort Rucker, munitions can cause damage to soils, vegetation, and wildlife upon impact, and can potentially cause wildfires. Dependent on location and habitat, wildfires may positively or negatively affect natural resources.

Adverse effects of soil erosion include loss of topsoil; formation of gullies; loss of soil fertility for plant growth; and stream, pond, and lake sedimentation. Sedimentation in surface water bodies results in adverse impacts to aquatic biota, and may reduce the capacities of streams and other wetlands to handle storm water runoff, resulting in increased flooding and impacts to floodplains (Rust Environment and Infrastructure, 1999).

Previous episodes of erosion and surface runoff from the installation have caused impacts on private property downstream, resulting in sedimentation of Steep Head Creek and Harris Mill Creek (Bo's Creek), as well as increased flooding and associated stream bank erosion, loss of timber, and damage to a seven-acre fish pond (Rust Environment and Infrastructure, 1999).

Atwood et al. (1994) describe the erosional inputs during flooding events as resulting in a heavy bed load of sand in the majority of streams within Fort Rucker. Substrates of most streams were described as consisting of flowing sand, shifting sandbars, and dunes which buried in-stream structures, such as woody debris, gravel, and cobbles, and disrupted stream morphology by filling pools and riffles (Rust Environment and Infrastructure, 1999). Soil erosion impacts stream habitats as described above. Homogeneous substrates of shifting sand, which occur in many streams on and downstream of the reservation as a result of sedimentation, generally do not support diverse and abundant populations of benthic macro invertebrates or the fish which feed on them.

Terrestrial wildlife is affected by noise from helicopter-training and weapons-firing activities that take place over extensive areas both on and outside the reservation. Wildlife is capable of becoming habituated or showing decreased responsiveness to stimuli after repeated exposure. Wildlife inhabiting Fort Rucker has been exposed to noise from training activity for many years. Therefore, it is expected that the level of impact from noise would likely be low to moderate, depending on the sensitivity to noise and degree of habituation of particular species (Rust Environment and Infrastructure, 1999). Increased construction, use of the tracked vehicle maneuver area, and use of the firing range and helicopter landing areas may result in an increase in erosion. Construction of planned projects would occur principally within the cantonment area or other developed areas of the installation. None of the proposed projects would be located in wetlands. Effects on sensitive and/or rare species would not appreciably change from current operations, and impacts to habitats and biota will be minimal. Impacts on the biological environment would be generally limited to areas already affected under current conditions. Sensitive wildlife likely already avoid these areas or have become habituated

to mission effects such as noise. Best management practices (BMPs) for erosion control and use of erosion and sedimentation control programs during these projects would limit increases in erosion and sedimentation and their impacts on streams, wetlands, and biota.

1.10.6 Constraints and Opportunities

Soldiers need to be aware of their environment, whether during war or peacetime. There are always rules of engagement, and planning and implementation of these plans must take these rules into account. Learning to plan around environmental restrictions helps develop a disciplined mindset that is a valuable asset to today's soldier. However, a balance must exist to avoid "negative training" from excessive constraints.

Most of Fort Rucker is available for training purposes, with few exceptions. Ground disturbing activities are limited in the following areas: in the vicinity of streams, wetlands, and water bodies; locations where gopher tortoise exist; and locations with documented cultural resources.

Streams, wetlands, and water bodies must be protected to the greatest extent possible to preserve water quality in these areas. This is accomplished through the use of erosion control measures and BMPs as described in Section 3.4.2.5. In areas where endangered mussel species listed in Section 3.1.2 are or may be located, extra precautions and proper consultation with USFWS may be required during the planning stages of any activity in which habitat may be impacted. All consultation correspondence (including email correspondence) will be kept on file at Fort Rucker.

Ground disturbing activities must also be limited when gopher tortoise are present. Burrows will be marked, and all activities must maintain a minimum distance of 25 feet from any active burrow and its associated mound. Should a project require activities to take place within this buffer, relocation of the tortoise or tortoise eggs may be required with coordination with Natural Resources and, if necessary, USFWS (**Appendix 5**). As discussed in Section 3.1.3, the gopher tortoise is an Army Species-at risk and a state of Alabama protected species. The eastern population of the gopher tortoise is a candidate species for listing under the Endangered Species Act. Much of the prime gopher tortoise habitat on Fort Rucker occurs in the Impact Area. Should the eastern population of the gopher tortoise be listed as endangered or threatened, it could impact the mission. Fort Rucker will continue to coordinate with the USFWS on the status of the eastern population of the gopher tortoise. Measures that would be implemented under this INRMP would provide benefit to the species, which should avoid the designation of critical habitat for the eastern population of the gopher tortoise on Fort Rucker.

Activities such as vegetation clearing, wildlife food planting, timber management, and training land rehabilitation are potentially damaging to cultural resources as well. In order to prevent activities from impacting cultural resources, natural resources projects that involve ground disturbing activities will be processed through the Fort Rucker cultural resources manager. Projects in areas with known cultural resource sites must have site-specific surveys completed prior to implementation. Determination of effect and consultation guidelines provided in implementing regulations for the National Historic Preservation Act (36 Code of Federal Regulations [CFR] §800) will be followed during

Environmental Division review of projects. Any project assessed as having an effect on a cultural resource site at Fort Rucker will be coordinated with the Alabama State Historic Preservation Office (SHPO).

Other restrictions include any area where bald eagles or migratory birds reside. Fort Rucker supports a pair of bald eagles, and one nest has been observed at Lake Tholocco. Although the eagle is no longer listed as threatened, it is still protected under the Bald and Golden Eagle Protection Act (BGEPA). Both the ADCNR Division of Wildlife and Freshwater Fisheries and the U.S. Fish and Wildlife Service have been notified. Due to the recreational nature of this area, it is not expected to create any constraints. Per the Migratory Bird Treaty Act (MBTA) restrictions are also placed on migratory birds. Restrictions regarding removal of nests during breeding season in accordance with the restrictions set forth in the MBTA, and The Nest Destruction Migratory Bird Permit Memorandum (USFWS, 2003) and must be addressed prior to any removal.

1.11 Physical Environment

1.11.1 Topography and Physiography

Fort Rucker extends northwestward from the floodplain of the Choctawhatchee River, rising gradually from 164 feet mean sea level (msl), through undulating to rolling, sometimes deeply dissected, forested terrain to elevations slightly above 515 feet msl (McGee, 1987; 1204th Engineer Co., 1995; Rust Environment and Infrastructure, 1999). A topographic map is included as **Figure 1-5**.

Fort Rucker is in the Buhrstone Hills sub-district, which developed on indurated resistant siliceous claystone and sandstone (Sapp and Emplainscourt, 1985; Osborne et al., 1989). Terrain on Fort Rucker consequently consists of typically narrow and winding ridgetops that range from highly dissected along the creeks and Lake Tholocco in the eastern portion of the post to gently rolling in the western and extreme eastern portions. Sideslopes are gently rolling in the western part of the reservation and steep in the eastern portion. Drainage-ways are typically narrow bands of alluvium along small streams (1204th Engineer Co., 1995; Rust Environment and Infrastructure, 1999).

1.11.2 Geology and Soils

The East Gulf Coastal Plain is an elevated former sea bottom, with sedimentary geologic formations and underlying basement rock that includes metamorphic, igneous crystalline, and sedimentary rock.

Fort Rucker soils overlie the Buhrstone Escarpment, a formation held up by shale and sandstone (Roberts, 1996). Geologic formations that outcrop on Fort Rucker include: Tuscaloosa Sand, Hatchetigbee and Tallahatta Formations, Lisbon Formation, Residuum, Alluvial High Terrace Deposits, and Low Terrace Deposits (Metcalf and Eddy, Inc., 1992; Rust Environment and Infrastructure, 1999).

While no minerals are mined on Fort Rucker, and no petroleum deposits are known, there are limited resources of potential future economic value including brown iron ore, sand and gravel, and clay (Turner et al., 1965; Newton, 1968).

Predominant soil series that occur on the Fort Rucker main installation include the Troup-Orangeburg-Nankin-Lucy series and Troup-Luverne-Conecuh series. In the far eastern portion of the main installation, there is also an area of Troup-Red Bay-Orangeburg series soils. The locations of these soil series, as well as those located on outlying properties are shown on **Figure 1-6**.

1.11.3 Water Resources

1.11.3.1. Surface Waters

The main Fort Rucker installation and all satellite stagefields are located in the Choctawhatchee River Basin, with the Choctawhatchee River to the southeast and the Pea River to the northwest of the installation. Fort Rucker has approximately 335 miles of streams and rivers within the main reservation. Claybank Creek and its tributaries constitute 82% of these streams and rivers on Fort Rucker. Claybank Creek flows from a source north of Fort Rucker, bisecting the reservation, and flows into the Choctawhatchee River southwest of Fort Rucker. Average annual discharge of the Choctawhatchee River at Newton (USGS Station 02361000) was 1,124 cubic feet per second (cfs) with a maximum discharge of 9,190 cfs. Average annual flow in the Pea River at Ariton (USGS Station 02363000) was 653.8 cfs in 2014. The locations of these stations are shown on **Figure 1-6**. No USGS flow data is available for Claybank Creek (USGS, 2015). Of the five lakes on Fort Rucker, four of them (Beaver, Buckhorn, Ech, and Parours) are small (less than 20 acres) reservoirs built on tributary streams of Claybank Creek. Lake Tholocco is an approximately 620-acre impoundment of Claybank Creek and is used for both recreation and training activities. Surface Water locations are shown on **Figures 1-7 and 1-8**.

Neither Fort Rucker, nor the surrounding areas, uses surface water as a source of drinking water. However, surface water is used extensively for agricultural purposes. Recreational use of surface water in the area is largely limited to Lake Tholocco, Dale County Public Lake, Coffee County Public Lake, and several other lakes in the region.

Surface water data from the Choctawhatchee River and tributaries indicates the rivers are moderately turbid, and hardness ranges from 20-30 parts per million. According to monitoring data, primary and secondary drinking water parameters are acceptable compared to State standards, with exception of manganese and iron, which exceeded State standards. Waters comply with Environmental Protection Agency Ambient Water Quality Criteria, with exception of iron. Organic contaminants were not routinely monitored in these rivers.

The Choctawhatchee River and most of its tributaries are classified as “Fish and Wildlife” waters by ADEM. This designation indicates that surface waters are suitable for the propagation of fish, aquatic life, and wildlife but are not suitable for swimming, drinking water, or food processing. The waters of Lake Tholocco are designated as “Fish and Wildlife” and “Swimming” (ADEM Administrative Code r. 335-6-11, 2015). Information regarding the process by which designation of surface water classifications are decided can be found in Alabama’s Water Quality Assessment and Listing Methodology (ADEM, 2012).

Wetlands and Floodplains are described in Sections 3.2 and 3.18.

1.11.3.2. Groundwater

The three regional aquifer units underlying Fort Rucker are part of the Southeastern Coastal Plain Aquifer System, which forms a thick wedge of sedimentary strata resting upon a base of relatively impervious igneous, metamorphic and sedimentary rock sloping down from the Piedmont Geologic Region. The shallow aquifer at Fort Rucker is the Lisbon Aquifer, which is subdivided into the Lisbon Formation and deeper Tallahatta and Hatchetigbee Formations. This aquifer extends to a depth of 10-140 feet below land surface, with shallow locations existing on higher ground in northwestern Fort Rucker (in the impact area of LMU 1) and to the southeast at the cantonment area. The Lisbon Aquifer is separated from deeper aquifers by the Tuscaloosa Sand Confining Unit. The Tuscaloosa Formation primarily outcrops north of Fort Rucker, but it is also surficial in valleys of Claybank, Steep Head, and Bowles creeks.

Immediately below the Tuscaloosa Confining Unit are the Nanafalia and Clayton Formations, which outcrop north of Fort Rucker at the headwaters of the Choctawhatchee River. The Nanafalia Formation consists of sand bed, hydrologically connected to sand and limestone beds of the Clayton Formation. These formations are 400-500 feet thick in the vicinity of Fort Rucker and are the primary source of drinking water for Fort Rucker and surrounding municipalities.

The Nanafalia/Clayton Formations are separated from the deeper Providence Sand/Ripley Formation by a narrow confining unit, and in places, they are hydraulically connected. The Providence Sand/Ripley Formation is 600-800 feet thick, and Groundwater flow is to the south. Still deeper formations include the Blufftown Formation and part of the Eutaw Formation, which are separated from the basal (deepest) aquifer by a confining unit of clay and chalk called the Middle Eutaw Formation. This confining unit lies 2,000 - 2,500 feet beneath Fort Rucker. The basal aquifer unit includes the Tuscaloosa and Atkinson Formations.

Due to the extensive pumping of groundwater, cones of depression have developed in the Nanafalia aquifer in the area of Fort Rucker and surrounding municipalities. The potentiometric surface has decreased approximately 80 feet in the period between 1975 and 2006. Deeper formations have been tapped for groundwater use with no reported instances of drawdown in the aquifer. These formations provide a substantial potential auxiliary water supply. Although the Nanafalia aquifer has been impacted by these withdrawals, it is not at a level which is likely to affect habitation or use by biota or people on Fort Rucker (Cook, Jennings, and Moss, 2007).

Due to concerns regarding depression of the aquifers and higher turbidity during extended periods of pumping, Fort Rucker limits pumping time to no more than 18 hours a day per supply well. Additionally, although the State of Alabama has not placed restrictions on groundwater use, Fort Rucker limits itself to four million gallons per day for all uses. Average annual water demand on Fort Rucker declined from 73.46 thousand gallons per 1,000 square feet in 2008 to 35.63 thousand gallons per 1,000 square feet in 2013, a 51 percent reduction in annual demand (ENRD, DPW, 2016), averaging approximately 215 million gallons per year. If operations are expanded, it may be necessary to increase water conservation measures and/or to rely more heavily on the deeper Ripley Formation for drinking water.

The Fort Rucker potable water supply is provided by groundwater from the Nanafalia/Clayton and Providence Sand/Ripley formations, and consists of seven wells drilled to a depth of 600 feet below land surface. Wells No. 1-6 have a pumping capacity of 500 gallons per minute (gpm). Well No. 7 is rated at 1,000 gpm. There are no reports of drawdown affecting production in these wells. The water supply system serves the cantonment area, Hanchey Army Heliport (AHP), and Knox AHP. Hanchey and Knox have no other source of water. This system has been privatized and is now provided by American Water. Cairns AAF is connected to the City of Daleville water system. Shell Army Heliport is connected to the City of Enterprise water system. Primary production wells which supply Fort Rucker are sampled regularly for pH, chlorine, coliform bacteria, metals, nutrients, and organic constituents (Metcalf and Eddy, 1992). Groundwater quality in the area is good, however constituents qualified as Secondary Drinking Water concerns, such as iron and hardness, are occasionally seen at high levels (Rust Environment and Infrastructure, 1999). These contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in water, but are not considered a present risk to human health (40 CFR § 143, 1991).

A second major use of groundwater is for fire protection. Cairns AAF, Lowe Field, and Hanchey Field each store 200,000 gallons for fire protection. Wells in the cantonment area provide firefighting water for Hanchey Field. Lowe Field has a 225 gpm well, and Cairns AAF also has a well to furnish water for fire protection. Shell AHP is connected to the City of Enterprise water system. Most other outlying fields are also connected to public water systems.

1.11.4 Wetlands

Wetlands are areas of transition between terrestrial and aquatic systems where the water table is usually at, or near, the surface, or the land is covered by shallow water (USFWS 1979). These resources are protected under Section 404 of the CWA (33 USC § 1344) and at the state level under ADEM Administrative Code 335-8 (2013). Wetlands on federal lands are afforded additional protection under Executive Order (EO) 11990, Protection of Wetlands, which sets a goal of “no net loss” of wetlands. The majority of jurisdictional wetlands in the U.S. are identified using three wetland delineation criteria: 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology. Fort Rucker supports approximately 3,425 acres of wetlands influenced by seasonal fluctuations in precipitation, overland or near surface flow, shallow groundwater, or some combination of these processes (**Figure 1-7**). Per EO 11990 (1977), Protection of Wetlands, EO 11988 (1977), Floodplain Management, and AR 200-1, Environmental Protection and Enhancement (US Department of the Army, 2007), actions are only permitted to take place in these areas should the proposed action be analyzed and found to have no significant impact or that there is no practicable alternative. Further information regarding wetland habitats on Fort Rucker can be found in Section 3.2.

1.11.5 Floodplains

Floodplains are lowland areas adjacent to surface water bodies (i.e., lakes, wetlands, and rivers) that are periodically covered by water during flooding events. Floodplains and

riparian habitat are biologically unique and highly diverse ecosystems that provide a rich diversity of aquatic and terrestrial species and act as a functional part of natural systems (Mitsch 2000). Floodplain management on Fort Rucker includes floodplain protection floodplain boundary determination, and assessment of proposed actions within floodplains. Many portions of the Fort Rucker reservation fall within the 100-year floodplain (areas with a one percent chance of being inundated by floodwater in a given year) (**Figure 1-8**). Most 100-year floodplains are in the northwestern portion of Fort Rucker, associated with Bowles Creek and its tributaries. The largest 100-year floodplain is associated with Claybank Creek and extends in a southerly direction through the east-central portion of Fort Rucker. Per EO 11990, *Protection of Wetlands*, EO 11988, *Floodplain Management*, and AR 200-1, *Environmental Protection and Enhancement*, actions are only permitted to take place in these areas should the proposed action be analyzed and found to have no significant impact or that there is no practicable alternative.

1.11.6 Climate

A variety of factors contribute to Fort Rucker's temperate subtropical climate, including location, topography and air-mass activity. Long, hot summers and short, mild winters are typical. Average annual rainfall on Fort Rucker is 49.1 inches, and monthly rainfall ranges from a low of 3.4 inches in October to a high of 5.5 inches in February. Although measurable precipitation (>0.01 inches) occurs on an average of 110 days each year, a large percentage of the rain typically occurs on a single day each month. Thunderstorms occur an average of 70 days per year, but are more frequent during summer months (an average of 12-15 events per month). Prolonged or severe droughts are rare, although dry periods from four to six weeks are common.

The average daily temperature for Fort Rucker is 79 degrees Fahrenheit (°F) in summer and 53°F in winter; allowing for an average growing season of approximately 250 days per year. Average daily maximum temperatures range from 61°F in January to 91°F in June, July, and August. Daily minimum temperatures range from 41°F in January to 72°F in July and August.

Prevailing winds on Fort Rucker are normally light (five to eight knots) and vary in direction. The highest sustained wind speed recorded during the period 1954-1996 was 64.9 knots. Intense weather activity at Fort Rucker is infrequent. High winds associated with thunderstorms occasionally cause damage, and hurricanes and tornadoes can bring intense winds and rain to the region.

1.11.7 Ecosystems and Biotic Environment

1.11.7.1 Historic Vegetative Cover

Fort Rucker has an extensive history of natural resource use prior to its establishment as a military reservation. Euro-American and Afro-American settlement of the area began during the 1820s. The vast majority of the pre-Fort Rucker population was more or less evenly scattered along the road system and lived on small farms without slaves. Although the Wiregrass region was not considered prime cotton producing land, many farmers earned their livelihood as cotton share-croppers. Archaeological evidence indicates their material possessions were few, and that there was a high degree of self-sufficiency

among these late nineteenth and early twentieth century farm families (Southeastern Wildlife Services Inc., 1984; Higginbotham/Briggs and Associates, 1991; Dothan Progress Ltd., 1995).

Cotton agriculture became more widespread in the Wiregrass region with increased use of commercial fertilizer during the late 19th and early 20th centuries. Cotton production contributed to the further depletion of the already thin soil of the area and led to an agricultural crisis with the arrival of the boll weevil during the early 20th Century. The boll weevil caused people of the Wiregrass to turn to crops other than cotton (Higginbotham/Briggs and Associates, 1991; Dothan Progress Ltd., 1995).

Four small, incorporated farm communities, Haw Ridge, Westville, Kleg, and Douglas served the needs of these farm families. Haw Ridge, which contained 16 permanent structures, was located on the Dale-Coffee County line on land that is now in the ordnance impact area. Westville was located north of Steep Head Creek, west of Black's Mill Creek and east of the county line. This settlement included a store with post office, a woodshop, a smithy, a doctor's office, and a school that, based on federal census schedules of 1860, served 206 farm families. Kleg was a dispersed settlement of about a dozen families, situated on uplands south of Steep Head Creek and west of Claybank Creek. The Douglas hamlet of five structures was located on Kelly Mill Creek in the extreme southeastern portion of the post, overlooking the railroad and floodplain of the Choctawhatchee River (Southeastern Wildlife Services Inc., 1984).

When the government acquired Fort Rucker, over 400 farm families were displaced. Property that had been farmed since before the Civil War was abandoned, and houses and other structures were subsequently razed (Southeastern Wildlife Services Inc., 1984).

1.11.7.2. Current Habitats and Associated Plants and Animals

The following descriptions provide an overview of the main habitats and typical associated species found on Fort Rucker. Detailed habitat descriptions and comprehensive species lists are available in the *Survey of Fauna and Flora of Fort Rucker, Alabama* (Mount and Diamond, 1992), and locations are shown on **Figure 1-9**.

The most prevalent habitats on Fort Rucker are hardwood-dominated mesic forest, mixed pine-hardwood mesic forests, and mid-aged pine stands. These habitats are discussed in further detail below. In the impact area, xeric forest-sandhill type is the most dominant habitat. Due to its status as an impact area and the high likelihood of encountering unexploded ordnance, Natural Resources is frequently unable to access or manage this area to the degree desired. However, Training Division, Range Branch is responsible for and conducts maintenance and operations functions within the area. All activity is centered upon aligning environmental Best Management Practices while meeting Army operational requirements. Other habitats found on Fort Rucker include Steep, forested, ravine slopes; xeric forest-clayhill type; young pine plantations; agricultural land, fallow fields, and old fields; eroded sites, waste areas, quarries; developed areas; floodplain forests; bay swamps; seeps, bogs, and wetlands; borrow pits; intermittent streams; oxbow ponds; beaver ponds; permanent streams; and man-made lakes. Scientific names of

flora and fauna discussed herein and more detailed descriptions of habitats not discussed below can be found in **Appendix 6**.

1.11.7.2.1. Hardwood-dominated Mesic Forests

The most common habitat on Fort Rucker is the hardwood-dominated mesic forest, which occurs where mesic (relatively moist rich soils) conditions prevail, such as on lower slopes, on floors of coves and ravines, and along some smaller permanent watercourses. Most forests of this type burn only infrequently. Logging has occurred on several sites formerly supporting this habitat type, and the majority of these sites have been converted to stands dominated by loblolly pine.

This forest type is typically dominated by mesophytic hardwoods, such as diamond-leaf oak, white oak, yellow poplar, American beech, maples, southern magnolia, water oak, and black gum. Smaller trees include holly, dogwood, sweet bay, silverbell, hornbeam, sweetleaf, ironwood, and Hercules' club. The shrub understory typically includes red buckeye, mountain laurel, piedmont azalea, sweet shrub, Florida anise, and members of the blueberry-huckleberry complex. Needle palm may occur. Herbs include a wide variety of wildflowers and ferns, such as wild ginger, violets, trillium, partridgeberry, and cinnamon fern. In areas with increased light penetration, greenbrier, poison ivy, and switch cane may also be common.

Wild turkey, white-tailed deer, and eastern gray squirrels make heavy use of mast and other food sources available in this habitat, as do the southern flying squirrel, cotton mouse, and golden mouse. Invertebrates constitute the major food source for shrews and armadillos, both of which are common inhabitants of this habitat.

Common birds in this habitat include passerines such as the northern cardinal, wood thrush, vireos, and warblers, as well as several woodpeckers. Raptors that use this habitat, often for nesting, include the screech owl, red-shouldered hawk, red-tailed hawk, broad-winged hawk, and Cooper's hawk.

Snakes that may utilize this habitat include the canebrake rattlesnake, copperhead, gray rat snake, and several small secretive species (e.g. ringneck snakes). Lizards most often encountered are the ground, five-lined, and broadheaded skinks. Around forest edges, the green anole and eastern fence lizard are also common. Typical amphibian inhabitants are the southern toad, Cope's gray treefrog, eastern narrowmouth toad, and spring peeper. Salamanders utilizing this habitat are the southeastern slimy salamander and, near small streams and in and around seepages, the dusky, two-lined, and red salamanders.

1.11.7.2.2. Mixed Pine-Hardwood Forests on Mesic Sites

Included in this category are mixed forests containing both pine and hardwood species on moderately well drained, mesic sites where mesophytic species predominate. Such forests are abundantly represented on the reservation in uplands with clay subsoils. They occur throughout Fort Rucker and are the dominant habitat type on the northwestern portion of Fort Rucker, as seen in **Figure 1-9**. This type of forest has developed naturally on much of the formerly cultivated uplands. Generally, topsoils are fairly low in nutrients and consist of sandy clay loams or sandy clays. Most sites are highly erodible, and the

topsoil layer may be shallow. On the tops of hills and ridges where conditions become xeric, this forest type may be replaced by one of the two xeric habitat types described below, or by an intermediate type.

Pines in the overstory of these mixed pine-hardwood forests include loblolly, shortleaf, and longleaf pine, in decreasing order of frequency. Common large hardwood species include southern red oak, water oak, diamond-leaf oak, sweetgum, and yellow-poplar. Less common are post oak, black oak, and hickory. Southern magnolia, beech, white oak, and spruce pine may also occur on flat areas. Predominant small trees include sassafras, dogwood, sourwood, hawthorn, persimmon and wild cherry. Present in lower frequencies of occurrence are blackjack oak, fringe tree, eastern red cedar, yaupon, and devilwood.

Shrub understory plants are mostly members of the blueberry/huckleberry complex, wax myrtle, and young individuals of the trees described above. Occasionally, piedmont azalea and red buckeye are also present. Blackberry and wild plum may be common in forest openings. Ground cover includes a wide variety of grasses and forbs, including numerous species of legumes, but no particular species is dominant.

A number of factors affect plant composition and frequency of occurrence of component species of these communities. One of the most important is the forest management system being employed. For example, where fire is frequent, mature dogwood tends to thrive along with the larger pines, while fire-susceptible species, such as yellow poplar, are scarce or absent. The herbaceous ground cover becomes thicker and more diverse following fire, and shrubby undergrowth is inhibited.

Animal life in mixed pine-hardwood forests is fairly diverse. Common passerine birds, which may breed here, include the pine warbler, brown-headed nuthatch, red-eyed vireo, northern cardinal, Carolina wren, American crow, and blue jay. Also common are several woodpeckers, including the downy, red-bellied, and pileated, as well as the northern flicker. Other avian residents include the wild turkey, chuck-will's widow, and several raptors, including the screech owl, broad-winged owl, red-tailed hawk, and sharp-shinned hawks. Species diversity is greater during winter due to migrants and non-breeding winter residents.

Common small mammals in this habitat are gray and flying squirrels, the eastern fox squirrel where the shrub understory has been suppressed by fire, the cotton mouse, pine vole, golden mouse, red bat, and several shrew species. The white-tailed deer, armadillo, Virginia opossum, and cottontail rabbit are also common.

Reptiles frequently encountered in this habitat are the eastern box turtle, green anole, eastern glass lizard, gray rat snake, eastern garter snake, and three species of skinks. The copperhead and canebrake rattlesnake are moderately common, especially around thickets at the edge of intermittent streams and drains. During winter, the cottonmouth tends to move away from its usual aquatic habitats and into these and other upland forests to overwinter in stump holes and similar places. Amphibians are infrequent in this type of habitat. Those most likely to occur are the southeastern slimy salamander, several treefrogs, and several toad species during the non-breeding period.

1.11.7.2.3. Mid-aged Pine Plantations

Flora and fauna of pine stands from 10 to 30 years in age varies depending on tree-age classes, tree spacing, and forest management practices. Those pine stands in which intensive efforts are made to suppress other vegetation utilizing annual burning or herbicides, are not as biodiverse as those burned less frequently (three to four-year intervals). In addition to planted pines, flora encountered in mid-aged pine stands may be extremely variable, depending on light availability, soil type, moisture conditions, and history of the site.

Scattered mast-producing hardwoods, such as oaks and dogwood, growing among the pines enhance the carrying capacity of this habitat type for wildlife and contribute to faunal diversity. The presence of certain shrubs, such as blueberry, as well as the presence of standing dead trees and snags or rotting stumps and tree trunks on the forest floor also increase wildlife habitat.

Common fauna likely to occur in the mid-aged pine stand habitat type include several lizards, the southeastern slimy salamander, the southern toad, and snakes of several species, notably the scarlet kingsnake in areas where rotting pine stumps and snags are present for denning sites, the ringneck snake, black racer, crowned snake, and, if gopher tortoises are present, the eastern diamondback rattlesnake.

Birds that characteristically breed in this habitat include the brown-headed nuthatch, pine warbler, northern cardinal, American crow, and several woodpeckers. Fox squirrels in southeastern Alabama tend to occur with greatest frequency in open stands of mature pine. Also found in mid-aged pine forests are pine voles, cotton mice, and shrews. Wild turkey and white-tailed deer generally prefer even-aged pine stands to a lesser extent than other forested habitats.

1.11.7.2.4. Xeric Forest - Sandhill Type

Xeric (low moisture) forests consist principally of plants that require minimal amounts of moisture and which, consequently, can grow in excessively well-drained soils. Xeric sandhill forests, as the name implies, develop in extremely dry, sandy soils. Trees strongly indicative of this forest type are turkey oak and bluejack oak. Longleaf pine is the most common dominant large tree species. Other woody species frequently occurring in this habitat type on Fort Rucker include hawthorn, southern red oak, dwarf (or sand) post oak, sand laurel oak, and occasionally, persimmon, and devilwood. Turkey oak and bluejack oak tend to be more fire susceptible than other oaks.

Low-growing species include several grasses, pineweed, several legumes (goat's rue and other *Tephrosia* species, beggar ticks, and wild indigo), milkweeds, prickly pear, sensitive brier, treadsoftly, and poison oak. Patches of blackberry may be present.

Most sandhill forest occurs in small tracts within more extensive areas of mixed pine-hardwood forests on mesic sites. Boundaries of these tracts are frequently imprecise, with broad ecotones occurring. Even where moderately well developed, the xeric sandhill forest type on most sites on Fort Rucker lacks the sharply distinctive character of this type of forest where it occurs further south in the lower East Gulf Coastal Plain. Most, but not all, of the habitat within this category is found in the eastern portion of the reservation

near the impact area. Much of the acreage on the reservation capable of supporting this habitat type has been cleared.

Many animals associated with sandhill forest habitat create burrows. Mammalian inhabitants include the oldfield mouse, southeastern pocket gopher, fox squirrel (where fire is frequent), and the southern flying squirrel (where tree cavities are available). Reptiles particularly well adapted to xeric conditions include the six-lined racerunner, eastern coachwhip, Florida pine snake, and gopher tortoise. Although the gopher tortoise is not confined to this habitat, it does show a preference for it. The eastern fence lizard, southeastern five-lined skink, ground skink, and crowned snake also occur. During winter, numerous other species may be found, often as hibernators either utilizing gopher tortoise burrows or in burrows they construct themselves. Included in this group are several frogs and toads (e.g., the ornate chorus frog, barking treefrog, and possibly, the oak toad), as well as the eastern diamondback rattlesnake.

Gopher tortoise burrows also provide optimum denning retreats and nesting sites for several larger mammals including the gray fox, opossum, armadillo, and striped skunk. With appropriate management (*i.e.* judicious use of fire and provision of scattered clumps of brush for cover) the northern bobwhite and cottontail rabbit are also found in this habitat. Acorns produced by mature oaks, when present in reasonable numbers, are valuable winter foods for white-tailed deer and wild turkey, although these animals are likely to spend a preponderance of their time in other habitat types.

1.11.7.3. Threatened and Endangered Species

Protection and management of threatened and endangered species will be conducted in accordance with the ESA, NEPA, AR 200-1, DoDI 4715.03, USFWS regulations and agreements, and other applicable laws or guidance from higher headquarters. Species of fish, wildlife, and plants that are listed as threatened or endangered will be protected and managed.

Consideration will be given to species the State of Alabama, Department of Conservation and Natural Resources include on the list of rare or sensitive species of Coffee and Dale counties in Alabama to also include species listed of Greatest Conservation Need published in Alabama's Comprehensive Wildlife Conservation Strategy. This list also includes updated status for state protected species.

The table below provides a summary of species that have been observed at Fort Rucker that are federal or state-listed, state-protected, or ranked by the Nature Conservancy. Comments are included regarding the status of each species found on Fort Rucker. Thirteen threatened and endangered species were documented and include five reptiles, three birds, one mammal, and two macroinvertebrate species of concern located on Fort Rucker, as discussed in detail in section 2.2. The bald eagle, which is protected by the BGEPA (16 USC § 668, 1940), has been observed on Fort Rucker.

**Table 1-3 Observed Species of Conservation Concern
Documented at Fort Rucker**

Species Name	Listing Status		Rank		Comments
Common Name Scientific Name	Federal	State	State	Global	
Listed Species					
American Alligator <i>Alligator mississippiensis</i>	T (SA)		4	5	Uncommon, probably stable
Eastern diamondback rattlesnake <i>Crotalus adamanteus</i>		SC			Uncommon, likely declining
Gopher tortoise <i>Gopherus polyphemus</i>	C	T	2	3	Locally common, low-density population
Eastern coachwhip <i>Masticophis flagellum</i>		SC			Locally common
Eastern Box turtle <i>Terrapene carolina</i>		SC			Moderately common
Cooper's hawk <i>Accipiter cooperii</i>		SC			Probably stable
Common ground dove <i>Columbina passerina</i>		SC	2	5	Locally common, stable
American white pelican <i>Pelacanus erythrorhynchos</i>		SC	Secure	Secure	Occasional on migration
Osprey <i>Pandion haliaetus</i>		SC	3	5	Last seen at Lake Tholocco in 1992
Bald Eagle <i>Hailiaeetus leucocephalus</i>	BGEPA	E	1/B 2/N	3	Nesting pair at Lake Tholocco
Southeastern pocket gopher <i>Geomys pinetis</i>			3		Rare- 2 localities, declining
Choctaw bean <i>Villosa choctawensis</i>	E				Located during 1998 – 2000 mussel survey
Fuzzy pigtoe <i>Pleurobema strodeanum</i>	T				Located during 1998 – 2000 mussel survey

C: Candidate species for listing under the Endangered Species Act

E: Endangered

T: Threatened

SA: Listing due to similarity in appearance

SC: Special concern

Note: Ranking scales are based on a scale of 1 to 5, where 1 is critically imperiled and 5 is demonstrably secure.

1.11.7.4. Ecosystem Services

The natural environments on Fort Rucker provide numerous ecosystem services. It is difficult to assign a monetary value to the majority of these services. As such, many times they are not adequately valued against other competing demands that provide clear economic benefits. One such benefit is the creation of habitat which is suitable for use by game species, threatened and endangered species, and other non-game species. Another is the well documented ability of healthy forest communities to filter air and water in comparison to those seen on developed land.

1.11.7.5. Climate Change Vulnerability Assessment

This section serves to address the mandate in DoDI 4715.03 to plan for climate change impacts to natural resources. Primary effects expected due to climate change in the region of Fort Rucker are increases in mean temperature, extreme heat events, a possible increase in extreme weather events, and changes to endangered species habitat.

Changes in weather patterns in the region have a potential to impact Fort Rucker's mission. Increases in mean temperature are expected to increase by 2°F to 10°F by 2100 in the region. Personnel safety concerns due to heat can decrease the amount of time in which soldiers are able to perform dismounted exercises. Extreme heat and drought events can create high fire risk conditions and preclude the ability to use pyrotechnics, live-fire training with tracers, and live fire of explosive ordnance to reduce the chances of wildfire. Additionally, extreme weather events typical of the region with associated lightning, wind, and flooding risks can temporarily limit access to training lands. Flight operations are also highly dependent upon the weather, and adverse conditions may significantly disrupt operational and training requirements.

Increased temperatures and changes in precipitation patterns, as discussed above, may require modification of the prescribed burn program, which is the primary means by which suitable habitat is managed (US Department of the Army, 2013).

1.11.7.6. Flora Inventory

The *Fauna and Flora of Fort Rucker, Alabama* (Mount and Diamond, 1992) contains an annotated checklist of flora known to occur on the post or possibly occurs, based on literature review. Unconfirmed species' probabilities of occurrence (0-25%, 26-50%, 51-75%, or 76-100%) are also listed in this survey. A survey for threatened, endangered or special concern plants was completed in November 2002 by Troy State University (Mount, 2003). **Appendix 6** contains descriptions of other habitats found on Fort Rucker. **Appendix 8** contains an index to scientific names of floral species known to occur on Fort Rucker and which are mentioned in the habitat descriptions.

A literature search, herbarium records, and an on-site flora survey conducted by Mount and Diamond (1992) indicate no species listed as endangered or threatened by the U.S. Fish and Wildlife Service (USFWS). Several species of interest to the USFWS may occur on Fort Rucker, including the incised groovebur (a species of management concern, Flyr's nemesis (a species of special concern), Baltzell's sedge (a species for which consideration is encouraged), and Alabama anglepod (a species of special concern). These species have not been confirmed on Fort Rucker in recent surveys. The State of Alabama has no official plant list of threatened or endangered plants. A survey for threatened, endangered or special concern plants was completed in November 2002 by A.R. Diamond and M. Woods of Troy State University. Of these species of interest to USFWS, none have been collected on the installation more recently than September, 1992.

1.11.7.7. Wetlands

The U.S. Congress enacted the Clean Water Act in 1972 to *"restore and maintain the chemical, physical, and biological integrity of the Nation's waters."* Section 404 of the Clean Water Act delegates jurisdictional authority over wetlands to the United States Corps of Engineers (USACE) and the EPA. "Waters of the United States" protected by the Clean Water Act include rivers, streams, estuaries, and most ponds, lakes, and wetlands. USACE and the EPA jointly define wetlands as, *"Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."* Most wetlands on Fort Rucker are part of the tributary system of truly navigable waters and are therefore under Corps jurisdiction. However, if a wetland is believed to be hydrologically isolated (lacking the necessary connection to navigable waters), USACE, Mobile District should be consulted to make a jurisdictional determination. Further information regarding the jurisdiction of wetlands on Fort Rucker can be found in Section 3.2.

Wetlands are dispersed throughout Fort Rucker, mostly associated with numerous streams that traverse the reservation. The largest contiguous wetland complex is a floodplain forest in the south-central portion of the reservation. This wetland system includes floodplains of Claybank Creek, Steep Head Creek, and Black Mill Creek below Lake Tholocco dam. Claybank Creek also has a fairly extensive wetland above the old Lake Tholocco bed, along the north-northeastern reservation boundary.

Field observations of wetland habitats and their associated plant constituents were addressed in Mount and Diamond's (1992) *Survey of the Flora and Fauna of Fort Rucker, Alabama*. Three wetland systems are present at Fort Rucker:

- **Riverine.** This classification includes wetlands and deepwater habitats that are contained within a channel, except those dominated by persistent, emergent vegetation. Riverine systems at Fort Rucker include the Choctawhatchee River, Claybank Creek, Bowles Creek, Steep Head Creek, and Blacks Mill Creek. Three stagefields are in the Pea River system.
- **Lacustrine.** This classification includes wetlands and deepwater habitats that occur

in topographic depressions, lack persistent, emergent vegetation, and have an area that exceeds 20 acres. Lacustrine systems at Fort Rucker include Lake Tholocco and four small reservoirs on tributaries of Claybank Creek.

- **Palustrine.** All non-tidal wetlands dominated by persistent or emergent vegetation are included in this classification. Palustrine wetlands have many unique and important functions. They provide essential habitat for many wildlife species, absorb floodwaters, improve water quality by removing pollutants, and provide aesthetic, recreational, scientific, and educational values. Palustrine wetland habitats at Fort Rucker are discussed in the following paragraphs.

During field observations, Mount and Diamond (1992) identified the following wetland habitats: floodplain forests, bay swamps, seeps, bogs, wet meadows, borrow pits, beaver ponds, oxbows, man-made lakes, perennial streams, and intermittent streams. A wetland (under normal conditions) must contain wetland soils, vegetation, and hydrology in order to fall under Corps jurisdiction.

Mount and Diamond (1992) calculated the total area of wetlands on the installation based primarily on hydric soil types identified in Soil Conservation Service soil surveys of the reservation (Henry, 1960; Childs, 1979) and estimated that 9,573 acres or 16.5% of the total land area of Fort Rucker consisted of wetlands. The maps developed by Mount and Diamond (1992) were determined to be inaccurate by Rust Environment and Infrastructure (1999) because of their reliance on the single parameter of hydric soils. Rust Environment and Infrastructure (1999) completed a wetland study that identified 3,425 acres of wetlands on Fort Rucker.

1.11.7.8. Fauna

Although Fort Rucker has a rich and diverse fauna, natural animal communities in the area, especially large mammals have been affected by urbanization. For example two large mammals, the panther (*Felis concolor*) and black bear (*Ursus americanus*) have been extirpated from the area. White-tailed deer (*Odocoileus virginianus*) and feral pigs (*Sus scrofa*) are common however, as are many smaller mammals which have been relatively undisturbed by urbanization. **Appendix 8** contains scientific names of faunal species known to occur on Fort Rucker (Mount and Diamond, 1992). For a complete list of faunal species known to occur, or which may occur on Fort Rucker, see Fauna and Flora of Fort Rucker, Alabama (Mount and Diamond, 1992).

1.11.7.8.1. Game Fish and Wildlife Species

The following species are actively managed as game for sport hunting or fishing. These species and specific management prescriptions are outlined in Section 3.4.3.

Table 1-4 Managed Game Species

Common Name	Scientific Name
Birds	
Wood duck	<i>Aix sponsa</i>
Eastern wild turkey	<i>Meleagris gallopavo</i>
Bobwhite quail	<i>Colinus virginianus</i>
Mourning dove	<i>Zenaida macroura</i>
Mammals	
White-tailed deer	<i>Odocoileus virginianus</i>
Feral pig	<i>Sus scrofa</i>
Eastern gray squirrel	<i>Sciurus carolinensis</i>
Eastern fox squirrel	<i>Sciurus niger</i>
Eastern cottontail rabbit	<i>Sylvilagus floridanus</i>
Gray fox	<i>Urocyon cinereoargenteus</i>
Coyote	<i>Canis latrans</i>
Raccoon	<i>Procyon lotor</i>
Virginia Opossum	<i>Didelphis marsupialis</i>
Fish	
Largemouth Bass	<i>Micropterus salmoides</i>
Bluegill	<i>Lepomis macrochirus</i>
Channel catfish	<i>Ictalurus punctatus</i>
Redear sunfish (shellcracker)	<i>Lepomis microlophus</i>

1.11.7.8.2. Nongame Birds and Mammals

Section 3.4.4 contains a discussion of terrestrial and aquatic habitats and associated species of nongame birds and mammals. **Appendix 9** contains a list of non-game bird and mammal species known to occur on Fort Rucker.

1.11.7.8.3. Fish

Section 4.4.6 of the INRMP contains a discussion of aquatic habitats and associated fish species. **Appendix 9** contains a list of fish species known to occur on Fort Rucker.

1.11.7.8.4. Reptiles and Amphibians

Section 11.7.2 contains a discussion of terrestrial and aquatic habitats and associated reptile and amphibian species. **Appendix 9** contains a list of reptile and amphibian species known to occur on Fort Rucker.

1.11.7.8.5. Insects

The Fort Rucker Entomologist has been collecting and inventorying insects on Fort Rucker for many years, emphasizing the Order Coleoptera. To date, the collection includes 590 species from 59 families of beetles. Additional species collected from the post (approximately 100) are stored at the University of Georgia. The current Coleoptera species list is in files at Entomology and Fish and Wildlife. The insect collection (including some from off-post) at Entomology and Fish and Wildlife includes about 165,000 specimens.

2.0 ENVIRONMENTAL MANAGEMENT STRATEGY AND MISSION SUSTAINABILITY

2.1 Supporting Sustainability of the Military Mission and the Natural Environment

The underlying driver for natural resources management actions on Fort Rucker is military mission support and the sustainability of ecosystems. To ensure a sustainable balance is achieved, coordination and cooperation among mission and environmental personnel organizations is required.

2.1.1 Integrate Military Mission and Sustainable Land Use

The primary natural resource requirements for Fort Rucker's main military mission of aviation training are airspace and open, relatively flat landing-hovering lands. For aerial gunnery training, there is also a requirement for isolated space with good target visibility. Survival, Escape, Resistance, and Evasion (SERE) training requires habitat conditions as close to natural as possible. Fort Rucker's role in supporting Reserve and National Guard forces is more land intensive. Areas with overhead concealment are required, as is land with open ground for target visibility for firing ranges. For various activities, including artillery firing, there is also a requirement for forested area with openings. All of these mission requirements are supported by, and in many cases, enhanced by the move at Fort Rucker to restore the original longleaf pine ecosystem wherever appropriate.

2.1.2 Training Requirements Integration

Training Requirements Integration (TRI) is the component of the ITAM Program that integrates training requirements and management with land management, natural resources, and cultural resources management processes. Data derived from Range and Training Land Assessment (RTLA) and these various components help identify options that support the mission, but also minimize impacts to environmental resources. Army Training and Testing Area Carrying Capacity (ATTACC) is the method used in the TRI process to estimate training land carrying capacity by relating training load, land condition, and land maintenance processes. The integration of all ATTACC requirements occurs through continuous consultation among the DPTMS, natural and cultural resources managers, and other environmental staff members. On occasion, TRI requirements necessitate that other entities, such as DPW, agencies external to Fort Rucker, and other federal agencies provide information as well. This methodology ensures wise land-use planning and management decisions that meet regulatory compliance and training and testing activity requirements while maintaining a "training-environmental" balance.

Through TRI, the DPTMS provides commanders with an analysis of the recommended course of action, along with alternatives, for allocating training and testing requirements to available lands. The analysis of alternatives includes potential environmental impacts, such as avoidance of streams and wetlands, to allow commanders to make decisions weighing readiness and conservation factors.

It is important to site missions where natural resources can provide support on a sustained basis. Proper siting provides higher quality training for troops, and minimizes the potential for environmental damage and the associated costs of rehabilitation. New mission siting is effectively implemented on Fort Rucker via the NEPA process. NEPA coordination helps to site missions on lands best suited for supporting them by analyzing all feasible alternatives. The NEPA process is discussed in further detail in Section 2.3. GIS (Section 3.12.2) is also becoming a more valuable tool for exploring multiple conditions which must be considered prior to siting a mission.

2.1.3 Impacts to the Military Mission

Land management activities play an important role in the sustainment and improvement of training conditions, thus it is important to coordinate with mission personnel to identify future training requirements. Prescribed fire and forest manipulations can be used to manage forest conditions that meet mission requirements; however, these may also negatively impact missions if not properly coordinated.

Fort Rucker has incorporated environmental restrictions into FR Reg. 385-1 *Safety–Range and Training Area Regulation* (Fort Rucker, 2017). Restrictions within this regulation specifically related to natural resources protection address field training and bivouacking activities, water resources protection, wetlands protection, digging restrictions, and sensitive species protection.

Prescribed fire has the potential to impact mission objectives. Positive impacts to the military training mission include reduction of hazardous fuel loads, improvement of access due to management of undergrowth, and to create a more realistic, natural training environment. However, smoke can reduce visibility required for aerial training missions. For these reasons, environmental conditions such as wind direction and likelihood of smoke dispersion are considered in planning prescribed fire events. Due to weather and military training constraints there are typically 20 to 24 acceptable burn days within each year. Prior to burns, a Daily Burn Plan is completed and made available to any whose mission may be affected. A copy of the Daily Burn Plan form is included as **Appendix 10**.

Conservation awareness is instrumental in creating conditions needed to conduct natural resources management. Fort Rucker's approach to awareness stresses education. It provides military personnel and the public with insights into Fort Rucker's natural environment and conservation challenges. The more people know about the installation's unique natural resources, the more responsibly they act toward them.

Education also promotes awareness of critical environmental projects and the rationale behind them. Activities such as fish stocking, erosion control, and wildfire suppression can be accomplished with little conservation awareness effort since soldiers, recreationists, and the general public naturally supports these easily understood efforts.

However, issues such as protection of sensitive areas for little understood plant and wildlife species, restrictions on troop field operations, nongame management, permit fees and their uses, and timber harvesting practices require effective conservation communication to get positive support and, perhaps more importantly, avoid adverse reactions from various users. An active conservation awareness program must be directed to both installation and external interests if it is to be effective.

2.1.4 Military Personnel Awareness

Environmental Awareness is included as a component of ITAM, in order to foster a conservation ethic in all who use Fort Rucker lands. Most of these materials were generic in nature.

Fort Rucker's Environmental Awareness component was fully implemented in 1998. From 1997 to early 1998, the installation utilized services provided by Kansas State University to develop materials specific to Fort Rucker's needs. These services emphasized aviation, armor, and infantry missions. Materials were more specific, and included videos, posters, handbooks, and other materials.

As such, Training Division addresses compliance measures within FR Reg. 385-1 as well as providing awareness through various digital and hard-copy media outlets which are distributed to soldiers.

Natural Resources restrictions on training are sometimes necessary for long-term sustainment of training and ecosystem protection. Within Fort Rucker Regulation 385-1 *Safety-Range and Training Area Regulation* (Fort Rucker, 2017), there are restrictions for natural resources protection, including limitations on field training, digging, and bivouac activities to prevent impacts to water resources, wetlands, and sensitive species.

2.2 Endangered Species Act Section 7 Consultation Requirements

There is suitable habitat on Fort Rucker for several federally listed mussel species. Of these species, the southern sandshell, southern kidneyshell, Choctaw bean, tapered pigtoe, and fuzzy pigtoe occur in the Choctawhatchee watershed, of which Claybank Creek and Steephead Creek on the Installation are part. The Choctaw bean and fuzzy pigtoe have been recorded on Fort Rucker in recent invertebrate surveys, however the other species have not been found in any recent surveys.

Fort Rucker was excluded from critical habitat (CH) designations in the proposals because conservation efforts identified in Fort Rucker's INRMP would be beneficial to these species in terms of reducing silt, sedimentation, and non-point source pollution. These efforts will continue as identified in the INRMP.

Any activities affecting watersheds on the Installation must be reviewed for possible impacts to listed mussel species. This includes land disturbance, chemical use, low water crossings, roadwork, and any other activity with the potential to affect water quality or to constitute a barrier to mussel or fish travel within the waterway.

A survey of Fort Rucker is tentatively planned by USFWS as schedule allows to identify specific areas of drainages containing these mussels. A complete list of mussel species of concern is included in the list of potential threatened and endangered species in

Appendix 7. Future development and resource management projects on Fort Rucker that may directly or indirectly impact streams where these mussels can be found will require communication with the USFWS for an informal consultation and site survey. Email documentation of informal consultation will be kept on file at Fort Rucker.

The Candidate Conservation Agreements (CCAs) are voluntary conservation agreements between the USFWS and one or more public or private parties. The USFWS works with its partners to identify threats to candidate species, plan the measures needed to address the threats and conserve these species, identify willing landowners, develop agreements, and design and implement conservation measures and monitor their effectiveness.

The eastern population of the gopher tortoise is a candidate species for federal listing under the Endangered Species Act and is an Army-Designated species at risk (SAR). The gopher tortoise occurs on Fort Rucker, AL. Conservation of the gopher tortoise and other species is part of a broader goal to conserve biological diversity on Army lands consistent with the Army's mission. Biological diversity and the long-term survival of species such as the gopher tortoise ultimately depend upon the health and sustainability of the ecosystem in which they reside. Therefore, installation-specific gopher tortoise management strategies will promote ecosystem integrity. Maintenance of ecosystem integrity and health also benefit the Army by preserving and restoring training lands for long-term use.

The SAR policy encourages proactive management efforts for SAR and their habitats (USACE, 2010). Should this population of the species be listed in the future, Fort Rucker would be required to consult on activities with potential to affect the gopher tortoise. Because the gopher tortoise is fairly widespread on Fort Rucker, the installation may pursue a programmatic Biological Opinion from USFWS to address normal operations and training if the species is listed.

The tri-colored bat (*Perimyotis subflavus*, formerly the eastern pipistrelle) is now considered a species potentially warranting listing by the USFWS. The bat is threatened by white-nose syndrome. This bat occurs throughout Alabama including southeast Alabama where Fort Rucker is located although none have been documented in surveys on Fort Rucker. Fort Rucker is treating the tri-colored bat at a Species -At-Risk (SAR) and is managing it proactively. Recommended management actions by USFWS include limiting growing season burns during the May-Oct timeframe and considering timing of timber harvests to avoid roosting habitat disruption or destruction.

2.3 National Environmental Policy Act

The NEPA of 1969 (Public Law 91-190, Title 42, Chapter 55, USC Sections 4321-4347 [42 USC 4321-4347]), President's Council on Environmental Quality (CEQ) Regulation, (40 CFR §1500-1508), and Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, dated November 28, 1978 require all Federal agencies to evaluate possible environmental impacts associated with proposed activities and consider all feasible alternatives. Additionally, AR 200-1, *Environmental Protection and Enhancement* and 32 CFR §651 detail NEPA policies specific to the Army.

At Fort Rucker, the DPW Environmental Office has primary responsibility for NEPA management, including review of individual job orders, service orders, and project specifications to determine NEPA documentation requirements. Items that may affect natural resources are sent to the Natural Resources Branch for further review. These considerations must be documented, and most often the analysis is presented to the public for comment. The depth of this analysis depends on many factors, including, but not limited to, the significance of the project, its effects on the public, and the expected degree of environmental impact.

2.3.1 Objectives

- Coordinate with the Environmental Impact Analysis office and other installation personnel to improve early coordination for avoidance of natural resources impacts; to ensure all NEPA documents, individual job orders, routine maintenance projects, service orders, and project specifications are routed through the Natural Resources Branch; and to ensure environmental requirements are distributed to mission and project personnel
- Assist the Environmental Impact Analysis office with identification of military training missions that are in need of NEPA documentation
- Ensure mitigation measures are included in the NEPA document when there is a proposed action that will impact natural resources, and ensure that it is entered in the EPR process with the proponent's funding code
- Establish a process to track projects to ensure that mitigations are accomplished and that restrictions included within Records of Environmental Consideration (RECs) are followed.

2.3.2 NEPA Documentation and Public Review

Army Regulation 200-1 (*Environmental Protection and Enhancement*) requires the proponent of any action being considered to prepare and fund any required NEPA documentation. Projects with potential environmental impacts must go through the NEPA process to evaluate alternatives and identify measures to reduce potential impacts. At Fort Rucker, proponents of projects generally pay for either USACE Mobile District or outside contractors to prepare this documentation.

The most common NEPA document prepared for projects that may impact natural resources is a Categorical Exclusion (CX). Often, the CX will have a Record of Environmental Consideration (REC) attached (USACE Form 251). The purpose of a REC is to describe a proposed action, and why no further environmental analysis is needed. The REC is used for projects that are exempt from NEPA requirements, have already been addressed in existing documentation, or are categorically excluded. This documentation is generally acceptable for routine projects such as vehicle decontamination exercises, use of borrow sites, small digging projects, and similar actions where impacts to the environment are non-existent to minimal. The Army has published a list of actions which are eligible for a CX in 32 CFR §651, Appendix B, Section II.

Environmental Assessments (EAs) are required when conditions for a CX or REC are not met. Proposed actions that would typically require an EA include new military exercises or ranges, actions involving a wide geographic area, and actions that may impact environmental resources such as wetlands, sensitive plant communities, or threatened and endangered species. Past projects that required EAs include major LRAM projects, major erosion control projects, and range construction. EAs must be signed by the Installation Commander, the Department of the Army. If the EA determines that the project will not have a significant impact on the quality of the environment, then a Finding of No Significant Impact (FNSI) must be published and followed by a minimum 30-day public comment waiting period.

If a FNSI is not appropriate, the following options are available:

- Modify the action to remove significant impacts.
- Mitigate significant adverse impacts.
- Drop the action.
- Publish a Notice of Intent to prepare an Environmental Impact Statement (EIS).

Should an EIS be required, the steps to follow are as follows:

- Announce in the Federal Register that an EIS will be prepared.
- Conduct scoping meetings with all potentially interested parties and shareholders.
- Prepare and distribute a draft of the EIS to any interested parties and publish a Notice of Availability (NOA) in the Federal Register.
- Once the NOA is published in the Federal Register, a 45-day review and public comment period begins. During this period, public hearings are held and comments are accepted.
- Prepare the final EIS incorporating all written comments, verbal testimony, and Army responses.
- Once the Final EIS is completed, a NOA is published in the Federal Register to announce its availability.
- After a 30-day waiting period, a Record of Decision is issued which identifies which action has been selected by the Army decisionmaker and what mitigation or other measures will be carried out to reduce, where appropriate, adverse impacts to the environment.

Mitigation is often used to employ less damaging options during an action or to offset damage to the environment by improving it in another location or later time. Mitigation tactics may include avoidance, limitation of action, restoration of the environment, preservation and maintenance operations, or replacement. Mitigation needs and methods involving fish and wildlife resources on Fort Rucker are determined by the Fish and Wildlife Section with the assistance and guidance of the USFWS, ADCNR, ADEM, and other appropriate agencies. Mitigation identified in a FNSI is considered a Class II action under NEPA and does not automatically require preparation of an EIS. Any

mitigation is to be funded by the proponent of the action. Below are five general mitigation tactics:

Avoidance: Avoid adverse impacts to resources by confining activities to areas where no significant impact would occur to the environment.

Limitation of action: The extent of an impact can often be reduced by limiting the degree or magnitude of the action. This can be done by arranging action timing, location, and magnitude so that they have the least impact on impacted resources.

Restoration of the environment: This method restores the environment to its previous condition or better. An example of this would be reseeding and/or replanting an area with preferred food or cover plants after it has been damaged by construction projects.

Preservation and maintenance operations: This method designs the action to reduce adverse environmental effects. Examples include monitoring and controlling pollution, contamination, disturbance, or erosion caused by actions.

Replacement: This method replaces the resource or environment that will be impacted by construction projects. Replacement can occur in-kind or otherwise, on-site or at another location. This could involve creation of the same type or better quality habitat for a particular impacted fish or wildlife species or creation of habitat for another species.

2.3.3 NEPA and Natural Resources Branch Support for NEPA

An EA was completed for the implementation of the 2010-2014 INRMP (Fort Rucker, 2009). Natural Resources Branch utilizes this EA to ensure its activities (as described in the INRMP) are properly planned, coordinated, publicly reviewed, and documented. Natural Resources Branch has also used the RPMP EA to identify potential impacts to natural resources associated with other organizations' projects. As such, Natural Resources Branch is both a proponent and responsible agent for NEPA.

Frequently, Natural Resources personnel are asked to consult in siting range-related projects. If this process is approached with the cooperative spirit of NEPA, most associated environmental impacts are generally resolved or mitigated. Decisions such as specific siting or mission planning should be cooperatively discussed with Natural Resources as well as all involved parties prior to preparing NEPA draft documents.

In 2018-2022, the installation will continue to actively incorporate the use of NEPA documentation in order to protect and conserve Fort Rucker's natural and cultural resources.

2.3.4 NEPA for the Fort Rucker INRMP

Fort Rucker completed an EA for potential impacts from implementation of 2010-2014 INRMP activities. Since that time, two listed mussel species have been located on Fort Rucker. Also, the gopher tortoise has been listed as a federal candidate species. Additionally, certain management activities detailed in this 2018-2022 INRMP were not addressed in the previous INRMP EA (for example, herbicide applications) and will require separate NEPA analysis. No significant impacts are anticipated from implementation of 2018-2028 INRMP activities, but an EA will be necessary to ensure all

environmental resources and INRMP activities are evaluated and that the public has an opportunity to be involved in the decision process.

2.4 Beneficial Partnerships and Collaborative Resource Planning

Surveys, ecosystem studies, and population evaluations are an important part of the adaptive management process, which is essential to ecosystem management. Due to limited Army resources, research or special projects using outside expertise are often used to help meet natural resource management objectives. These projects may be used to determine baselines with regard to status of ecosystems (for future comparisons) or to directly evaluate management programs in terms of meeting management objectives. Some of the support mechanisms by which these partnerships and collaborations are accomplished are identified below. Recent examples of collaborative efforts include: Solar Project, Erosion Control Survey & Design, Bridge Upgrades-Survey & Design, and Gopher Tortoise Survey.

2.4.1 Other Agency Personnel and Project Assistance

The Intergovernmental Personnel Act of 1972 (IPA) provides a means by which to conduct research or obtain other personnel assistance at Fort Rucker. Sections 1.4.2 through 1.4.7 contain a list of agencies with which Fort Rucker has cooperated with in recent years. However, any state or federal agency is authorized to participate utilizing the IPA. This Act is set up so that a federal (or state) agency may borrow other federal or state agency personnel for a limited time period in order to complete a specific project. The installation pays the borrowed employee's salary and administrative overhead. There are two advantages: personnel would be directly supervised by Fort Rucker, and no manpower authorizations are required. In 2018-2022, Fort Rucker will consider using IPA agreements as a source of assistance with special projects and possibly for ITAM personnel support. One potential source of IPA personnel for ITAM implementation is the NRCS. NRCS completed a Rotorwash Control Project on Hatch Stagefield and provided erosion control services within the AGRC.

2.4.2 University Assistance

Fort Rucker has used several universities in recent years to help with specialized research needs. Auburn University, the University of Georgia, and Kansas State University are the most likely sources of assistance with implementation of this INRMP (Section 1.4.5).

2.4.3 Contractor Support

Fort Rucker may also utilize contractors to complete studies and projects. Contractors give the installation access to a wide variety of specialties and fields. Contractors are often involved in projects such as plan preparation, surveys, grounds maintenance, NEPA documentation, and aerial photography when existing DoD manpower is not available. TDA manpower authorizations have been greatly reduced within the Natural Resources program within the last 5 years; therefore, requiring contract supported manpower to execute essential program objectives. Contract manpower is provided to supply forestry and wildlife technical field support under the direction of the Natural Resources Manager.

2.4.4 Other Support

In addition to the sources named above, programs such as the Student Conservation Association (SCA) and the Oak Ridge Institute for Science and Education (ORISE) exist and can be accessed to support various installation projects and program needs.

2.4.5 Planned External Support

The following table outlines needed external support projects in order of priority. In 2018-2022 many of these projects will be determined by funding availability.

Table 2-1 2018-2022 Natural Resources External Support Project Needs

Project	Priority	Agency	Completion	Comments
Agricultural out-leasing	1	USACE	Indefinite	5 Year renewal
Invasive Species Management	1	APHIS	2018	Annually
Game harvest	1	ADCNR	Indefinite	Annually
Endangered species	1	USFWS	Indefinite	As needed
Erosion Control and LRAM	1	NRCS		As needed
Grounds maintenance	1	Various contractors	Indefinite	Annually
Soils testing	1	Auburn Univ.	Indefinite	As needed
Wetlands management	1	USFWS		As needed
GIS implementation	1	KSU, probably others	Indefinite	KSU in 1997
Law enforcement	1	ADCNR	Indefinite	As needed
Deer necropsy	2	SE Coop Disease Study	Indefinite	Every 5 years
Environmental Awareness	2	KSU, USAETSC	Indefinite	Ongoing
Hog and Coyote Depredation Efforts	1	APHIS	Indefinite	Annual Renewal

1 Needed as soon as possible for immediate management application.

2 Useful for improving management to a significant degree over a long period.

3 Has good potential to improve long-term management.

2.5 Public Access and Outreach

2.5.1 Public Access and Outdoor Recreation

Natural resources-based outdoor recreational opportunities on Fort Rucker are abundant because of the large portion of acreage that is undeveloped. Some sections are restricted due to safety and security requirements, including explosive safety arcs, the restricted airfield, and other restricted land for training. Hunting and fishing is permitted on the base.

2.5.1.1. Public Access

Public access is a tradition on Fort Rucker. There are many opportunities for the general public to participate in installation activities. As of June 5, 2015, anyone with a Common Access Card, Retiree Identification (ID), Military Dependent ID, Department of the Army (DA) Form 1602 Civilian ID Card, or other US Government issued personal identity verification credential may access Fort Rucker without a Visitor's Badge. Gates are manned, and visitor passes may be obtained at the Daleville, Enterprise, or Ozark gates between the hours of 8 AM and 4 PM, Monday through Friday. The Daleville gate is also open on Saturdays and Sundays from 8 AM to 4 PM to allow for access on the weekends. To obtain a Visitor's Badge, a Government-issued picture identification such as a driver's license, state-issued ID, or passport is required. Visitor's Badges may be issued for up to six months.

DoDI 4715.03, *Natural Resources Conservation Program*, states, "DoD lands, waters, and coastal resources shall be made available to the public for the educational and recreational use of natural resources when such access is compatible with military mission activities, ecosystem sustainability, and with other considerations such as security, safety, and fiscal soundness."

Fort Rucker hunting, trapping, and fishing programs will remain open to military personnel, dependents, civilian employees, and members of the outside public with an Alabama and Fort Rucker hunting, trapping, or fishing license. Both of these permits are available for purchase at the Outdoor Recreation Center. There are currently no restrictions on the number of permits issued to the public. Typically, the public has more participation in hunting and fishing activities than military personnel on Fort Rucker. The only major outdoor recreation activity that is more heavily utilized by military personnel is picnicking. Outdoor recreation is discussed in further detail in Section 3.13.

2.5.1.2. Native American Access

Access will be granted to any Native American entity to include current or future sites on the installation that have religious importance for the continuance of their culture.

2.5.2 Public Outreach

2.5.2.1. Special Events

Special events with local, state, or national significance offer opportunities to educate the public on programs of high interest. These programs include an annual Wildlife School for Landowners, hosted by Fort Rucker and the NRCS, Fort Rucker's Annual Earth Day

Celebration, and various events scheduled within local schools to increase awareness of natural resources and programs.

The event schedule for 2018/2019 from the Outdoor Recreation Service Center is described in the following table.

Table 2-2 Special Events Schedule

Event Month/Year	Event
January 2018	Big Buck Contest and Coyote Hunt
February 2018	ATV and Dirt Bike Trail Ride
March 2018	Youth Turkey Hunt and Gobbler Classic Turkey Hunt
April 2018	Youth Fishing Tournament, Thunder on Tholocco Boat Race and Gobbler Classic Turkey Hunt
May 2018	Hunting Incentive, ATV and Dirt Bike Trail Ride, Two Man Buddy Bass Tournament, Annual Hearts Apart Fishing with BOSS, and Day at the Lake
June – August 2018	Hunting Incentive
September 2018	ATV and Dirt Bike Trail Ride
November 2018	ATV and Dirt Bike Trail Ride
January 2019	Big Buck Contest and Coyote Hunt
February 2019	ATV and Dirt Bike Trail Ride
March 2019	Youth Turkey Hunt and Gobbler Classic Turkey Hunt
April 2019	Youth Fishing Tournament, Thunder on Tholocco Boat Race and Gobbler Classic Turkey Hunt
May 2019	Hunting Incentive, ATV and Dirt Bike Trail Ride, Two Man Buddy Bass Tournament, Annual Hearts Apart Fishing with BOSS, and Day at the Lake
June – August 2019	Hunting Incentive
September 2019	ATV and Dirt Bike Trail Ride
November 2019	ATV and Dirt Bike Trail Ride

2.5.2.2. Youth Groups

The development of outdoor skills and conservation ethics among youth is a priority, and the Natural Resources Branch is committed to cultivating a conservation ethic in local youth. Branch personnel work with youth groups on conservation programs, and occasionally give presentations to school groups. Natural Resources and DPW have also supported Boy Scouts with projects, merit badges, and conservation talks. Boy Scouts often volunteer to help with natural resources management projects. Eagle Scout projects include public seating benches on installation lakes, bird houses in a watchable wildlife area and making improvements to the Claybank Creek nature trail.

Special hunting programs for youth have also been established. Jakes, a National Wild Turkey Federation youth group, uses Fort Rucker personnel to provide presentations, judge turkey calling contests, and facilitate shooting competitions. The post also has a provision to conduct special youth hunts. These annual State-approved hunts allow youth to begin hunting deer using a gun earlier in the season than other hunters. Fort Rucker Natural Resources believes that these programs are a good investment in the future of Natural Resource management, and will continue to work with youth groups whenever possible.

2.5.2.3. Printed Media

Fort Rucker's weekly newspaper, the *Army Flier*, is the most efficient way for Natural Resources personnel to distribute information to the Fort Rucker community. This newspaper is used to explain programs and gain support for their implementation. Natural Resources personnel write several articles annually for the *Army Flier*, and staff writers also cover natural resources materials. Outdoor Recreation uses the paper regularly to inform users of recreational opportunities.

The *Weekly Bulletin* is the official publication used to notify Fort Rucker personnel of changes in policy and regulatory matters. Outdoor Recreation uses the *Weekly Bulletin* to advertise events, hunting and fishing seasons, hours of operation, and similar information.

Other newspapers, such as the *Enterprise Ledger*, *Southeast Sun*, and *Dothan Eagle*, use information about Fort Rucker's natural resources programs. News releases and interviews with outside media are coordinated with the PAO.

Additionally, information is provided through DPTMS, Training Division, Training Support Center in the form of Graphic Training Aids available to using units conducting training on the Installation. There are also a number of informational brochures developed by Natural Resources and DMWR which cover a variety of topics including Timber Sales on Training Lands, Prescribed Burning, Reseeding Legumes for High Protein and Cost Reduction, Venomous Snakes, and more.

2.5.2.4. Television and Radio

Fort Rucker's natural resources program is seldom the subject of television or radio coverage. However, special events such as youth hunts, fishing tournaments, and some research projects may attract television and radio coverage. Use of television and radio during the next five years will be largely driven by media events on the installation. It is not expected that media will report on routine events, however, new and innovative programs such as ITAM implementation, Lake Tholocco restoration, and similar programs have the potential to attract media coverage. Special events such as youth hunts, fishing tournaments, and some research projects may also attract television and radio coverage.

2.5.3 Conservation Awareness

Conservation awareness efforts at Fort Rucker focus on providing military personnel and the public with information on Fort Rucker's natural environment, conservation challenges, and critical natural resource projects. Certain issues require effective

conservation communication to get positive support and, perhaps more importantly, avoid adverse reactions from various users. Such issues include protection of sensitive species and habitats, permit fees and their uses, and timber harvesting practices. Informational brochures developed by Natural Resources and DMWR are available, covering a variety of topics including Timber Sales on Training Lands, Prescribed Burning, Reseeding Legumes for High Protein and Cost Reduction, Venomous Snakes, and more.

Fort Rucker also has multiple websites where Natural Resource information can be found. The Environmental Division maintains a website located at www.fortrucker-env.com, which has information regarding Natural Resources programs on base. Fort Rucker MWR also maintains a website located at www.ftruckermwr.com, which provides a calendar of events and information regarding various MWR programs including a hunting and fishing status map displaying which areas are currently open to recreation.

To foster a conservation ethic in all who use Fort Rucker lands, Environmental Awareness is included as a component of ITAM. Fort Rucker's Environmental Awareness program was initiated with support from the Environmental Training Support Center, Huntsville, Alabama. Initial program materials included a Leader's Handbook, training video, a series of posters, videos demonstrating techniques to repair rotor wash and gully erosion, and a cross reference of regulations pertinent to training on military lands. Additional materials more specific to Fort Rucker's aviation, armor, and infantry missions include videos, posters, and handbooks.

As an element of the Sustainable Range Program (SRP) Information Campaign, the SRP supplies decks of playing cards displaying awareness messages to each ITAM cell. ITAM further distributes the cards through the Range Operations firing desk, range and training area coordination meetings, and other public forums frequented by soldiers, trainers, and civilians. Fort Rucker ITAM has also developed a series of SRP message slides that are displayed on large format digital picture frames at the Army and Air Force Exchange Service mall, the Aviation Learning Center, and Range Operations. Slide additions and revisions are made as needed throughout the year. Graphic Training Aids on natural resources are available to units through DPTMS, Training Division, Training Support Center.

The National Guard is the most likely entity to utilize heavy machinery at Fort Rucker. Considering that Guard and Army Reserve units typically only train for a maximum of two weeks, it is difficult to provide individualized Environmental Awareness briefings. As such, the Training Division addresses compliance measures within FR 385-1, as well as providing awareness through various digital and hard-copy media outlets that are distributed to soldiers.

2.6 Encroachment Partnering

Encroachment of surrounding development can reduce the flexibility needed to conduct military missions, thus it is a top DoD priority to take measures to minimize encroachment. From the natural resources perspective, development around the borders of Fort Rucker is a problem due to the potential for urban interface issues associated with prescribed fire and wildfires. Civilian activities or development adjacent to in proximity to the Fort Rucker

boundary could be at risk from wildfires that originate on the installation. Smoke from prescribed fires could be a nuisance to off-installation locations.

2.7 State Comprehensive Wildlife Plan Integration

Alabama completed its State Wildlife Conservation Strategy in 2005; a copy can be found at <http://www.outdooralabama.com/al-comprehensive-wildlife-conservation-strategy>. The overall goal of the strategy is to “identify and conserve those species in greatest need for conservation action while also addressing the full array of wildlife and habitats”. This INRMP and the natural resources programs on Fort Rucker work together with and are compatible with *Conserving Alabama’s Wildlife: A Comprehensive Strategy* (ADCNR, 2005), specifically, the sections that address management of state and federal rare, threatened, and endangered species and their habitats.

3.0 PROGRAM ELEMENTS

3.1 Threatened and Endangered Species Management

Threatened and endangered species management at Fort Rucker is intended to maintain habitat quality to support existing populations of listed species and to provide benefits to the gopher tortoise such that Fort Rucker would not have any lands subject to designation as critical habitat under the Endangered Species Act if the eastern population of the gopher tortoise is listed under the Endangered Species Act.

3.1.1 Objectives

- Implement an Ecosystem Management strategy
- Conduct an Installation-wide survey for federally protected mussel species in Fort Rucker creeks and map locations
- Continue to map locations of quality gopher tortoise habitat and of tortoise burrows
- Provide information and maps to installation personnel regarding protected species, along with the requirements to avoid impacts to them
- Review Management Guidelines for the Gopher Tortoise on Army Installations, and develop a Fort Rucker gopher tortoise management plan, including protection measures
- Coordinate with Forest Management and Fire Management personnel to prioritize areas with protected plant and animal species for treatments, and to develop management prescriptions for these areas
- Implement any mitigation measures specified in project-specific NEPA analysis relevant to threatened and endangered species or their habitats
- Identify key species that require monitoring, and develop and implement monitoring plans
- Work with conservation law enforcement to enforce restrictions on harming, harassing, or killings protected species
- Identify areas where mechanical and chemical vegetation clearing could be turned over to prescribed burning to benefit gopher tortoises
- Develop protocol to ensure Natural Resources is contacted to conduct site-specific surveys for gopher tortoises prior to project initiation
- Annually survey the bald eagle nest for nesting activity, and mark a buffer around the nest if there are nearby activities that may impact nesting success
- Survey for state and federally listed species and species at risk on the main installation and satellite properties
- Map locations of all state and federally listed species and species at risk, and develop management prescriptions as needed
- Fulfill Fort Rucker's obligation under the term of the Gopher Tortoise Candidate Conservation Agreement

The management and protection of federally listed species is a priority for the Natural Resources program. These species will be given priority in natural resource management. In cases where endangered species management in accordance with the appropriate guidance would conflict with other mission activities, consultation with the USFWS will be initiated to avoid jeopardizing any listed species or its critical habitat. Formal consultations with the USFWS will be coordinated with the installation SJA and United States Army Installation Command (IMCOM). Proposals to enter into formal consultation or seek an exemption will be coordinated through the installation SJA, IMCOM, and the Office of the Director of Environmental Programs.

Protection and management of threatened and endangered species will be conducted in accordance with the ESA (16 USC §1531), NEPA (42 USC 4321-4347), AR 200-1, DoDI 4715.03, USFWS regulations and agreements, and other applicable laws or guidance. When a proposed mission or project may impact a federally listed species, consultation with the USFWS will be initiated to avoid jeopardizing any listed species or its critical habitat. Proposals to enter into formal consultation with the USFWS or seek an exemption will be coordinated through the installation SJA, IMCOM-SE, and the Office of the Director of Environmental Programs. Species of fish, wildlife, and plants that are listed as threatened or endangered will be protected and managed.

The first step in assessing for a threatened or endangered species or what is known as a candidate species is to review the main criteria for designating a species as threatened or endangered. Based on this analysis, a species may be listed as threatened or endangered dependent on the degree of threat of extinction. Endangered species are in danger of becoming extinct throughout all or a large portion of its natural environment. A threatened species is one that has the possibility or is likely to become endangered in the foreseeable future within a large portion of its range or throughout its range. (USFWS, 2015).

Consideration will be given to species listed by the State of Alabama. The State of Alabama, Department of Conservation and Natural Resources provided a list of rare or sensitive species of Coffee and Dale counties in Alabama including their species listing of Greatest Conservation Need (GCN) that was published in Alabama's Comprehensive Wildlife Conservation Strategy (CWCS). This list also includes updated status for state protected species. Consideration will be given to the species listed.

AR 200-1 states that the Army has the following summarized responsibilities for T&E species:

- Prepare and implement an Endangered Species Management Component to the INRMP
- Carry out mission requirements in compliance with 16 USC 35
- Integrate endangered species management and installation planning functions to ensure compliance with 16 USC
- Take appropriate actions to preclude critical habitat designation
- Access all activities at the earliest opportunity to determine if they may affect listed species
- Coordinate T&E actions or issues with appropriate organizations
- Conduct biological assessments for activities that may have an effect on listed

species

- Informally consult with USFWS or NOAA-Fisheries
- Coordinate with affected installation organizations and the higher headquarters prior to initiating formal consultation
- Formally consult with USFWS or NOAA-Fisheries when required
- Confer with USFWS or NOAA-Fisheries on any action that is likely to jeopardize the continued existence of any proposed species
- Review all ongoing and proposed actions immediately upon listing of a T&E species
- Complete a biological evaluation before initiating formal conference on actions affecting a proposed species
- Develop and implement strategies to promote, in cooperation with other landowners, the use of conservation banking and/or ACUB initiatives to minimize impact of an action on T&E species
- Within 24 hours report 16 USC Chapter 35 (ESA) violations
- Coordinate with higher headquarters and HQDA in taking final action to correct any endangered species management problems
- Ensure that T&E awareness is included in unit training for personnel who may come in contact with listed species
- Obtain HQDA approval before supporting USFWS's or NOAA-Fisheries' introduction and/or reintroduction of Federal and State listed, proposed, and candidate species
- Protect the water rights necessary for the survival and recovery of listed, proposed, or candidate aquatic or riparian species
- Participate in the listing/delisting process, recover plan development, and critical habitat designation where the species in question may impact installation military missions
- Cooperate with State and local authorities in the management of ACSIM-designated Army species at risk
- Participate in regional/habitat-wide efforts to conserve candidate and ACSIM-designated Army species at risk
- Include State-listed species in the installation INRMP

Section 4(a)(3)(B)(i) of Public Law 108–136 prohibits the USFWS from designating as critical habitat any lands or other geographic areas owned or controlled by DoD, or designated for use by DoD if the following conditions are met:

- those lands are subject to an INRMP prepared under Section 101 of the Sikes Act (16 USC 670a);
- the Secretary of Interior determines in writing that such plan provides a benefit to the species.

3.1.2 Threatened and Endangered Mussel Species

There are a number of federally listed mussel species for which streams on Fort Rucker provide suitable habitat. The southern sandshell, southern kidneyshell, Choctaw bean,

tapered pigtoe, and fuzzy pigtoe occur in the Choctawhatchee watershed, of which Claybank Creek and Steephead Creek on the Installation are part. The Choctaw bean and fuzzy pigtoe have been recorded on Fort Rucker in recent invertebrate surveys. However, the other species have not been found in any recent surveys. A complete list of federally listed mussel species that Fort Rucker provides suitable habitat are included in the list of potential threatened and endangered species in **Appendix 7**.

Lake Tholocco formerly supported populations of fresh water mussels and since the lake has been restored, the mussels are expected to re-establish themselves within reasonably short time. The Choctawhatchee and Pea River watersheds are also designated as critical habitat by the USFWS for these species in areas around Fort Rucker, including both the influent and effluent of certain streams which flow through Fort Rucker. Under Section 4(a)(3) of the Endangered Species Act (16 USC §1531), Fort Rucker was excluded from critical habitat (CH) designations because conservation efforts identified in Fort Rucker's INRMP would be beneficial to these species in terms of reducing silt, sedimentation, and non-point source pollution. These conservation efforts will continue as identified in the INRMP.

Any activities affecting watersheds on the Installation must be reviewed for possible impacts to listed mussel species. This includes land disturbance, chemical use, low water crossings, roadwork, and any other activity with the potential to affect water quality or to constitute a barrier to mussel or fish travel within the waterway.

Fort Rucker will coordinate with USFWS, Daphne, AL field office to conduct a mussel inventory for baseline data as well as project planning during the 2018-2022 timeframe. A mussel survey conducted in 1998-2000 of the Choctawhatchee/Pea River system did locate endangered mussel species near the installation. Two of the collecting stations for this survey were in the vicinity of Fort Rucker at Steep Head Creek at Alabama Highway 27 (2 miles west of Fort Rucker) and Claybank Creek above Alabama Highway 27. Species detected during this survey are listed in the following table.

Table 3-1 Mussel Species Surveyed

Steep Head Creek at Alabama Highway 27	
Purple pigtoe	<i>Fusconaia succissa</i>
*Fuzzy pigtoe	<i>Pleurobema strodeanum</i> (T)
Lilliput	<i>Toxolasma parvus</i>
Little spectaclecase	<i>Villosa lienosa</i>
Southern rainbow	<i>Villosa vibex</i>
Claybank Creek above Alabama Highway 27	
Rayed creekshell	<i>Anodontooides radiata</i>
Southern fatmucket	<i>Lampsilis straminea clairbornensis</i>
*Choctaw bean	<i>Villosa choctawensis</i> (E)
Little spectaclecase	<i>Villosa lienosa</i>
Southern rainbow	<i>Villosa vibex</i>

* indicates listed species

Mussels are water filters and are very susceptible to pollution, and, as such, they are excellent biomonitors of overall water quality. Any activity which may result in changes in water quality via erosion, sedimentation, or discharge must be coordinated with Natural Resources via the process identified in Section 2.3. Should an activity occur in an area where these mussels are likely to be found, ENRD will contact the USFWS for an informal consultation and site survey.

3.1.3 Gopher Tortoise

The gopher tortoise is of special concern as it is a federal Candidate species, a threatened species on the state listing, and an Army Species at Risk (SAR). The gopher tortoise is also federally listed as Threatened in Alabama west of the Mobile and Tombigbee Rivers. A Memorandum was distributed regarding Management Guidelines for the gopher tortoise on Army installations (**Appendix 5**) in March 2008. The guidelines address Army policies such as conservation, ecosystem management, education/outreach, funding and cooperation with the Gopher Tortoise Team. Management strategies include population goals, habitat management, population monitoring, burrow marking, translocation, and data records/ coordination. Management projects that may affect gopher tortoise habitat must follow the gopher tortoise guidelines listed in the memorandum.

The FY 15 submission of information for the Gopher Tortoise Candidate Conservation Agreement (CCA) Annual Report immediately follows the management guidelines. This agreement allows stakeholders representing the fish and wildlife agencies of Florida, Georgia, Alabama, and South Carolina, branches of the Department of Defense, and related non-profit organizations to organize a cooperative range-wide approach to gopher tortoise management and conservation in its eastern range. The CCA allows the signing parties to leverage knowledge and funding within a common conservation approach and framework. The CCA is voluntary and flexible in nature so that various conservation and management actions can be agreed to and implemented at different levels by the signing parties.

Much of the prime gopher tortoise habitat on Fort Rucker occurs in the current Impact Area and in the southeastern portion of the reservation (**Figure 3-1**). Should the gopher tortoise become federally listed in its eastern range, it could create significant impacts to the mission at Fort Rucker. Fort Rucker's primary method of managing for protection of the gopher tortoise is through the restoration of its favored habitat, the sandhill longleaf pine dominated forest, and minimizing the loss of the species. An increase in growing season burns is planned during the next five years to promote stand conversion to longleaf pine and to improve gopher tortoise habitat, which would enhance and restore the population and maintaining the Gopher Tortoise as a keystone species in the ecosystem. If any project is planned in known gopher tortoise habitat or in areas where it is likely that the species occurs on Fort Rucker, the site is surveyed by Natural Resources Branch (NRB) staff for tortoises prior to the project start date and appropriate action is taken to protect any tortoises identified within the project area. To assist in predicting locations where gopher tortoise may exist, a Gopher Tortoise Habitat Suitability Survey was completed. Then, a population survey conducted 2012 estimated an excess of 10,000 gopher tortoises on Fort Rucker, with most concentrated in the southern portion

of the installation (CH2M Hill, 2012). This information, as well as known gopher tortoise location burrows has been added to the Fort Rucker GIS. **Figure 3-1** shows the results of the habitat survey.

Ground disturbing activities must be limited when gopher tortoise are present. Burrows will be marked, and all activities must maintain a minimum distance of 25 feet from any active burrow and its associated mound. Should a project require activities to take place within this buffer, relocation of the tortoise or tortoise eggs may be required with coordination with Natural Resources and, if necessary, USFWS (**Appendix 5**).

3.1.4 American Alligator

The alligator is listed as “threatened due to similarity of appearance” to the endangered American crocodile. The American crocodile does not occur in the Fort Rucker area where alligators are locally common. No special protection measures have been deemed necessary for alligators, and they are not discussed further in this INRMP.

3.1.5 Bald Eagle

Fort Rucker supports a pair of bald eagles, and one nest has been observed at Lake Tholocco as recently as 2015. The ADCNR Division of Wildlife and Freshwater Fisheries and the USFWS have been notified regarding this nest. The eagles on Fort Rucker are protected by the BGEPA. Where eagle nests occur in flight areas, a Notice to Airmen (NOTAM) alert will be deployed. NOTAMS will be published to helicopter pilots that identified the coordinates where known existing eagle nests are established, within Fort Rucker’s flight training area.

3.1.6 Future Threatened and Endangered Species Surveys

A mussel survey of Fort Rucker is tentatively planned by USFWS as schedule allows to identify specific areas of drainages containing listed mussels. Additionally, section 7 consultations assist with the protection and restoration of listed and potentially listed species, such that Fort Rucker can minimize future restrictions to projects and missions.

3.2 Wetlands and Deep Water Habitats Management

Wetlands and deep water habitat management at Fort Rucker is intended to maintain habitat quality to support existing populations of aquatic and wetland species, to maintain water quality in these features, and to ensure compliance with the Clean Water Act.

Objectives:

- Protect and manage wetlands on the installation
- Coordinate with ITAM to provide expertise and support for projects that protect and restore wetlands and floodplains
- Protect the necessary physiological inputs of wetlands where floral assemblages that are scarce elsewhere on the reservation exist
- Implement any wetland mitigation measures specified in project-specific NEPA analysis

The Clean Water Act (33 USC Sections 1251-1376) and EO 11990, *Protection of Wetlands* requires wetlands protection. Fort Rucker was one of five US Army Training and Doctrine Command (TRADOC) installations to have wetland surveys performed as part of a cooperative agreement between the U.S. Army and the U.S. Fish and Wildlife Service. This survey was conducted in 1996 as part of the National Wetlands Inventory. The 1:24,000 map produced showed a total of 3,424 acres of wetlands. Wetlands boundaries were confirmed using field observations and classified according to Classification of Wetlands and Deepwater Habitats of the United States Coward et al. (1979). Data from this survey may be useful in planning development activities. However, land-disturbing activities being considered for areas in which wetlands or streams are documented as present will still require assessment by qualified persons, and the extent of any jurisdictional areas shall be identified or verified by the USACE Mobile District. Activities in wetlands which require federal permits include, but are not limited to: placement of fill material, ditching activities when the excavated material is sidecast, levee construction, dike construction, mechanized land clearing, land leveling, most road construction, and dam construction. The USACE permit process also requires coordination with the USFWS and the SHPO to allow for the assessment of potential impacts to protected species and cultural resources.

Wetland locations are shown on **Figure 1-7**. Additional wetlands surveys, except those specific to project sites as described above, are not planned during the next five years. The primary directive of wetland management on Fort Rucker will consist of protection and maintenance of existing habitat. Efforts will be made to mitigate or restore impacted wetlands. The biggest impact to wetlands on Fort Rucker stems from watershed erosion and subsequent silting of low-lying areas and streams. *Alabama's Best Management Practices for Forestry* are utilized to protect, maintain, and improve various wetland functions and potential uses (Section 3.5).

Other sections of this INRMP have provisions to protect water quality and, therefore, wetlands. Best Management Practices for forestry are also utilized to protect, maintain, and improve various wetland functions and potential uses. *Alabama's Best Management Practices for Forestry* (Alabama Forestry Commission, 2007) are being implemented as part of the forest management (Section 3.5).

Additionally, unique floral assemblages exist in two wetland locations on Fort Rucker. The "bay swamp" below the beaver dam on Brooking Mill Creek, south of the southeastern perimeter road (sector 38) contains several rare plants (e.g., white arum). Changes in the water regime, cutting, or mechanical disturbance could alter the habitat to the detriment of the plant assemblage. A seepage bog containing several species of plants uncommon to scarce elsewhere on the reservation occurs in Sector 21 between the stream crossing Ech Stagefield Road and Ech Stagefield. The bog's unusual (for Fort Rucker) characteristics would be enhanced by periodic burning during the dormant season, preferably before February. These sites will be managed as specified above in order to protect these resources.

3.3 Law Enforcement of Natural Resources Laws and Regulations

Many aspects of natural resources management require law enforcement to be successful, including programs such as harvest controls, protection of sensitive areas, water pollution prevention, hunting and fishing, and non-game species protection.

3.3.1 Objectives

- Implement natural resources law enforcement program
- Improve enforcement of natural resources laws and regulations at Fort Rucker by providing sufficient conservation law enforcement staffing

3.3.2 Authority and Jurisdiction

Game Law Enforcement (GLE) is the responsibility of the DPS. GLE officers also assist the DPS with remote area patrolling. GLE Officers enforce post, state, and federal regulations involving wildlife, environmental concerns, and outdoor activities where safety rules are involved.

ADCNR enforcement officers independently patrol Fort Rucker as well as working with Installation GLE Officers. These officers have federal jurisdiction. Concurrent jurisdiction exists on most areas of Fort Rucker north of the cantonment area. This cooperation will continue during 2018-2022. Laws are enforceable by Federal- and State-commissioned personnel. However, jurisdiction in the cantonment area is exclusive to Federally-commissioned personnel.

Fort Rucker officers use the Federal Magistrate Court to adjudicate civilian violators who are issued 1805 and Military Police Report citations. In most cases, 1408 citations are issued to military and civilian violators of regulations and administrative procedures. These violations are administratively handled by military commanders and civilian supervisors. More serious cases are handled using the Military Police Report, DA Form 3975. State enforcement officers use District courts for case adjudication.

3.3.3 Enforcement Issues

Fort Rucker has hunting and fishing activities, as well as other outdoor recreation, which may require enforcement activities. In addition, cultural resources and non-game species require protection. Related illegal activities include unauthorized dumping and unauthorized off-road vehicle (ORV) operation.

Some users gain access through illegal entry of the installation, which may either directly or indirectly impact efforts to protect natural resources. While unauthorized entry is not a major issue at Fort Rucker, illegal dumping is a significant problem at specific, isolated sites. Signage, cabling and local law enforcement is called upon in patrolling these areas.

Although ORV operation is less of a problem than it has been in the past, where they are used, ORVs can cause a great deal of damage to soils and vegetation. These vehicles tend to make use of places that are relatively unaffected by military vehicles, and can cause significant damage to wet and boggy areas as well as waterway embankments. Additionally, illegal use of ORVs on Fort Rucker could afford easy access for other illegal activities such as theft, fish and wildlife violations, dumping, and others.

Game issues include poaching, failure to check game at check stations, and persons hunting or fishing without proper licenses. Poaching, especially deer, is a major problem at Fort Rucker. Check points have been effective in curbing night deer hunting, as evidenced by a lack of shootings of dummy deer, but there are concerns that the growing turkey population is vulnerable to road shooting during certain times of the year. Another significant issue is the checking of game at check stations. These numbers directly affect the capability of Natural Resources to make decisions regarding harvest regulations. Without accurate counts, it is difficult to set limits for the next season. Persons hunting or fishing without state or post hunting or fishing licenses or permits present another challenge to enforcement on Fort Rucker. Creel limits are sometimes violated and water sports need additional GLE monitoring. Additional GLE positions are needed on the Installation to reduce these infractions.

3.3.4 Training

GLE officers are selected from individuals with prior law enforcement backgrounds and receive continuous on the job training (OJT). Military Police (MP) receive their training at the MP School, currently located at Fort Leonard Wood, Missouri. The current GLE force consists of one civilian and is augmented by MP resources during swimming season.

Alabama State Game Wardens and Marine Police conduct continuous training upon requests from the DPS. DPS currently has memorandums of agreement with surrounding law enforcement agencies for any type of law enforcement support, including training.

Enforcement personnel must qualify with their individually issued weapons twice annually. Additional in-house training includes the use of enforcement videos and cardiopulmonary resuscitation training. OJT is the primary means used by permanent civilian enforcement personnel to train MP personnel in game warden specific duties.

3.4 Fish and Wildlife Management

Game management is an important component of fish and wildlife management, but it is considerably different from management of other fish and wildlife species. Game management focuses on the production of harvestable surpluses on a sustained basis. Section 3.13, *Outdoor Recreation*, includes recreational aspects of game management.

3.4.1 Objectives

- Determine biological and recreational carrying capacities of game and fish species, and set management prescriptions and hunting/fishing harvesting quotas to ensure longevity and sustainment.
- Identify and map areas to improve or expand habitat for upland game birds through timber harvesting, TSI and the establishment of native grasses
- Identify and map critical areas of wildlife habitat for protection during timber harvesting
- Implement any mitigation measures specified in project-specific NEPA analysis relevant to fish and wildlife management or habitat management

- Establish a schedule for monitoring of lake/pond fish species and plant communities
- Evaluate and review the effectiveness of the iSportsman program as an upgrade from program usage
- Evaluate effectiveness of process for coordinating with Range Operations to ensure that an up-to-date roster of closed areas and areas designated for hunting and fishing is available at all times
- Rebuild the whitetail deer herd population to near carrying capacity levels
- Combat predator invasive species and feral pigs through an organized volunteer management program
- Encourage the development of facilities that improve use and enjoyment of fishing, hunting, and other natural resources-based recreation, and increase the use of underutilized areas
- Install nesting boxes in priority areas
- Conduct deer herd health surveys on a three-year interval
- Combat aquatic invasive species in all Installation impoundments
- Establish schedule for checking pond dams and spillways for maintenance and replacement needs
- Submit annual REC for NEPA review of upcoming fish and wildlife management activities

When The State of Alabama transferred this land to the War Department in 1942, wild game was scarce (Barkalow, 1949). Since that time, the installation has been stocked with deer and turkey obtained from state agencies. .

3.4.2 Terrestrial Habitat Management

Habitat trends on Fort Rucker are largely determined by military use, development, forestry practices, and prevailing climate. The rapid growth of plants, moderate temperatures, and long, snow-free conditions combine to provide a steady supply of food for wildlife. The harvesting of timber, creation of open areas for flight safety strips, and prescribed burning alter the successional trend in wildlife habitat. Open fields (covered with native herbs and forbs and interspersed with sparse woody growth) occur throughout the installation, especially in LMUs 1 and 3 (**Figure 3-2**). Many upland sites are being converted to native longleaf pine, replacing even-aged stands created by past logging and agricultural practices. Along streams, larger hardwoods and dense shrubs and vine understory are prevalent.

Information from the following surveys is used to support terrestrial habitat management: plant survey (1992), vegetation communities survey (2009). Gopher Tortoise Baseline Survey (2012), and threatened and endangered species survey (2003). The list of plants discovered during the floral survey (Mount and Diamond in 1992) is updated as new species are found (**Appendix 8**).

3.4.2.1. Hardwood Tree Management

Forest mast production is an important source of food for deer, turkey, quail, squirrel, and other wildlife species. Mast and den trees will be retained in pine/hardwood areas on Fort Rucker, with a minimum of 200 square feet of basal area in mast-producing species per 40 acres. Eighty square feet of this basal area will be from trees 15 inches or greater diameter at breast height, when available. In bottomland hardwood areas and streamside management zones, no commercial harvesting of hardwood mast-producing species will be performed. When present, one or two large hardwoods (particularly wide-spreading “wolf trees”), will be left per acre to serve as den trees.

Fort Rucker has instituted a program to improve the quality of hardwood mast producers in bottomland areas. Competing trees and midstory may be removed to release the best quality hardwood trees. Additionally, Natural Resources personnel are planting hardwood mast producing tree seedlings in areas where no adequate seed supply is available.

An annual tree planting program comprised of both soft and hard mast bearing trees was implemented in 2009. Results of this program for 2016 are shown in the table below. These trees allow the establishment of an annual food source as well as provide wildlife corridors, escape cover and habitat for a variety of wildlife species. In 2018-2022, the same species will be planted in wildlife openings throughout the installation.

Table 3-2 Trees Species Planted in 2016

Species	Acres
Longleaf Pine	230 acres

3.4.2.2. Wildlife Openings, Supplemental Plantings and Brush Piles

Deer and other browsers, such as cottontail, mice, and squirrels prosper following any event that produces new growth vegetation within their reach. Natural Resources personnel mimic these events in wildlife clearings and surrounding wildlife habitat by using rotary mowers and harrows. Mowing stimulates the sprouting of choice hardwood browse and grasses. Numerous wildlife clearings are maintained by mowing, thereby improving browse quality. Mowing (bush-hogging) is performed on an annual basis to keep airfield overruns clear. In addition to supporting the mission, these areas benefit wildlife. Mowing is also used to clear food plots prior to planting and for maintenance of bicolor lespedeza. Food plots that are to be left idle are mowed to stimulate desired vegetation growth. In some open areas, native shrubs and forbs are fertilized to increase growth rates and forage value. In addition to specific clearings for wildlife, other areas treated may include road shoulders, erosion control project sites, and similar areas of opportunity. Disking and/or plowing of wildlife openings and existing food plots, using standard agricultural practices, are performed annually on a rotational basis. Fort Rucker has numerous wildlife clearings, including those used for supplemental wildlife plantings. These clearings total approximately 500 acres. Wildlife food plots supplement natural food sources, particularly during the winter, thereby increasing wildlife population carrying capacity. Conversion of many areas to longleaf pine is further augmenting these food plots as wildlife find the understory vegetation associated with these forests highly desirable. Grain sorghum, winter green crop mixtures, bicolor lespedeza, chufa,

browntop millet, kobe lespedeza, Egyptian wheat, Chickasaw plum, LabLab, DQP, Austrian winter pea, chicory, Iron & Clay Pea, sunflower, Dove Proso millet, soft mast trees, hard mast trees are planted on Fort Rucker to supplement wild food naturally available. Additional detail is provided in **Appendix 11**.

Fort Rucker uses a no-till drill to obtain optimum benefits from its supplemental food plots. This equipment allows overseeding of natural forage without the need for disking or plowing. Brush cuttings provide escape cover, nesting cover and travel lanes for various wildlife species, particularly the cottontail rabbit. This program is of an opportunistic nature, and utilizes debris from tree trimming projects where site conditions allow.

In 2014-2015 reseeded crimson and arrowleaf clovers were established in food plots identified as having poor soil conditions. These high protein legumes are annual reseeders and reestablish themselves with little assistance other than annual mowing in the Fall. While improving the soil conditions, these establishments provide protein for browsing animals during the Spring and Fall at very little cost. As a cost reduction in annual planting expenses, approximately 92 acres have been converted into this reseeded clover.

3.4.2.3. Prescribed Burning

The benefits to wildlife derived from prescribed burning include increased forage by keeping hardwood sprouts short, tender, palatable, and abundant; reduced competing undesirable species; stimulated growth of herbaceous plants, especially legumes; improved soil fertility; and increased aesthetic quality and accessibility of the land. Prescribed burning will be conducted on a 3-year cycle on upland pine sites older than 20 years. Young, fire-tolerant pine stands will be burned when they become thick (generally between 2-6 years). Prescribed burning is coordinated through the Directorate of Plans, Training, Mobilization, and Security.

The main purposes in the Wildland Fire Management Plan for Fort Rucker include:

- reduce levels of hazardous fuels
- prepare sites for reforestation
- improve and maintain threatened and endangered species habitat
- improve other native species habitat, especially forage for game species
- manage understory hardwoods
- control disease
- improve access
- enhance appearance
- provide a safe military training environment.

Prescribed fire is the most cost effective method to return large areas to earlier successional stages. Featured game species with regard to prescribed burning are quail, turkey, and deer. Prescribed fire is the most important tool utilized in quail management. In pine habitat, prescribed fire benefits deer by improving the palatability and nutritional

level of understory plants; reducing large, woody understory stems, encouraging production of new sprouts, reducing roughs that suppress forbs and grasses, keeping browse within reach of deer, and encouraging understory fruit and mast production.

Most prescribed burns are conducted from December through early March. Fort Rucker also conducts growing season burns to stimulate restoration of longleaf pine ecosystems. Although this burning will more closely mimic natural burn cycles in the region, there is some concern that growing season burns have a greater potential to negatively impact wildlife, thus growing season burns will be qualitatively monitored for wildlife effects. Effects may include loss of legumes during seed production phases and effects on hardwood soft mast production. Growing season burns are more manpower-intensive than winter burning due to the need to maintain cover in wildlife food plot areas.

3.4.2.4. Special Plant Sites

Mount and Diamond (1992) identified the following three sites warranting special attention due to their distinct floral assemblages, which are scarce elsewhere on the:

- The “bay swamp” below the beaver dam on Brooking Mill Creek, south of the southeastern perimeter road (sector 38). The swamp lies along the eastern side of the creek and contains several plants (e.g., white arum) that are infrequently encountered elsewhere. Changes in their water regime, cutting, or mechanical disturbance could alter the habitat to the detriment of the plant assemblage.
- A seepage bog containing several species of plants uncommon-scarce elsewhere on the reservation occurs in Sector 21 between the stream crossing the Ech Stagefield Road and Ech Stagefield. The bog lies to the south of the road. The bog’s unusual (for Fort Rucker) characteristics would be enhanced by periodic burning during the dormant season, preferably before February.
- The northeastern quadrant of sector H (W 1/2 of SE 1/4 of Sector 31, T. 5 N, R. 24 E) has gopher apples, which were not found elsewhere, and a number of other xerophytes that combine to make a floral assemblage worthy of maintenance. Periodic fire to keep it relatively open will promote its welfare.

These sites will continue to be protected or managed as stated above.

3.4.3 Aquatic Habitat Management

3.4.3.1. Pond Fertilization

Buckhorn, Parcours, Beaver, and Ech Lakes (**Figure 1-7** and **Figure 1-8**) are fertilized to promote phytoplankton, which increases fish pond productivity and shades bottom muds to control aquatic vegetation. Lakes are fertilized starting the last week in February, and a regular schedule is continued throughout the summer. A 10-34-0 liquid ammonium phosphate fertilizer is applied at 1 gallon per acre, generally in 13 separate applications.

3.4.3.2. Aquatic Weed Control

Aquatic weeds are becoming more of a prevalent problem in response to high nitrates in watersheds and with transient boating traffic providing a source for the spread of

propagules. As problems are discovered they are corrected by angler education, mechanical removal, or, as a last resort, chemical means. The Integrated Pest Management Plan identifies the process for determining when controls are needed and how controls are implemented.

The primary means of aquatic weed control is implementation of a consistent and effective pond fertilization program, as discussed in Section 3.4.2.1.

Biological control of weeds has been included as an element of the integrated pest management program. The herbivorous grass carp or white amur (*Ctenopharyngodon idella*) is stocked primarily to control submerged weeds. Because this species is not native to the area, triploid fish are stocked to ensure 100 percent sterility and prevent natural reproduction of the species. Once stocked, grass carp can provide long-term control of noxious aquatic weeds. They are capable of eating two to three times their body weight per day in aquatic vegetation and can provide control for 10-15 years. In most circumstances, stocking is designed to augment other weed control actions. Use of grass carp should result in the decrease of aquatic herbicide usage. Grass carp have been stocked in four small ponds and in Lake Tholocco.

Chemical control involves herbicide application by certified applicators in accordance with label instructions and USEPA and DoD requirements. Herbicides (Rodeo®/glyphosate [53.5% active ingredients]) are applied during spring and summer when plants are most actively growing and flowering to reduce surface and shoreline aquatic weeds. Submersed aquatic weeds such as Fanwort grow from the bottom and can reach the surface in up to 10 feet of water. This type weed requires treatment of the entire water column for control and can become problematic for anglers and swimmers. Targeting treatment areas through contract work and in-house manpower have been successful in the past. The NRB has an airboat, equipped for this specialty application and plans to incorporate aquatic management as a greater priority in future years.

3.4.3.3. Liming

When tests indicate that a pond's pH is below 6.5-7.0, agricultural (dolomitic) limestone is applied at a standard rate of one ton per acre. Ponds are tested at least every three years to determine lime requirements. Bulk limestone is most easily applied from a pontoon boat with a barge-like platform. Limestone is loaded onto the barge with a front-end loader, and it is spread by hosing the material off the platform as the boat is motored, distributing it as evenly as possible over the pond.

3.4.3.4. Pond Maintenance

Pond maintenance constitutes a wide array of activities with emphasis on mechanical actions. Dam maintenance is foremost to maintaining the integrity of the facility. Shoreline clearing and deepening of shallow edges are conducted as needed. Topsoil is brought in to fill low spots around the shoreline. The dam, spillway area, and improved shoreline are planted in Bermuda grass and fertilized to obtain a thick protective sod. A contractor regularly mows shorelines around the lakes during the summer. Maintenance and repair of water control structures and spillways are accomplished on an as needed basis.

3.4.3.5. Erosion Control Efforts

All Installation construction projects are reviewed for impacts to wetlands and appropriate actions are required by NEPA for full compliance. Timber Sales require BMPs incorporated into all timber harvesting activities. Small grains and cool season annuals are normally planted on disturbed areas to reduce soil movement. Buffer zones and filter strips are protected throughout all activities and sediment movement is monitored closely. Larger erosion control design and structures are normally completed under contract and smaller drainage projects only requiring rip-rap and vegetative covers are normally completed by Grounds Maintenance contractors or in-house manpower. The ITAM program is actively engaged in managing Rotorwash erosion on airfields and stagefields and the greatest defense against all erosion problems is a healthy stand of vegetative cover on drainage areas. Fort Rucker applies pH adjuster and fertilizers on a regular basis to all training land vegetative covers. Warm and cool season annuals are used as temporary measures in forest management operations and on all construction sites. Forest management measures also provide for maintaining effective buffers around streams and other water features, including wetlands.

3.4.3.6. Fish Attractors

Although the primary purpose of fish attractors is to concentrate fish for anglers, fish attractors can benefit all species of fish. Benefits include the aggregation of baitfish, additional substrate for aquatic invertebrate production, increased spawning habitat, and shelter. Numerous fish attractor designs have been utilized in Fort Rucker lakes, including sunken Christmas trees, car tires, wooden pallets, and others. Hazardous materials, if any, are removed before placement. Attractors using trees, pallets, and brush are refurbished periodically to replace those that have decomposed. Fish attractor site selection is based on the amount of naturally occurring structure, water depth, pond size, and angler use.

3.4.4 Game and Fish Species Management

Census of game species is required for the establishment of harvest regulations that allow for the sustained use of game species. The State of Alabama provides the framework within which Fort Rucker must harvest game species. In some cases, such as management of deer, Fort Rucker imposes more restrictive regulations. Harvest numbers provide an inexpensive means to monitor game populations. All game harvested must be reported. Combining harvest data with hunter effort provides information adequate to manage most game species.

Other than the antlerless deer quota, there has never been a need to establish quotas on game harvest on the reservation. The annual harvest of game is relatively self-adjusting to population levels and does not, by itself, significantly affect the following year's game populations. If, in the future, new quotas need to be set, the Fort Rucker Wildlife Biologist would consult with the Alabama Department of Conservation and Natural Resources game biologists to determine the maximum harvest allowable.

A record of hunting harvest has been kept since 1964. Records include the number of each species harvested plus the number of man-days spent hunting the species. Data

are summarized and analyzed at the end of the hunting season by Fort Rucker wildlife biologists. This information is furnished to the District Wildlife Biologist, ADCNR.

3.4.4.1. White-tailed Deer

Deer population and harvest data are maintained in the Fish and Wildlife Section files. Fort Rucker strives to maintain a healthy and productive deer herd with natural sex and age structures while producing optimal sustained yield. However, harvest numbers remain low, most likely due to a prevalence of feral pigs and an abundance of predator coyotes. Corpora lutea counts from harvested females indicate normal reproductive rates for white-tailed deer in this part of Alabama, but fawn survival/recruitment appears to be low, perhaps indicating high fawn mortality. In cooperation with Auburn University and the ADCNR Division of Wildlife and Freshwater Fisheries, a study was completed in 2011 which indicated that coyote predation was likely a leading cause for low survival rates (Ditchkoff, 2011). An additional study in 2014 found that feral pigs also displace deer due to competition for food sources (Ditchkoff & McGowan, 2014).

A six-year cooperative research project was done on Fort Rucker in cooperation with the ADCNR and Auburn University to determine the preferred foods of white-tailed deer on Fort Rucker. Results of this study have been incorporated into habitat management programs on the post as discussed in Section 3.4.1.

Fort Rucker implements a quality deer management program (QDM) that requires antlered bucks to have at least 3 points on one side to be harvested. Limited antlerless deer harvest will continue during this program.

Fort Rucker establishes a yearly deer harvest recommendation prior to the hunting season. Natural Resources current year deer harvest recommendations are attached. For information on deer hunting please see Section 3.13.4.

All legally harvested deer are evaluated at deer check stations. Harvest data collection is the primary source of information to evaluate deer herd condition and establish antlerless deer seasons. Biologists collect data regarding area harvested, age, and body weights from all deer and determine antler development for bucks and collect incidence of lactation data from does. Ovaries are sampled for corpora lutea data (to evaluate incidence of pregnancy). Age-specific antler measurements, body weights, and reproductive data are compared with data from previous years to obtain a trend of the herd's overall condition.

Every three years Fort Rucker collects deer for necropsies to provide a general herd health check. Biological samples are sent to the Southeastern Cooperative Wildlife Disease Study Group for analysis. USAPHC periodically conducts Lyme disease risk assessments utilizing harvested white-tailed deer. This will continue during 2018-2022.

Census for deer is completed using infrared camera surveys. Thirty bait sites with cameras are deployed each year to sample 3,000 acre blocks. The sample area is moved the subsequent year. Population estimates are developed using ratios of identified bucks. Every year the Natural Resources Manager and the Wildlife Biologists carefully analyze every aspect of collected biological data on the deer herd and make a recommendation to the Garrison Commander for the next years' game harvesting plan. Natural Resources is very optimistic about the recovery of the whitetail deer population as we are currently

within the fourth year of antlerless harvesting restrictions and QDM guidelines and have already identified substantial improvements in animal quality and herd density.

3.4.4.2. Eastern Wild Turkey

The turkey population on Fort Rucker is increasing, reflecting good hatching seasons and the availability of suitable habitat.

Management techniques, such as controlled burning, maintenance of openings, and plantings have all contributed to good turkey habitat. The restriction on vehicular traffic during nesting season in certain areas has also decreased nest disruptions.

It is mandatory to check harvested turkeys on Fort Rucker. Data are collected on area taken, sex, weight, beard length, and spur length.

3.4.4.3. Bobwhite Quail

Improvement of habitat through bush-hogging, fertilizing, liming, and planting of various wildlife foods is important for bobwhite quail on Fort Rucker. The thinning of dense pine stands followed by controlled burning creates desirable quail habitat (see Section 3.4.1). Historically, Fort Rucker's quail density has been light to medium, a trend that continues today. However, a more intensive management effort is being directed towards quail habitat improvement through increased controlled burning and thinning of dense pine stands, cover interspersation, and establishment of a balanced variety of annual and perennial preferred food crops. Particular attention to managing for this habitat occurs in Land Management Unit (LMU) 3 (**Figure 3-2**) due to the availability of open land in the area. This program has resulted in more higher-quality quail habitat, and quail numbers are increasing in these areas.

A study was conducted on Fort Rucker regarding effects to wild quail populations due to release of pen-raised bobwhite quail. Results of this study provided information concerning population dynamics and limiting factors of wild bobwhite populations on Fort Rucker. A joint venture between Fort Rucker, Auburn University, USFWS, ADCNR, and Quail Unlimited was conducted assessing the bobwhite quail for management guidance.

It is important to monitor more precisely where quail are found on Fort Rucker. Whistling call counts are run May through June with the objective of learning where quail are absent in spite of good habitat. These data are used to identify potential transplant locations.

Fort Rucker traps wild quail and transplants them to locations where quail habitat has developed, but there is inadequate breeding stock. In general, birds are removed where high quality quail habitat is abundant when training allows. Quail that are transplanted are banded to provide information on population parameters. The goal for 2018-2022 is to move about 50 birds annually.

Fort Rucker quail season and bag limits corresponds with regular state seasons for this area.

In 2015 approximately 3,000 acres were specifically designated and developed by NRB as a primary quail habitat ecosystem with completed conservation practices as TSI (Timber Stand Improvement), Thinning, Burning and native grass planting. These areas maintain an open understory with towering pines and are burned on a regular basis. A

major emphasis was completed to remove and destroy the invasive vegetative species within the area.

3.4.4.4. Mourning Dove

Resident dove populations on Fort Rucker are low, and the number of doves that use the post during migration is also low. It is difficult to draw migrating doves on to Fort Rucker property due to vast amounts of farm land in the immediate area. Plantings for quail also benefit doves.

Fort Rucker dove season and bag limits corresponds with regular state seasons for this area.

Fort Rucker uses the standard USFWS mourning dove call count methodology as part of a nationwide effort to monitor this migratory species.

3.4.4.5. Waterfowl

Fort Rucker is far removed from any major waterfowl flyway, and, as a result, any large migration of waterfowl through this area is generally attributed to major storm activity. An increased effort on wood duck management is planned and will include banding, construction, maintenance, and monitoring of nest boxes (Section 3.7.3), and habitat improvement through hardwood improvement.

Waterfowl abundance is estimated using population data gathered through visual counts, hunter success, and nest box monitoring.

3.4.4.6. Squirrels

Fort Rucker has initiated a program to improve the quality of hardwood stands by increasing the abundance of preferred mast producers (Section 3.5.4). Forest managers leave snag or den trees in place when upland sites are harvested. Squirrels are abundant on the installation, and hunting pressure on squirrels could be increased. Hunting seasons and bag limits for squirrels follow state regulations. Squirrel abundance is qualitatively estimated using nest counts and harvest data.

3.4.4.7. Eastern Cottontail/Swamp Rabbit

Rabbit populations benefit from much of the same management as deer and quail. Winter food crops such as clovers, rye, and wheat are especially important to rabbits. Additionally, Fort Rucker creates brush piles when site conditions allow to provide escape cover for rabbits in more open habitats. Rabbit population data are collected by harvest rates, track counts, flush counts, and pellet group counts.

3.4.4.8. Fish

Lakes on Fort Rucker may experience population fluctuations over the short and long term, stemming from fish harvest, enforced regulations, stocking, fish kills, pond productivity, aquatic weed infestation, etc. Primary species emphasized in the Fort Rucker fisheries program are Florida largemouth bass, bluegill, and shellcracker (redeer). Fish and Wildlife personnel conduct creel surveys on an opportunistic basis while in the field. Angler success and degree of satisfaction with the fishery are important parameters

to monitor the success of the overall fish management program. Fort Rucker also uses seine surveys in its small ponds (5-15 acres) to monitor reproduction of fish species. Electroshocking is used to evaluate overall population dynamics in each body of water. Electroshocking is used both day and night, and principal data collected include species, length, and weight of each fish. Proportional Stock Density and length-weight relationships are calculated.

Fish population data are used to make decisions regarding the need for rough fish control and stocking. Population data are also used to evaluate effects of harvest regulations on important game species, especially largemouth bass and bream species.

To date, there has not been a need for direct control of undesirable species in Fort Rucker lakes. The preferred means to control undesirable species is to utilize a drawdown to concentrate these fish, allowing bass predation to resolve the imbalance. It is illegal to use baitfish in lakes on Fort Rucker, which reduces the problem of introduced species.

Sterile grass carp (white amur) are stocked to help control aquatic vegetation in the smaller lakes, as discussed in Section 3.4.2.2. If a lake's fish population were to get to the point where it could not be controlled using predation, it would be necessary to remove all fish and re-establish the population. In that case, the stocking rate would be 100 largemouth bass and 1,000 bluegill per acre.

3.4.4.9. Other Game Species

Raccoon, opossum, fox, and bobcat are in excess of any hunting pressure exerted upon them. There is extremely light hunting pressure on these species. Other species that are found on Fort Rucker, but are only lightly hunted, include snipe, rail, purple gallinule, common moorhens, and woodcock.

3.4.5 Non-Game Species

With the exception of Threatened and Endangered Species, as discussed in Section 3.1, Fort Rucker performs little direct species management for non-game species; however, most non-game species benefit from general habitat management, such as prescribed burning. Fort Rucker has a Supervisory Entomologist, who has been collecting data on insects found on the installation. To date, the collection includes 590 species from 59 families of beetles. Additional species collected from the post (approximately 100) are stored at the University of Georgia. The current Coleoptera species list is within Entomology and Fish and Wildlife files. The insect collection (including some from off-post) at Entomology includes about 165,000 specimens.

3.5 Forest Management

Improvement of forest resources and related ecosystems is achieved through active professional forest management based on soil-site capabilities in an ecologically sound manner. Forest management including harvest, reforestation, and silvicultural treatments that foster forest health and vigor, structural and biological diversity. These actions will produce financial returns to the government, contribute commercial forest products to the economy, and maintain and improve the economic and ecological value, health, and diversity of the forest resources and related ecosystems. Forest management actions

include timber management, forest administration, timber sales, reforestation, afforestation, timber stand improvement, timber access road construction and maintenance, forest protection, and other directly related functions for maintaining the health and vigor of forest ecosystems. Forest management provides for the production and sale of forest products and maintaining the health and vigor of forest ecosystems.

3.5.1 Objectives

- Annually coordinate with Training Division, Range Branch to identify areas that require forest management; map and prioritize these areas for harvesting and other treatments
- Implement timber stand improvements to optimize growth and yield of pine-dominated areas
- Annually identify and map upland sites that require timber management or reforestation; coordinate these activities with Wildlife and other installation organizations to ensure habitat compatibility
- Identify, map, and develop management prescriptions for existing areas of longleaf pine and for potential areas to be established in longleaf pine
- Identify and map areas with invasive non-native plant species, and prioritize treatment operations
- Develop protocols for protection of gopher tortoises during forest management activities, including safeguards to minimize mechanical site preparation during nesting season (May-September) in areas where gopher tortoises are known to be established
- Identify, map, and prioritize areas of erosion on logging roads, ramps, fire lanes, and trails, then implement stabilization measures
- Develop and maintain an installation-wide continuous forest stand inventory, and monitor changes
- Obtain and use Landsat imagery for monitoring vegetative trends
- Identify and map stream management zones, hardwood bottoms, and select upland hardwood sites, and develop protection measures
- Map and develop management prescriptions and protection measures for the Bluffs and steep ravine slopes of the type that overlook Steep Head Creek
- Define protocol for coordination with the Cultural Resources to identify, delineate and protect cultural resources during forest management activities
- Submit annual REC for NEPA review of upcoming timber sales and other forest management activities
- Evaluate current logging roads to determine which ones require maintenance or erosion control measures, and which ones should be closed and revegetated

- Continuous Forest Inventory plots will be established in-house by the Forestry section and monitored and recorded at least once every three years

The purpose of Fort Rucker's forest management program is to support the military mission, enhance ecosystem integrity, promote biodiversity, sustain renewable forest resources, protect forest watersheds, manage wildlife habitat, and provide outdoor recreation opportunities. Management objectives for the Fort Rucker forestry program have changed over the years from early forest restoration, to a unified ecosystem management approach that protects travel corridors, bedding and roosting areas. Revenues generated from forest management operations are critical to Fort Rucker in funding of this INRMP execution. A major portion of the revenues generated from timber sales are returned to the installation to pay salaries of Forestry staffing and to maintain and upgrade all heavy equipment.

An Access© -based timeline will be developed based on all activities for the next 10 years. A less detailed timeline will be developed for long-term (50-100 years) management. Longleaf pine ecosystem recovery is a primary concern that is addressed specifically in this plan.

Goals during the life of this plan include restoration of native longleaf pine ecosystems over a wide range of slope, aspect, and soil conditions. The NRB plans to use various TSI strategies to improve the value of numerous Training Areas and bivouacs to the training community. Foresters will also assist in the maintenance of safe areas around training sites. Management strategies will stress improved forest health and environmentally sound decisions.

3.5.2 History of Forest Lands on Fort Rucker

Historically, longleaf pine was wide-ranging, covering much of the coastal plains from southeastern Virginia to eastern Texas, as well as the northern two-thirds of the Florida peninsula. The species was also found in the piedmont and mountain areas of Alabama and northwestern Georgia. In pre-settlement times, longleaf pine grew in extensive stands occupying approximately 90 million acres. Its value as timber and for the production of naval stores led to widespread exploitation. Today, less than 5 million acres of this forest remains. Before acquisition by the United States government, land use patterns in the Fort Rucker area included the production of agricultural and forest crops. Most ridge tops and many bottomlands were cleared and used for crop cultivation. When the land was acquired by the Department of Agriculture, a land utilization plan was prepared and put into effect a short time prior to designation of the area as a military reservation.

During this period, wildfires burned at will, damaging or killing stands of trees. After cessation of intensive troop training, the post was put on a standby basis. A caretaker force was left to protect the installation against wildfires. After reactivation in 1950, all lands were intensively used for training infantry division troops until 1954 when aviation training commenced. The woodland area was placed under intensive forest management in 1953 and a woodland management plan was approved in 1954.

Between 1953 and 1996 there were 541 wildfires affecting 4,747 acres of woodlands, exclusive of the impact area. Wildfires have been greatly reduced in recent years as

shown by the table in Section 3.15.3. Environmental conditions are such (e.g., high relative humidity, rapid fuel decomposition, and light prevailing winds) that relatively few stands require salvage operations. An active prescribed burning program greatly reduces the threat of wildfires. The prescribed burning program is based on a four year rotation with an annual acreage target of burning approximately 9,000 acres each year. This aggressive approach has reduced wildfires to only one or two small brush fires reported each year. These wildfires generally consist of a very small acreage and with no damage.

By 1987 the NRB included two foresters, three technicians, and two equipment operators. In 1994 one forester and one technician position was eliminated. Forest management activities are currently performed by one forester and four forestry technicians. The forestry technicians perform all equipment operations including forestry road construction and repair, firebreak construction and repair, and boundary line maintenance.

Fort Rucker is predominately an aviation training facility, and timber harvesting/silvicultural practices have a somewhat limited adverse impact on training. Harvesting operations are typically viewed favorably because they provide emergency landing areas and improve and promote ground training opportunities. Ground troop training has increased due to SERE training as well as expanded land navigation course training and NRB cooperates with trainers to ensure that harvesting/silvicultural practices do not negatively affect training missions. The expansion of the ground training mission has greatly reduced the volume of timber being sold annually on Fort Rucker.

3.5.3 Emphasized Stands and Species

The portion of Fort Rucker east of Alabama Highway 85 bears close similarity to traditional coastal plain longleaf forests and represents an opportunity for re-establishing longleaf pine acreage at Fort Rucker. Vegetation in the area consists of hardwood scrub that is overgrown due to the exclusion of fire, poorly stocked loblolly or hardwood stands, poor quality stands, or acceptable stands on sub-optimal sites. Additional opportunities for longleaf pine reforestation on the west side of the installation include ridgelines with deep sandy soils. Areas where sands are shallower and areas further down slope are more appropriate for loblolly pine. In addition, a clay lens located in the center of the installation creates marginal growing conditions for longleaf pine that would require significant mechanical manipulation for success. This site may be more appropriately planted in loblolly pine. Both loblolly and longleaf pine were historically significant in the area, and current management strategies should yield high quality forests more closely resembling native ecosystems. Although most priority will be given to propagating longleaf pine stands on upland sites and southern and western slopes, valuable hardwoods are also propagated in habitats to which they are best suited. Means of reforesting will include both artificial and natural regeneration. Principal species and reasons for selection are listed below.

3.5.3.1 Pine Species

The following pine species are present at Fort Rucker:

Longleaf pine (Pinus palustris) - produces high quality timber and native to most soils on Fort Rucker.

Loblolly pine (Pinus taeda) – good growth potential and native to some soils on Fort Rucker.

Slash pine (Pinus elliotti) - good growth potential.

Shortleaf pine (Pinus echinata) - resistant to fusiform rust and produces high quality timber.

3.5.3.2. “Hard” Hardwood Species

These hardwood species are not typically harvested, even when located within timber sale boundaries. This is due to considerations of mast production being a primary food source for wildlife.

White oak (Quercus alba) - High market value and quality mast producer.

Chestnut oak (Quercus prinus) - High market value and quality mast producer.

Red oak (Quercus falcata) - High market value and quality mast producer.

3.5.3.3. “Soft” Hardwood Species

These hardwood species are the primary hardwoods harvested on Fort Rucker.

Yellow poplar (Liriodendron tulipifera) - High market value.

Sweet gum (Liquidambar styraciflua) - High market value.

Black gum (Nyssa sylvatica) - High market value.

3.5.4 Forest Inventory

In accordance with Army Guidance Procedures for Forest Inventory (April 2006), Fort Rucker has recently completed an inventory of all managed forest lands on the Installation. This forest inventory was conducted by using outside contract manpower.

Inventory transects (cruise lines) are laid out using aerial photographs and forest inventory maps. Data collected on transects include species, age, growth, overall timber density, timber volume, site index, regeneration, stand delineation, slope, fuel types, and other associated data. Inventory data are entered into computer databases and these databases will be linked to the GIS as this technology is implemented.

Fort Rucker will also establish continuous forest inventory (CFI) plots in all of the 48 Training Areas. A minimum of two plots will be established in each Training Area with a maximum of five plots per Training Area depending on size of Training Area. Continuous Forest Inventory plots will be established in-house by NRB and monitored and recorded at least once every three years. CFI uses the changes which occur to individual trees over time (tree growth, mortality, and removal) to estimate wood volume for the total forest. CFI allows comparisons of actual and predicted changes over time.

Pre-management inventories will be executed by NRB to obtain the most current estimate of timber volume, species composition and value of a particular management unit or sale area. Pre-management inventories are used to determine an appraised value of the trees and should precede normal silvicultural prescriptions. These inventories are performed for all timber availabilities, of the type of harvest to be implemented. Thinning schedules

are developed to ensure full advantage is taken of growth and yield for pine dominated stands. Timber stand improvement (TSI) activities are matched appropriately to specific sites and are prioritized to maximize growth and yield.

3.5.4.1. Forest Management Strategy

DoD and Department of Agriculture philosophical changes, as well as public interest and concerns for species habitability have increased the desire to restore the longleaf pine-wiregrass ecosystem in the coastal plain. This has caused a re-evaluation and adjustment of Fort Rucker forest management strategies. Fort Rucker is located in the historical transition zone between the longleaf pine pyroclimax of the Gulf coastal plain and the more rugged southern mixed hardwood forest. Generally, forests will be managed on an ecosystem scale for longleaf pine restoration in all practical areas, healthy loblolly pine forest, mixed pine-hardwood forests, and bottomland hardwood forests.

Fort Rucker's forest management program attempts to meet diverse objectives. Forests will be managed to provide adequate emergency landing and over-run areas at airfields and stagefields, optimize areas for ground maneuver and SERE training, optimize forest stand stocking for ecosystem and wildlife health, and the restoration of more natural, native community types. These objectives will be accomplished by appropriately reforesting harvested areas according to slope, aspect, and soil conditions. Uneven-aged management and TSI practices will be used to promote forest health, biodiversity, and sustainability. Even-aged management will be used as appropriate in marginal sites. Regeneration cutting small areas is an appropriate silvicultural tool for species conversion or the removal of diseased or insect infested trees. It is also an appropriate silvicultural tool for salvaging timber that is affected by natural disasters and/or construction projects. Poorly stocked upland sites and mature stands are also identified as potential sites for regeneration harvesting and a conversion to the longleaf ecosystem. A well-timed prescribed burning program is vital to maintaining healthy, diverse forests, as well as to the longleaf pine restoration efforts.

3.5.4.2. Scope of Forest Management

Almost all of Fort Rucker (including Cairns AAF) is classified as forest. The dominant forest species, acreage, percentage of land owned by Fort Rucker, and management prescriptions are described in the table below. The remaining land on the Installation is not managed due to being located in the impact area, the cantonment area, or other restricted areas. In light of the change in management strategies, these acreages and percentages are likely to change over the life of the plan.

Table 3-3 Forest Species and Management Prescriptions

Dominant Species	Acreage	Percentage of Land	Management Prescription
Pine	8,259	14%	Intensive even-aged management
Pine/hardwoods	19,194	33%	Even and uneven-aged management
Hardwoods	10,498	18%	Most producing species are favored

Sources: ENRP, DPW, 2016

Pure, or nearly pure, pine sites are typically found in upland areas and along ridgetops. Loblolly, shortleaf, slash, and longleaf pine grow together within these topographical areas. Stand delineation is often indistinct and irregular due to variations in age, stocking, site characteristics, and previous harvesting.

Mixed pine/hardwood sites are most frequently found along middle to lower slopes and alluvial bottoms. Pine and hardwood species grow in combination within these topographical areas. Stands vary significantly in age, stocking, and composition.

Hardwood sites are typically found along poorly drained stream bottom areas. These sites are composed of a mixture of primary and secondary hardwood crop trees. Stands vary significantly in age, stocking, and composition.

Fort Rucker has approximately 58,043 acres of forestland within the classifications listed below (ENRD, DPW, 2016):

- Regulated (All options for forest management): 40,042 acres
- Modified (Limited timber harvest): 2,095 acres
- Restricted (Little, if any, forest management): 19,103 acres

Fort Rucker is divided into three LMUs to facilitate management planning (**Figure 3-2**).
Off Post Lands

Off post lands encompass 3,681 acres not located on the main reservation. Off post lands are largely devoted to aviation training and contains Cairns AAF (1,431 acres), Shell Basefield (396 acres), and the many stagefields/remote tactical training sites described in Section 1.10.1.1. of this INRMP (McGee, 1987; Higginbotham/Briggs and Associates, 1991; DPTMSEC, 1994, Rust Environmental and Infrastructure, 1999). It also contains forest management unit 50, which is the forested area within Cairns AAF.

Off post lands consist of 480 acres within Cairns Army Field which are managed by Natural Resources personnel, of which 480 are forested. Off post lands forests consist of 100% natural pines and hardwoods.

Ideally, one common ecological management unit, based on ecosystem types or watersheds would be best for natural resources management. However, often it is more critical that field personnel, troop units, recreationists, and others be able to easily identify area boundaries than it is to use more scientifically based boundaries. Besides, due to the difficulty of determining at what level ecosystems should be identified and managed, it would be difficult to get agreement on a common ecosystem management unit designation that meets the needs of all users and managers.

3.5.4.3. Forest Compartments and Treatment Units

Forestry operations are on a 10-year management cycle for cutting and thinning operations and four year prescribed burn cycle at Fort Rucker. Management operations are discussed in further detail in Section 3.5.5. There are 10 forest compartments (**Figure 3-3**), which are managed using various ecosystem enhancements, consumptive, and non-consumptive forestry practices, as their place in the cycle occurs. Forest

compartments are portions of LMUs that are managed for harvest. Compartments are further subdivided into 51 total treatment units.

An historic fire regime and vegetation map is being developed to describe and display precolonial ecological information for Fort Rucker and the Southern Red Hills portion of Alabama.

3.5.5 Harvest Management

Fort Rucker harvests timber annually in a sustainable manner to meet training objectives, support land clearing activities for construction projects, and to meet silvicultural and other management objectives. Harvest management methods are matched to stands as appropriate for stand health, vigor, species, and stand prescription. Uneven-aged management is a preferred biodiversity-enhancing, as well as a TSI tool. In marginal areas and those managed with even-aged or regeneration strategies, a mature stand is approximately 50 years old. However, these strategies can be used earlier for species conversion or to remove diseased trees. Greater emphasis is being placed on low thinning management strategies and preserving uneven-aged natural stands. Timber harvesting management strategies are affected by natural disasters and construction salvage operations which will increase scheduled harvest acres and volumes.

3.5.5.1. Management Cycle

Fort Rucker timber compartments (**Figure 3-3**) are on a 10-year management cycle, where one compartment is treated each year (thinned, herbicide applied, and/or otherwise managed) on a 10-year rotation. The compartment organization consists of total acres and managed acres. The total acres represents forested, SMZ's, upland and bottomland hardwoods and open areas. The managed acres are treated with the mentioned treatment prescriptions above. The table below indicates management units within each compartment. It should be noted that Management Units share the numbering system of the Training Areas. The schedule for 2015-2024 is listed below.

Table 3-4 Compartment Organization

COMPARTMENT NUMBER/ (FY)	CUTTING UNITS	MANAGED ACRES	TOTAL ACRES
ONE/ FY 2015	11/13/14/17/18/31/C/CAIRNS FIELD	5,223	8,483
TWO/ FY 2016	1/3/15/35/38/A1/D	4,576	6634
THREE/ FY 2017	4/10/20/26/G	2,989	4609
FOUR/ FY 2018	8/19W/39/41/F	2,334	3,290
FIVE/ FY 2019	19E/22/29/A2/B/H	3,166	5,414
SIX/ FY 2020	1/3/7/14	2,203	3,316
SEVEN/ FY 2021	6/9/17/21	2,210	3,571
EIGHT/ FY 2022	12/23/24/28/34	1,726	2,522
NINE/ FY 2023	25/32/35/I	2,357	3,273

COMPARTMENT NUMBER/ (FY)	CUTTING UNITS	MANAGED ACRES	TOTAL ACRES
TEN/ FY 2024	2/5/16/30/40/E	2,993	4,799

3.5.5.2. Harvest

Commercial timber harvesting on Fort Rucker involves the removal of standing trees from forested areas. The trees are processed into various forest products to including saw logs, firewood, and roundwood pulp. Site condition and overall strategy for managing a particular type of stand are considered prior to determining the type of harvest. Harvest schedules are developed through the use of density management diagrams that are maintained in the Forestry Program. In Pine and pine/hardwood stands, harvest may be performed using single-tree selection. In pine/hardwood stands shelterwood or seedtree cuts may be utilized, but clearcuts are also possible. Damage due to natural disasters, insects/disease, or construction projects may require salvage or sanitation cuts.

Seedtree or shelterwood cuts require an adequate stocking of high quality seedtrees and soils with high clay content. When these conditions are not present, clearcutting with subsequent artificial reforestation will be prescribed. The decision to regenerate a stand will be based on the following stand condition factors:

- the stand occurs in an area which has been identified as prime location for longleaf pine re-establishment;
- timber is an average of less than 50 years of age with stand analysis showing an average of more than five annual rings in the last one-half inch of radius;
- understocked stands which will never achieve the site's optimum wood producing potential, due to environmental factors such as storm damage, insects, or disease; and
- stands consisting of predominantly low-quality timber that will never meet end-of-rotation objectives.

Reforestation harvesting will not normally exceed 50 acres in a continuous management unit in order to maintain age diversity and a high edge (ecotone) effect. However, these harvests may sometimes be larger if stands are to be converted from non-native stands to longleaf pine or if other silvicultural, construction or military factors dictate.

3.5.5.2.1. Timber Sales

Fort Rucker will conduct timber sales IAW current regulations and/or guidance approved by the Department of the Army. The timber sale process may take up to three months or more to complete based on time of year and volume of timber to be removed. Installation Forestry Technicians prepare the sale area for harvest and the Installation.

All timber sales are reviewed and coordinated directly with Training Division, Range Branch, DPTMS, G-3, ODR and other organizations throughout the Installation. The NRB estimates approximately 250 acres to be marked for select harvest annually with approximately 200 acres harvested for Longleaf regeneration.

Inspections of sale areas are performed daily to ensure that harvest operations are conducted in an orderly manner and that compliance with contract specifications are maintained. Post-harvest inspections are performed to determine if goals of harvests have been met.

At the beginning of each fiscal year, Fort Rucker submits a report of timber availability to the U.S. Army Environmental Command (USAEC) for each planned timber harvest. Then an end-of-year report is sent to USAEC summarizing annual forestry activities that were implemented.

Timber sales indirectly benefit the military mission by providing trails and hardened wetland crossings that are used post-harvest as training trails. Activities implemented by the Forest Management Section support this effort by intentionally creating loops and connecting skidder trails. Log landing openings built for timber harvests are beneficial to wildlife and tend to be used as safe landing zones, refueling areas, and/or staging areas for ground training missions.

3.5.5.2.2. Planning and Coordination

NEPA documentation is required for timber harvests and is performed on an annual or multi-year basis prior to the submission to IMCOM Region Office forestry point of contact of the master availability for that year. Cultural records are also checked prior to planning for timber sales. Environmental and cultural impacts are given priority in planning of timber harvests. Coordination is maintained between NRB and USAEC in planning all timber sales. The NRB Forestry Program and Fish and Wildlife Program are informed of any metal-contaminated timber, and harvest areas are assessed by the Forester and the Installation Range Officer to ensure safe conduct of harvesting operations. Harvesting within the confines of the range perimeter road require permission of the Range Operations Officer on a daily basis. Coordination is also maintained, as necessary, with the Range and Training Branch to avoid conflict with training exercises and other activities occurring near the proposed timber sale areas.

Timber Availabilities incorporate a NEPA REC and cultural resource surveys, and must be approved by the Fort Rucker Environmental Office prior to sale.

3.5.5.2.3. Best Management Practices

Timber is most commonly harvested and removed by means of heavy equipment (i.e. wheeled skidders, tracked feller-bunchers, forwarders, etc.). One of the most challenging aspects of removing timber from the forest is ensuring that water resources are protected at all times. Typical timber industry stream crossing techniques such as log bridges, corduroys, fords, and culverts, can result in unwanted fill, excessive temporary sedimentation, erosion, and alteration of stream banks if not installed properly. In order to help minimize negative impacts on water quality and ensure implementation of best management practices during harvesting operations, the Forest Management Section does not use any stream crossings for timber sales on Fort Rucker. *Alabama's Best Management Practices for Forestry* (Alabama Forestry Commission, 2007) are included within contracts for forest harvest on Fort Rucker. BMPs include recommendations for streamside management zones, stream crossings, access roads, timber harvest, site

preparation, reforestation, prescribed burning, wildfire suppression, chemical treatments, and wetland management.

3.5.5.3. Timber Stand Improvement

Timber stand improvement includes all forest management activities where the object is to improve the quality of a forest stand. These activities include, but are not limited to, chemical and mechanical treatments to reduce competition, and intermediate commercial harvests or non-commercial thinnings. These are important tools, not only to improving the quality of the training land and forest health, but also in increasing biodiversity and wildlife habitat.

3.5.5.3.1. Thinning

A thinning is a harvesting operation intended to increase the growth of remaining, desirable timber, improve biodiversity, foster higher quality habitat, improve spacing, and to promote sanitation. The least promising dominants and co-dominants which compete with the most promising individuals of the same class are removed. Trees with 6-16 inches in diameter, measured 4 1/2 feet above the ground, are thinned as necessary to allow additional growing space for more desirable trees. Larger, mature and over mature trees are selected individually for removal.

Fort Rucker's thinning efforts are generally focused on conversion of existing pine stands to longleaf pine dominated stands by removing intermediate and/or suppressed undesirable pines and increasing fire frequency and intensity.

TSI thinning on Fort Rucker is traditionally accomplished using low thinning methods and single-tree selection. In pine/hardwood stands, the following criteria are used to mark trees for removal:

- **Sanitation trees:** Trees in which the presence of wood-destroying fungi, such as fusiform rust, or other pests are unmistakably evident. Trees infected with fusiform rust are removed when multiple infections are present that will result in timber that will be suitable for sawtimber. Trees heavily infested with bark beetles are also marked for removal.
- **Poor risk trees:** Trees in which the loss of marketable wood exceeds the annual growth of new wood, those which are overmature and suppressed, unhealthy due to insect or fungus attack, weakened mechanically and subject to windthrow, and those damaged by fire, lightning, logging, or insects.
- **Pine wolf trees:** Pine trees with large, heavy limbs or spreading crowns that occupy a large area and suppress light from penetrating to young understory trees.
- **Poorly formed trees:** Trees not suitable for sawtimber because of form.

3.5.5.3.2. Chemical Treatments

Chemical treatments are sometimes the most economical means to remove undesirable tree and brush species that compete with preferred species. Sweet gum, laurel oak, turkey oak, and red maple are the primary undesirable hardwood species found on pine sites. Preferred mast producers, as listed in Section 3.5.3, are very valuable to wildlife

on Fort Rucker, thus they are protected from herbicide use. Chemical treatments in the form of herbaceous spraying are commonly used for TSI. The preferred chemicals are Garlon or a mix of Imazapyr, glyphosphate, and non-ionic methylated seed oil (MSO) surfactant applied at the recommended rates and with sufficient amounts of carrier.

Chemical treatments in the form of herbaceous spraying are commonly used for site preparation prior to seedling planting. The preferred chemicals are a mix of Imazapyr, glyphosate, and non-ionic methylated seed oil surfactant applied at the recommended rates and with sufficient amounts of carrier.

Chemical treatments are the primary form of site preparation and/or pine release due to the high cost and ineffectiveness of mechanical methods alone. Chemical site preparation typically has less potential for negative environmental degradation than mechanical methods. Natural Resources has selected Drum Chopping as a mechanical method that is least invasive to existing sites and is also compatible with herbicide application when needed.

The NRB has State certified pesticide applicators and all chemical applications are coordinated with the pest management personnel on Fort Rucker.

3.5.5.4. Timber for Installation Use

Timber harvested for installation use as training course material, parking lot borders, posts, range materials, etc., will be marked, tallied and recorded for inclusion in end of year reports. Troops training in the field are permitted to use trees for training activities, provided such use is small scale.

3.5.6 Restoration and Reforestation

Restoration includes enhancing wildlife habitats, providing a natural ecological community to prevent erosion and reduce maintenance costs. Reforestation is the appropriate regeneration of harvestable material of desired species for the ecological community. Reforestation does not occur every year because of the manpower limits in preparing land and contracts. Fort Rucker intends to conduct reforestation on approximately 400 acres every two years.

3.5.7 Site Preparation

Intensive site preparation and planting are necessary when there is a lack of an adequate seed source needed for natural regeneration. Approximately 200 acres per year will be site prepared and planted during the 2018-2022 period.

Chemical site preparation is the primary method of site preparation. Mechanical site preparation may be used in conjunction with chemical in areas that retain high volumes of biomass and standing trees following the harvest. Types of mechanical site preparation include drum chopping, shearing, raking, subsoiling/plowing, bedding, or combinations of these, depending on site requirements.

Approximately 2,000 acres will be planted the in the next five years using containerized longleaf and/or containerized loblolly pine seedlings originating from an acceptable seed source. Planting of loblolly and longleaf pine will be limited in the near future due to

funding restrictions. Containerized Long Leaf Pine normally planted at 484 trees per acre in the SERE Training Areas and 605 trees per acre in all other areas. Seedlings will have sufficient size root plugs and will come from nurseries that are recommended and approved by The Longleaf Alliance. Spacing will vary depending on the desired stocking levels. The reduced rate of containerized Long Leaf Pine species inside the SERE area is to allow a greater spacing between row widths for improved accessibility and ground training. Both hand and machine planting will be used, but most planting will be performed by hand. Planting will be done during December through February. Small reforestation projects may be accomplished in-house while the bulk of the tree planting will be accomplished through outside contracts. Refer to **Appendix 12** for details.

3.5.7.1. Wildlife Considerations

As discussed in Section 3.5, forest management is one of the management activities that have the greatest impacts on wildlife habitat. Many forest management practices are beneficial to wildlife habitat. Location, shape, size, type, and distribution of timber cuts are analyzed from the standpoint of wildlife habitat management, to provide a series of vegetative stages that are beneficial to both forestry and wildlife.

Dense pine stands provide poor habitat for most wildlife species. Thinning of pine stands is primarily a forest management tool; however, it also improves game habitat. Soil is disturbed by logging operations, and germination of desirable plants is stimulated. Removal of trees creates openings in the forest canopy, which allows light to penetrate to the forest floor and encourage growth of desirable vegetation.

Reforestation harvests can offer temporary improvements in wildlife habitat for deer, rabbits, and other species that benefit from the early stages in forest succession. Reforestation harvests are most productive the first several years following harvests, see Section 3.5.6 for details on reforestation information. As the stand matures and thickens, many valuable understory species grow above a height which is usable by wildlife. Grasses and legumes are shaded out by the maturing forest. However, the canopy of longleaf pine stands is much less dense, allowing for greater browse in the understory. Mechanical thinning in sapling and pole stages increases the productive period by encouraging re-sprouting, disturbing the soil, and allowing light to penetrate to the ground. To be effective for wildlife management, the new reforestation harvest should be irregular in shape, average less than 50 acres, and not adjoin recent cuts or non-productive habitat. All timber sale plans are reviewed by NRB Biologists in advance to make adjustments in protecting habitats.

3.5.7.2. Prescribed Burning

Prescribed burning is the most important and the most cost effective tool for managing and improving forested ecosystems. The trend to exclude fire over the last fifty years has played a key role in the reduction of biodiversity in forested ecosystems in the area. In the past, fire served to eliminate shrubby competition, return nutrients to the soil, and aid in seed germination of certain species. These fire-maintained ecosystems enhance biodiversity by supplying significant browse for wildlife. Present settlement patterns make wildfires highly undesirable. Prescribed burning provides a mechanism for the reduction of fire fuel loads in forested areas, reducing the likelihood wildfires will occur.

At Fort Rucker, the wildland fire program is under the Forest Management section. This section includes a summary of the program as it relates specifically to forest management; refer to the Wildland Fire Management section and the Integrated Wildland Fire Management Plan (Fort Rucker, 2015) or additional detail on prescribed fire and wildfire support activities. Normal burning is on a four year rotation. Burning rotation during 2018-2022 is shown on **Figure 3-4**. Because of the potential impact of prescribed burning on helicopter training, coordination must be accomplished between the Forestry Section and Airfield Air Space Management and Range Operations. The Fire Department must be informed daily prior to ignition for planned prescribed burning activities and also when securing from a burn area. These parameters do not apply to burning in conjunction with chemical and mechanical site preparation, such as the burning of brush piles. Prescribed burning is carried on as a range fire control activity when necessary and is coordinated through the Installation Range Officer.

Prescribed burning is a scheduled and approved forest management activity budgeted for and funded by the Forestry Reimbursable Account. With the exception of a small number of growing season burns and site preparation burns, the prescribed burning program at Fort Rucker is predominately dormant season burning which begins around the first of December and continues through April. Some of the March and April burns occur during the growing season. An increase in growing season burns is anticipated during the next five years to promote stand conversion to longleaf pine and to improve gopher tortoise habitat. Due to weather and military training constraints there are typically only 20 to 24 acceptable burn days within each year.

3.5.8 Forest Diseases and Pests

Fort Rucker forests have relatively minor forest disease and insect problems. The greatest economic damage is caused by bark beetles, primarily those in the genus *Ips* (*Ips avulsus*, *I. grandicollis*, and *I. calligraphus*) and the southern pine beetle (*Dendroctonus frontalis*).

Disease losses are subtle, but occasionally significant. Fusiform rust (*Cronartium fusiforme*) affects slash and loblolly pines, and is especially prevalent in pine plantations where tree density is higher than natural. Genetically resistant pines are being planted to reduce effects of fusiform rust.

Longleaf pine, in general, is less susceptible to diseases and pests than are loblolly or slash pine. Loblolly pine is more susceptible to southern pine beetle than are slash or longleaf.

3.5.9 Offset Loss of Managed Forest Lands

Loss of forested acreage due to construction projects has had a major impact on the natural resource program, as less land is available for wildlife habitat, outdoor recreational opportunities, and the production of commercially valuable timber. The following actions will be taken to offset the impact of construction projects on forest management:

- convert low quality, upland hardwood sites to commercially valuable pine sites; and
- convert non-productive land (i.e. eroded fields, landfills, inactive borrow pits) to pine plantations.

3.5.10 Biodiversity Conservation and Longleaf Pine Restoration Sites

The greatest potential returns in biodiversity will be a result of the re-introduction of longleaf pine on a measurable scale on Fort Rucker, with attendant management strategies including growing season burns. The areas below have the greatest potential for development of the longleaf pine habitat. As part of the Integrated Forest Management Plan completed with the previous INRMP, a Vegetative Community Survey was completed in 2009, which used Light Detection and Ranging (LIDAR) to determine suitable habitat for gopher tortoises and other related species. ArcGIS will be the record keeping format for forest management activities on Fort Rucker. This will allow up-to-date record keeping that can be stored in text and map formats. All information recorded with ArcGIS will also be stored using Excel™ spreadsheets and other documentation.

3.5.10.1. Impact Area

The impact area contains the most natural forested habitat on Fort Rucker. Spring and fall prescribed burning has begun in the impact area. Additionally, fire breaks are created based on aviation line of site cutting, which assists in preventing large scale forest fires that could have negative impacts on timber stands. In addition to longleaf pine, the impact area contains many hardwoods and a relatively good mixture of other pine species. The impact area offers the greatest biological diversity opportunity for mature longleaf pine communities on Fort Rucker.

3.5.10.2. Bivouac Sites

Fort Rucker has bivouac sites, which are not managed with the exception of removal of storm-damaged trees and other special treatments. These areas include Training Area (TA)-6, TA-14, TA-15, TA-16, TA-17, TA-18, TA-21, TA-32, TA-34, TA-38, TA-A1, TA-H and TA-G. These sites offer considerable potential for management of a mature longleaf pine community. Fort Rucker is experimenting with mature pine management on some bivouac sites. Areas are thinned to allow release of preferred pine trees (longleaf will be favored) using individual tree marking. Longleaf will be managed for mature timber, with no intended harvest except required thinnings. The end goal will be longleaf in the 150-200 year class. Where possible, a three-year, growing season burn regime will be instituted. Results will be monitored, and the program will be adjusted as needed to meet biodiversity objectives, consistent with adaptive management. An additional benefit of this management will be the improvement of the bivouac area for military use. The park-like condition in old age pine areas that are regularly thinned and burned is ideal for many military training activities.

3.5.10.3. Survival, Evasion, Resistance and Escape Training (SERE)

SERE Training has increased significantly at Fort Rucker, and currently affects TAs-13, -14, -15, -16, -17, -18, -20, -21, -25, 26, and 38, for a total acreage of 13,092 acres. At the request of SERE Trainers, these areas were excluded from forest management practices until 2008 when Fort Rucker Natural Resources personnel, SERE personnel, and Training Division personnel agreed that forest management should be conducted within SERE training areas to ensure sustainability and longevity of the timber resources. Regeneration or clear cuts are minimized to the greatest extent, as they are the most

non-conductive activity, with major impacts to the SERE training criteria and course lengths. Coordination is conducted between the Natural Resources Branch, Range Operations, USAACE, GS, and 1AB to ensure all forestry activities within these TAs are scheduled and carried out appropriately.

3.6 Vegetative Management

Vegetation management is an important component of the INRMP due to the presence of rare natural communities as well as sensitive wildlife species that are dependent on habitats that occur at Fort Rucker. Vegetation management principles are considered when conducting general maintenance activities, such as invasive species management, weed control, and improve wildlife habitat.

3.6.1 Objectives

- Work with Grounds Maintenance personnel to ensure only native plants are used in landscaping.

3.6.2 Improved Grounds

The following table categorizes improved grounds on Fort Rucker.

Table 3-5 Improved Grounds

	Total Acres	Mowed By
Improved Grounds	5, 253	See Below
Around Buildings	776	Contract
Lawns, Housing	189	Occupant
Lawns, Vacant Quarters	40	Contract
Lawns, General Officer	2	Contract
Lawns, Common Use	126	Contract
Post Cemeteries	2	Contract
Ammunition Storage	56	Contract
Roadways and Recreation Areas	404	Contract
Airfields	3,643	Contract

3.6.2.1. Golf Courses

Fort Rucker has a 280-acre, 27-hole golf course; a driving range; and a chipping area. Fairways and roughs on the course were established with common Bermuda grass, and tees and greens were established with 328 Improved Bermuda and are overseeded during winter with rye grass. In 1988, fairways were sprigged to 419 Bermuda, and all maintenance became a golf course greens keeper responsibility at that time.

3.6.2.2. Cemeteries

There are four small private cemeteries on Fort Rucker. These cemeteries have been maintained and protected in accordance with AR 200-1. Maintenance consists of mowing and maintaining fences and shrubs.

3.6.2.3. Ammunition Storage Point

The Ammunition Storage Point was constructed in 1999. Maintenance consists of grass cutting to reduce fire hazards and prevent the growth of woody vegetation.

3.6.3 Grounds Maintenance Operations

Grounds maintenance provides opportunities to enhance the visual appeal of the environment. The main objective of grounds maintenance operations is to reduce ground maintenance costs, conserve water, minimize the use of invasive and exotic species and use plants native to the Fort Rucker region to the extent practicable. This is often performed in correlation with vegetative management operations. Enforcement of beneficial landscaping concepts, such as planting native species to reduce nutrient and water demands, reduce the costs of grounds maintenance, improve wildlife habitat, and protect vegetation through the use of shade trees is encouraged.

3.6.3.1. Landscaping Establishment and Maintenance

General landscaping is limited to community facilities; post exchanges; theaters; Bachelor Officers Quarters; barracks; chapels; hospitals; family quarters; administrative, school, and research buildings; Post Headquarters; Constitution Park; main entrances to the post; and areas adjacent to athletic facilities. In general, trees, shrubs, and ground covers have been intermittently planted without the benefit of a landscape plan, so there was no consistency in the arrangement or relationships of one area to another or to the overall theme of the landscape. In the future, special consideration will be given to creating a landscape with continuity and a better blend of trees, shrubs, and flowering plants.

Fort Rucker utilizes various methods to accomplish landscaping operations. During new construction, plantings are contracted. The cantonment is managed through a combination of self-help, in-house, and contract planting, and housing areas are managed by self-help and contract planting. As landscapes are planned, consideration is given to the use of native vegetation as set forth in the Presidential Memorandum (Office of the President, 1994) and EO 13112 (1999).

Establishment and maintenance of trees and shrubs are accomplished by contract and in-house personnel of the Grounds Maintenance Section. For contract planting sites, a one-year plant establishment period is written into the contract. Trees, shrubs, and special ground cover plants are maintained on a year-round cycle. Fertilizing, weeding, mulching, and pruning are scheduled to meet needs of various plant species, considering available manpower. As a rule, spring-flowering shrubs are pruned in late winter or early spring. Pruning of screening shrubbery throughout the cantonment and housing areas is done twice annually by contract as described in the table below. A removal and replacement program for trees and shrubs has been in effect for several years at Fort Rucker to mitigate effects of crowding, storm damage, and changes in utility services.

Table 3-6 Landscape Shrubbery Pruning Schedule

Type of Plant	Time of Pruning
Evergreens (holly, ligustrum, photinia)	Year-round
Berry-producing plants	Before spring growth and blooming
Camellias	Pruned in winter, only to shape
Crepe myrtle	Winter
Trees, in general	Winter

For new planting specifications, Fort Rucker uses the recommendations found in the *Fort Rucker Installation Design Guide* (EDAW, 1987) on pages 2.6.8-3 through 2.6.8-14. Specifications and compatible species are also identified in the Installation Design Guide, page 2.6.8-1. A list of species which are used to replace damaged or removed trees and shrubs on Fort Rucker is included as **Appendix 12**.

3.6.3.1.1. Five Year Landscape Plan

General landscaping is limited to community facilities; post exchanges; theaters; bachelor officer's quarters; barracks; chapels; hospitals; family quarters; administrative, school, and research buildings; Post Headquarters; Constitution Park; main entrances to the post; and areas adjacent to athletic facilities.

In general, trees, shrubs, and ground covers have been intermittently planted without the benefit of a landscape plan. The effort is commendable. The only permanent irrigation systems are at the golf course, post headquarters and the adjacent parade field, Constitution Park, the three main gates (Daleville, Enterprise, and Ozark), and the Service Member's Support Complex.

3.6.3.2. Irrigation

Fort Rucker normally receives sufficient annual rainfall to support vegetation without the use of irrigation. Temporary irrigation systems have been used for major turf establishment or renovation projects as required. In 1987, irrigation systems were installed at post headquarters and the adjacent parade field. In 1990, one additional irrigation system was installed at Constitution Park. During FY-1991, new sprinkler systems were installed at the three main gates (Daleville, Enterprise, and Ozark) in conjunction with landscaping projects during. The Service Member's Support Complex also has an irrigation system.

3.6.3.2.1. Sod Establishment

Prior to April, 1988, establishment of sod areas on post was accomplished by in-house personnel of the Grounds Maintenance Section and by contract. In 1988 a reorganization of DPW transferred in-house accomplishment of all grounds maintenance belongs to the Individual Job Order Branch, a contracting-out operation. Turf areas on post are established with selected grass species that will provide ground cover compatible with

land use, tolerate seasonal drought conditions, allow for the least degree of maintenance necessitated by the site, and benefit wildlife where possible.

Planting preparations consist of preparing a seedbed 4 to 6 inches deep. Where topsoil is required, subsoil is scarified 2-4 inches for bonding with the topsoil. Lime or other amendments are incorporated into the seed bed during site preparation.

The area is then seeded by cyclone, cultipacker, or hydroseeder, dependent upon slope. Centipede grass is used on lawns, and bahia grass is used on other open areas. Centipede and St. Augustine are used in shaded areas. Hay or fabric mulch is applied after planting operations, and the areas are limed and fertilized.

Fertilization of turf areas has been accomplished by both in-house operations and contract. Areas of improved grounds in the cantonment where sod is present, family housing, and high visibility airfields are fertilized yearly during spring. Special areas, such as turf renovation areas of athletic fields or intensive foot traffic sites, have been fertilized at the time of planting or overseeded and top dressed 30-45 days later.

Fertilizer and lime requirements are typically determined by soil test analysis. When soil test data cannot be obtained in a timely manner, 300 pounds per acre of 17-17-17 (17 percent nitrogen, 17 percent phosphorous, and 17 percent potassium) or 15-0-15 (15 percent nitrogen, 0 percent phosphorous, and 15 percent potassium) fertilizer is applied, depending on plant species. Lime is applied at two tons per acre.

The soil testing mission is conducted by utilizing a blanket purchase agreement. One hundred and fifty soil samples are programmed annually for analysis at the Soil Testing Laboratory, Auburn University. Samples are collected in advance of programmed work to allow time for analysis and procurement/contract application of needed soil amendments.

3.6.4 Diseases, Insects, and Undesirable Vegetation

Trees and shrubs are relatively free of disease with the exception of photinias. These plants have been attacked by entomosporium leaf spot disease, which cannot be treated successfully at Fort Rucker, so their use has been discontinued. Brown patch is the only major turf disease on Fort Rucker, and it has not been a problem in recent times. Most turf grass disease has been limited to golf course greens. Primary control has been preventive maintenance through a combination of chemicals, proper watering, and mowing practices. Tables describing herbicide and pesticide use on Fort Rucker are shown below. Most common insect pests have been Armyworms, tent caterpillars, aphids, mole crickets, and red spiders. Insect damage to turf has been minimal and influenced primarily by excessive rains or droughts. The Pest Management Section is generally able to control common pests. The FY 18 Pesticide Use Proposal (PUP) lists approved herbicides for use on the Installation (**Appendix 13**)

3.6.5 Mowing

Mowing requirements of Fort Rucker have evolved from a combination of in-house, contract, and family housing occupant responsibility to the most recent arrangement wherein the construction and property management firm, Picerne, has been granted a 50 year lease on family housing and provides mowing as part of the lease.

Plant growth regulators (PGRs) have been applied to areas away from runways on airfields and stagefields. The areas are mowed and PGR's applied in spring (April/May). Mowed and summer (PGR's applied in July/August). They are mowed a final time in November. Mowing on 3,000 acres has been reduced from 21 cuts per year down to 3 or possibly 4. This reduction in mowing has decreased the heavy equipment wear on all airfield and stagefield turf and infrastructure, greatly improved the turf quality and resulted in a tremendous cost savings nearing 200k per year.

3.6.5.1.1. Grounds Police

A continual program of policing grounds around facilities throughout the cantonment area, along roadways, around lake facilities, and picnic areas has been accomplished by troop details and building occupants. Trash cans have been located at strategic points for proper disposal of litter. These have been maintained using troop details. An anti-litter attitude by employees and residents of Fort Rucker helps maintain a clean post. Spring and fall clean-up campaigns have been conducted annually. In addition to policing by employees and residents, policing of debris prior to mowing areas is required of the grass-mowing contractor.

3.6.6 Contracts

Fort Rucker uses the following recurring contracts:

- Grounds Maintenance In Cantonment Areas
- Grounds Maintenance at Airfields and Stagefields
- Technical Assistance for Natural Resources Management
- Cost-Effective Measures for Grounds Maintenance

3.6.6.1.1. In-house Tree Planting

In-house tree planting is accomplished using a tractor-towed hydraulic tree spade. Whenever possible, trees are located in forested areas adjacent to the site to be planted. A hole is dug where the first tree is to be sited. The tree is removed from the adjacent forest and placed in the pre-dug hole. A second hole is then dug where the next tree is to be sited, and the dirt from that hole is placed in the hole the first tree was removed from. A second tree is then removed from the forest and placed in the second pre-dug hole. This process is repeated until all desired trees have been transplanted, leaving only the last hole from which a tree was removed to be filled by hand.

3.6.6.1.2. Outleasing

Agricultural outleasing has a benefit of reducing the cost of mowing. Efforts to increase leased areas are ongoing. More information can be found in Section 3.11.

3.6.6.1.3. No-mow Areas

Reduced grounds maintenance programs involve reduction of mowing and establishment of forest, grassland, or wildflower areas to reduce grounds maintenance costs on

improved and semi-improved grounds. The tradition of manicured grass on military installations often makes it difficult to generate acceptance of such programs.

“No-mow” areas are those in which an area is no longer included in the grass mowing cycle. These areas are most accepted by the public when they are natural extensions of already wild lands, such as narrowing a mowed road shoulder or extension of a woody area into a field.

The largest Fort Rucker “no mow” area in recent years has been a former nine-hole golf course. This area has been reverted to a wild status, and designated as a Watchable Wildlife area. The post will continue to look for areas that can be dropped from the mowing cycle during 2018-2022.

3.7 Migratory Birds Management

The MBTA makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations. The migratory bird species protected by the MBTA are listed in 50 CFR 10.13. Migratory bird management on Fort Rucker is consistent with the DoD Strategic Plan for Bird Conservation and Management on Department of Defense Lands (2014) and with the Memorandum of Understanding between the DoD and the USFWS to promote the conservation of migratory birds that was implemented in 2014 and is subject to review and renewal in 2019. Migratory bird management also is consistent with the “Migratory Bird Readiness Rule”, which authorizes incidental take of migratory birds for military readiness activities provided the installation confers with USFWS to develop and implement appropriate conservation measures to minimize or mitigate negative effects of if the action would have significant negative effects on the sustainability of a population of a migratory bird species. NEPA processes used at the installation is one of the ways we evaluate projects for MBTA compliance.

3.7.1 Objectives

- Monitor Breeding Bird Survey routes for neotropical birds annually
- Expand the bluebird trail
- Educate mission personnel on Migratory Bird Treaty Act requirements, and provide them with the protocol to follow when a nest must be removed to satisfy mission or project requirements

3.7.2 Neotropical Birds

There is considerable continental-wide concern over declining numbers of many neotropical bird species. Fort Rucker has cooperated with the Smithsonian Institute to complete neotropical bird surveys on the Installation in the past and will continue to cooperate in the future, as the Smithsonian Institute requests and as mission allows.

3.7.3 Nest Boxes

Fort Rucker has an abundant bird population. Nest boxes have been constructed for bluebirds, wood ducks, and purple martins.

In 1993, 72 bluebird boxes were constructed. In 2008, 50 additional Bluebird boxes were constructed and placed throughout the installation in suitable habitat which includes open country around trees, frequently burned pine plantations, beaver ponds, mature but open woods, and forest openings. Additionally, you find them along pastures, agricultural fields, suburban parks, backyards, and golf courses. During 2018-2022 Fort Rucker will construct 25 bluebird boxes annually (including replacement boxes), and a major effort will be expended to maintain the bluebird trail. Wood duck boxes are placed on ponds and beaver dams, but most are on Lake Tholocco. The loss of Lake Tholocco was a major blow to the wood duck box program, which had about 90 boxes. When the lake was restored, wood duck boxes were constructed or repaired on this lake, coordinated with ADCNR and the USFWS. In 2008, 50 wood duck boxes were constructed and placed on installation lakes and ponds. These and previously erected boxes are cleaned and/or repaired annually prior to nesting season.

There are no specific plans for additional purple martin boxes. However, Purple martin boxes are maintained on an annual basis.

3.8 Invasive Species Management

Executive Order 13112 was established to prevent the invasion and introduction of invasive species and provide control for these species on federal lands. Control efforts are aimed at reducing the ecological, economic and human health impacts that invasive species cause. Invasive species control includes control of insect pests, invasive plant species, and noxious weeds, through treatment and prevention measures. Invasive species management strives to implement an integrated pest management (IPM) strategy that will aid in control by changing routine practices, or making habitat and structural alterations. The integration of IPM strategies will reduce the use and need for application of chemical controls. However, chemical controls may be required and would be applied carefully to kill only targeted pests, with minimum use of the least toxic effective product available.

3.8.1 Objectives

- Identify, map, and prioritize areas with invasive non-native plant and animal species for initial and follow-up control treatments.
- Treat 800 acres of invasive vegetation annually using TSI treatment methods.
- Submit annual REC for NEPA review of upcoming invasive non-native species control activities.
- Coordinate a Management Plan with Installation Command to control feral pigs within the AGRC.
- Expand a volunteer trapping program throughout the installation for targeting Feral Pigs and coyotes in all training areas.
- Closely monitor all aquatic habitats for spreading invasive species and develop

action plan for control.

- Request annual Environmental Funding appropriations for invasive species management and utilize all available resources.
- Utilize APHIS services when possible to provide assistance with removal of invasive species.

Invasive species require management under Executive Order 13112, and DoDI 4715.03, Natural Resources Conservation Program (2011) directs installations to address invasive species management. The Sikes Act details cooperation between the U.S. Fish and Wildlife Service, State Conservation Agencies (Alabama Department of Conservation and Natural Resources) and DoD to effectively manage such resources. The Armed Forces Pest Management Board has published the DoD Commanders Guide on Invasive Species.

3.8.2 Invasive Plant Species

Kudzu, cogongrass, privet, and fanwort are the primary exotic invasive plant species that are of concern to Natural Resources professionals on Fort Rucker due to their rapid expansion and density. Yaupon is an aggressive native species that also is invasive on Fort Rucker. Without control, these species have the potential to negatively affect military training and native species and habitats.

As of 2015, Cogon grass has been positively identified and treated with herbicide, through the use herbicides, on approximately 8 acres on Fort Rucker. It is likely that further investigation will lead to the identification of more cogongrass-infested areas. It is of high priority by Fort Rucker Natural Resources Staff to quickly treat these areas, as soon as possible. This species has the greatest potential of any non-native invasive plant to negatively affect military training on Fort Rucker and to eliminate wildlife habitat.

Kudzu currently occupies approximately 500-1,000 acres on Fort Rucker. These infestations have little to no use for any type of activity or wildlife habitat. Kudzu infestations alongside rights-of-way are being treated in order to limit its spread. Additional funding will be required to effectively eradicate these infestations.

Chemical treatments for invasive species are conducted at present and will continue to be considered in future land management planning. Transline, Tordon, Arsenal, and Glyphosate 4 Plus are all used as dictated by site conditions.

Privet and Yaupon are prevalent throughout most of the entire Installation and are spread by birds eating the berries and seeds. The rapid growth and expansion of these species create extremely dense forest understory and reduce accessibility for ground training, forest maintenance and recreational activities. Herbicide application equipment was obtained in 2014 to begin treatment with Natural Resources manpower and contracted treatments are applied when funding is available. The Natural Resources staffing is normally capable of treating approximately 800 acres of woodland each year. Fanwort is an aquatic vegetative plant that grows from a lake bottom upward to the surface and can grow at depths in excess of 10 feet. This vegetation can become very dense as in Lake Tholocco and may require reoccurring treatments with herbicide. If not properly

controlled, boating, fishing, swimming and many other recreational activities may become severely impacted. In 2015 the NRB obtained a new airboat to begin eradication treatments of these invasive plant communities within targeted areas of Lake Tholocco with a high recreational use.

3.8.3 Invasive Animal Species

3.8.3.1. Coyote

Coyotes have been a growing concern and have been identified as a limiting factor of whitetail deer and eastern wild turkey population growth and recruitment on Fort Rucker lands over the past 8 years as the coyote population is undergoing rapid expansion. This expansion can be attributed to the coyotes' nonspecific needs in habitat and food, large litter size and short generation time, decreased competition across its range from other predators, and the coyote's ability to adapt and benefit from human activities.

Coyotes present several areas of concern to the Installation. The whitetail deer population has been severely reduced due to increased fawn mortality caused by coyote predation. Field analysis conducted by Auburn University indicates nearly 80 percent of all newborns are being killed by predator coyotes. There has also been a decrease in wild turkey population due to nest depredation by coyotes.

Disease threats to humans include rabies, eastern equine encephalitis, and salmonellosis. Safety threats include the: threat of attack to soldiers, threat of attack to occupants and/or residents of housing and cantonment areas, and threat of attack to recreational users, as well as the threat of disease and parasite spread to SERE students and instructors. The threat of coyote predation on livestock such as horses and pets that are housed or pastured on Installation lands are also a concern of owners. Coyote hunting is allowed on Fort Rucker year round due to no closed hunting season; however, trapping by individuals is limited to the State furbearing trapping season.

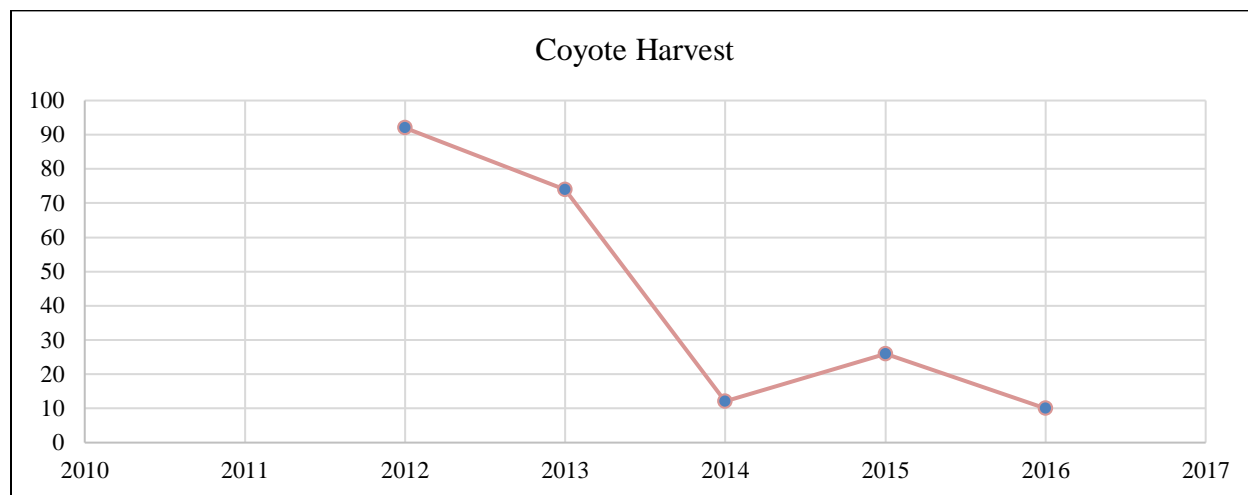
Over 200 coyotes have been removed through 2015. Due to the nonspecific habitat needs of coyotes, their mobility, and ability for immigration and emigration, an ongoing removal program must be employed. Coyote movement patterns are cyclic and sometimes difficult to identify. It is essential for trapping success that a trap location must remain active for at least a two week interval without disturbance other than checking trap integrity, removing and dispatching captured coyotes, and rebaiting. Trap sets are typically placed along forest road right-of-ways, forest edges, and along open fields, marked with a pole covered with red tape at its top. As such, they pose little threat or conflict with other activities that may be taking place in the training area/areas being utilized.

In training areas where trapping is allowed, all trapping operations must cease when the training area is closed. This practice is adhered to regardless of at what stage the trapper is in during the prescribed trapping interval; therefore rendering many of the planned traps sets ineffective.

To assist with the reduction in the number of coyotes that are present on the installation, our trapping efforts will be expanded through a cost sharing program with the United

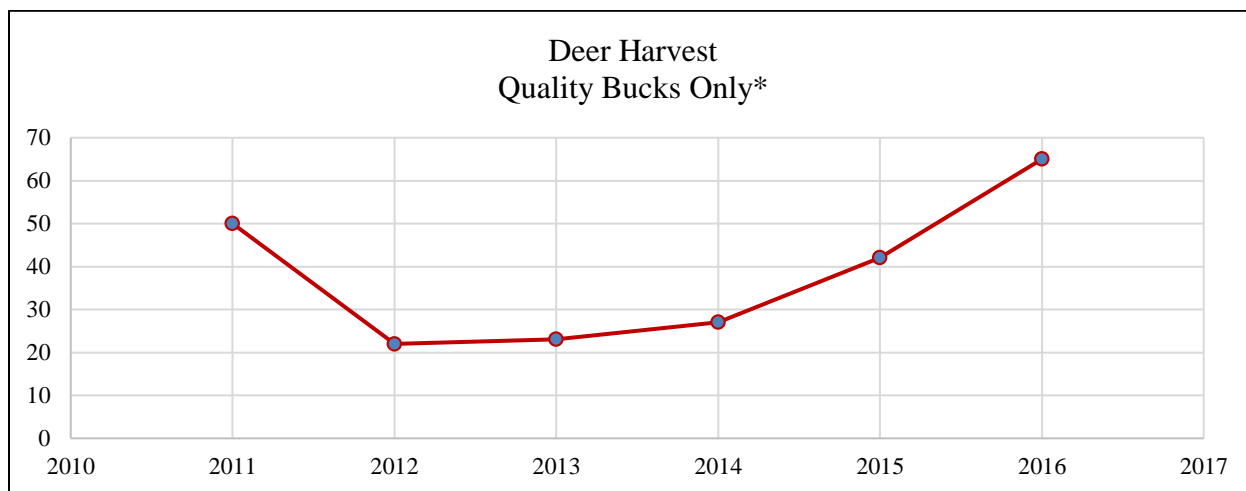
States Department of Agriculture (USDA), APHIS. It is our intention for this cost share program to work in conjunction with our current trapping processes.

Table 3-7 Coyote Harvests, 2012-2016



In an effort to maximize effectiveness of coyote trapping and increase the survival rate of whitetail newborn fawns, trapping efforts are prioritized annually to occur prior to the fawning season which is normally during the months of July, August, and September. As newborn fawns are born each year, field analysis conducted by Auburn University indicates nearly 80% of all newborns are being killed by predator coyotes. This survival rate is not capable of sustaining a healthy whitetail deer herd on the Installation.

Since inception, the coyote trapping program has proven to be beneficial, as whitetail deer camera surveys are beginning to show higher surviving whitetail recruitment; however. However, the whitetail deer population numbers are still well below carrying capacity for Installation lands. This planned trapping strategy is a major component in recovering this resource.

Table 3-8 Deer Harvests, 2011-2016

*2011 was last year of doe harvesting until the deer population recovers.

3.8.3.2. Feral Pigs

Although sporadic minor damage from feral pigs has occurred over the span of 20 years, it is quick to heal and less invasive than logging activities. There have been no training impacts based on feral hog damage to training lands. There have been issues on the main cantonment and the golf course in which minor land repairs have been conducted to correct minor feral pig damage. Their population has grown to one which exceeds the carrying capacity of desirable wildlife species. These animals have also migrated off of Fort Rucker lands and in to surrounding communities. Over 3,400 feral pigs have been removed through organized control efforts during the last five years. Annual camera surveys conducted for white-tailed deer show numerous feral pig sounder groups throughout the entire Installation, and sightings by troops, hunters, recreational users, and natural resources personnel continue to increase in all areas.

Feral pigs have been identified as an invasive species requiring management under EO 13112. DoDI 4715.03, Natural Resources Conservation Program (2011) directs installations to address invasive species management. The Sikes Act details cooperation between the U.S. Fish and Wildlife Service, State Conservation Agencies (ADCNR), and DoD to effectively manage such resources. The Armed Forces Pest Management Board has published the DoD Commanders Guide on Invasive Species which also specifically addresses feral pigs.

Feral pigs present several areas of concern to the Installation. Ecological damage is being done by decreased water quality, propagation of exotic plant species, increased soil erosion, modification of nutrient cycles, damage to native plant species, competition for resources with native wildlife, direct predation of native wildlife, and spread of disease and parasites to native wildlife.

Damage to infrastructure includes: road damage, aircraft landing area damage, solid waste management unit cap damage, and damage to recreational facilities (golf course

and recreational trails). Damage to agricultural crops includes timber damage, open field damage (airfields), and destruction of planted areas (lawns, food plots, erosion control sites).

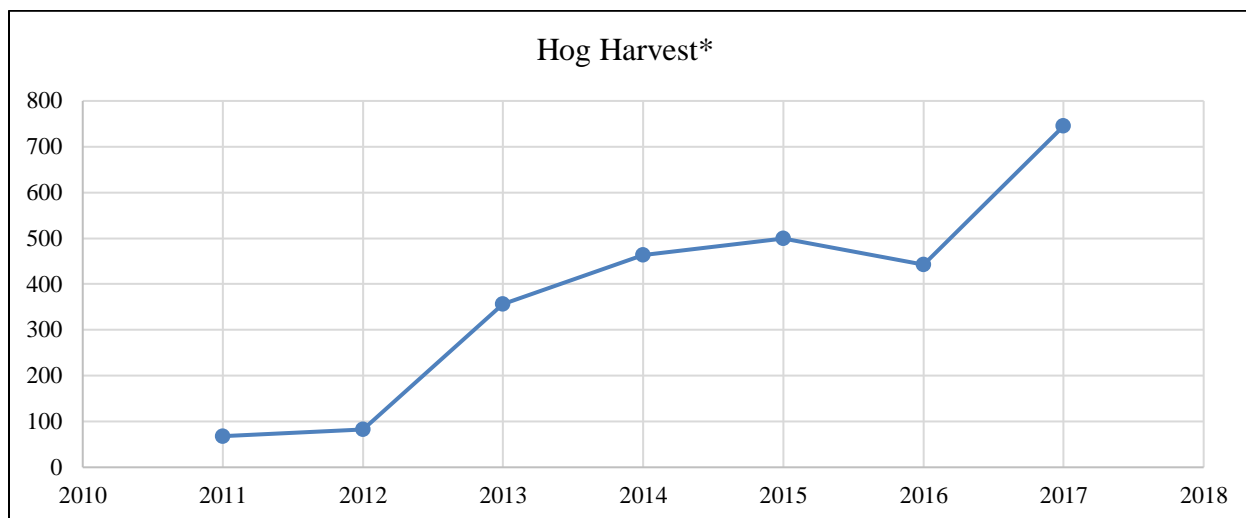
Disease threats to humans include brucellosis, leptospirosis, salmonellosis, toxoplasmosis, sarcoptic mange, *Escherichia coli*, and trichinosis. Safety threats include: threat of attack to soldiers involved in dispersed ground training, threat of attack to occupants of cantonment area, threat to recreational users of the Installation, and disease/parasite threat to SERE students.

Additionally, local landowners on adjoining lands have reported increasing damages to pastures, crop fields, lawns, forested areas and wildlife habitats. Fort Rucker is perceived as the source of the feral pig spread in this area due to the knowledge that the pigs were released on the Installation. The widespread damage currently being done to local farms, timber, and land as well as the safety concerns have resulted in continuous complaints by surrounding landowners and local farming communities.

Feral pig hunting has been allowed on Fort Rucker during the last 20 years, and recently was recently expanded to year-round open season with free hunting permits offered as an incentive. In 2010, Natural Resources personnel began training and trapping with a small number of traps. In 2011 USDA APHIS, Wildlife Services was consulted for guidance and a cooperative project was developed to seriously begin trapping feral pigs on the Installation. This effort was expanded to include volunteer trappers, as manpower and accessibility are the major limiting factors for the program. A depredation permit was obtained from the Alabama Department of Conservation and Natural Resources to expand permit trapping of feral pigs year round by designated permittees. Fort Rucker Natural Resources provides the traps and bait, and helps construct the traps in select trapping locations. There are currently 97 traps dispersed throughout the Installation. The volunteers provide manpower to check the traps daily in order to dispatch and remove the captured animals. The animals are then used for meat by the volunteers, as authorized by the state game laws.

Recently, remote controlled traps have been obtained from Jager Pro which enable traps to be remotely monitored and triggered by cell phone. Additionally, these traps use 30 gallon feeders for baiting and only require replenishing once a month. These traps are useful for areas with difficult or limited access, as well as being larger than the standard traps on Fort Rucker.

Although more than 3,400 animals have been removed through 2016 (**Figure 3-7**), it has not slowed the rates of feral pig reproduction or population numbers. With no natural predators and prolific reproduction, feral pigs' growth rate is exponential. Population growth models for these animals indicate that once they are established in an area, it is necessary to remove 80% of the established population to prevent further growth.

Figure 3-9 Hog Harvests, 2011-2016

*2017 began USDA-APHIS hog trapping program in coordination with NRB.

Currently, Fort Rucker is being funded by IMCOM to manage and remove plant and animal species on all Installation lands. There are plans to expand the number of traps each year and to continue the volunteer trapping effort. In addition to these actions, DPW Natural Resources Branch has worked directly with the USDA APHIS, Alabama Department of Conservation and Natural Resources, and Auburn University to develop and implement a holistic trapping strategy. This strategy will provide greater feral pig control if it is fully implemented. Utilizing the remote control traps, it is possible to trap areas without the need for visiting the traps daily. Traps only need be visited for monthly rebaiting using feeders and when feral pigs have actually been caught in the traps. This can be scheduled for a time of day when the area is clear, or if necessary, an escort can be provided. Currently protocols are being developed by DPW and Training Division, Range Branch using these trapping methods.

3.9 Pest Management

The primary objective for pest management in this INRMP is to coordinate with Pest Management to clarify when Natural Resources support for pest management is needed.

Pest management activities on Fort Rucker are conducted in accordance with the provisions of the Fort Rucker Installation Pest Management Plan. Oversight of pest management activities on the installation is the responsibility of the Installation Pest Management Coordinator (appointed by the Commander). The Forest Management, Fish and Wildlife Sections of the Natural Resources Branch, Game Warden personnel assigned to the Provost Marshal's office, and Golf Course maintenance personnel have outdoor pest management activities included as a part of their responsibilities. The Natural Resources Branch uses an integrated approach in planning all pest management actions to ensure impacts to existing ecosystems are reduced to the greatest extent possible.

3.9.1 Pest Management Priority

Resources, if limited, are allocated to pest management activities on the installation according to the following set of priorities:

1. Disease vectors and medically important arthropods (mosquitoes, fire ants, wasps and bees, spiders).
2. Quarantine pests.
3. Real property pests (structural/wood destroying pests such as termites, powder-post beetles, carpenter ants).
4. Stored products pests.
5. Turf and ornamental pests.
6. Undesirable vegetation.
7. Vertebrate pests (mice, rats, bats, birds).
8. Household and nuisance pests.

3.9.2 Integrated Pest Management

At Fort Rucker, IPM is a planned program that incorporates continuous monitoring, education, record keeping, and communication to prevent pests and disease vectors from causing unacceptable damage to operations, people, property, materiel, or the environment. The IPM strategy uses targeted, sustainable, economical, and environmentally sound methods, including education, habitat modification, biological control, genetic control, cultural control, mechanical control, physical control, regulatory control and, where necessary, the judicious use of the least hazardous pesticides. AR 200-5 and the Fort Rucker Installation Pest Management Plan mandate the use of IPM practices on the installation.

3.9.2.1. Installation Pest Management Plan

The Installation Pest Management Coordinator is responsible for the development and maintenance of the Installation Pest Management Plan. Review and approval of the plan is by the staff of the Army Environmental Command, Fort Sam Houston, Texas. All pest management activities at the installation are covered by this plan. Revisions of the plan are conducted periodically and per directive of higher headquarters. Updates (reflecting changes in staffing, training, equipment, etc.) are conducted annually. Approval for use of pesticides is obtained on an annual basis via the submittal of a U.S. Army Pesticide Use Proposal for the installation. Any pest management requirements not specifically detailed in the plan must receive approval in writing from higher headquarters before implementation and must subsequently be incorporated into the Installation Pest Management Plan.

Herbicides are used to manage undesirable and competing vegetation on food plots and to improve the quality and quantity of crops produced in fish and wildlife operations. Herbicides and other pesticides may also be used to control undesirable vegetation and other pests in aquatic habitats. Natural Resources is responsible for control of nuisance wildlife on training land, such as beaver, pigeons, feral pigs, coyotes and the American alligator.

The Game Warden is the animal control officer for the installation, with responsibility for control of feral cats and dogs and other household pets as well as nuisance wild animals, such as snakes, armadillos and raccoons.

Golf course personnel use pesticides to manage and control turf pests and diseases and undesirable vegetation on the course.

3.9.2.2. Use of Pesticides, Growth Regulators and Other Chemicals

All chemicals used on Fort Rucker must be EPA-approved and approved for use by incorporation in the Installation Pest Management Plan.

The Office of the President (1994) called upon heads of Federal agencies to reduce the amount of pesticide use by using integrated pest management practices. This is due to the fact that pesticides involve health and safety risks, target pests have developed resistance to many pesticides, and many pesticides have been used to excess and in violation of product labels.

Also, in 1994 and in response to the directive of the Office of the President, the Department of the Army approved three Measures of Merit designed to address the problems of pesticide abuse and overuse. Measure of Merit 1 required the development of Pest Management Plans for all installations. Measure of Merit 2 directed that the quantity of pesticides used, measured as pounds of active ingredient applied, be reduced by 50% from FY-1993 baseline levels by the year 2000. Measure of Merit 3 required that all DoD installation pesticide applicators be properly certified (certification is DoD or State as appropriate). Direct hire employees have a maximum of 2-years to become certified after initial employment. Contract employees must have the appropriate State certification when the contract is let. Fort Rucker is currently in compliance with Measures of Merit 1, 2, and 3.

3.9.2.2.1. Pesticide Certification

Personnel who select, mix, or apply pesticides which are defined by Regulation as controlled or restricted-use pesticides must be certified. Contractor personnel who apply pesticides must be State of Alabama certified in the operational categories in which they work. Government employees who apply pesticides must be DoD certified in the operational categories in which they work. Pest management activities on the installation are conducted by a combination of Contractor and Government employees. Contractor employees must be State of Alabama certified before employment. DoD (Appropriated Fund and Non-appropriated Fund) employees must complete a correspondence course, *Basic Pest Control Technology* and one year of on-the-job training under the supervision of a certified DoD employee. Training records and copies of certifications are part of the Installation Pest Management Plan. At the time of this writing, the Contractor-operated Pest Management Section of the DPW, most of the Natural Resources Branch, and the Golf Course all have personnel certified as Pest Controllers.

3.9.2.2.2. Environmental Considerations

Wetlands, water bodies, and recreational areas may require special precautions during the application of pesticides. Compliance with precautionary statements on pesticide

labels and safety data sheets is mandatory. Recreational areas are well known, and special requirements for their protection and the protection of users of these areas are implemented as needed. Wetlands are restricted to prevent recreational vehicle traffic and soil disturbing activities. The Natural Resources Branch of the DPW is responsible for maintaining maps of wetlands on the installation. These maps must be consulted whenever planning and/or conducting pesticide applications. If pesticide application in a wetland or other aquatic site is deemed necessary, only products approved for application in aquatic environments would be used.

Use of pesticides and herbicides in and around wetlands or streams in which endangered mussel species listed in Section 3.1.2 are known to exist involves extra care and precaution. If use of these chemicals could potentially impact mussel species, special coordination and approval of the USFWS would be required. Additionally, Federal law protects bird species except the starling, English sparrow, and pigeon. Any bird control activity except for these three species requires coordination and approval of the USFWS, which has an office in Daphne, Alabama.

3.10 Land Management

Land management is the use of programs and techniques for management of lands, wetlands, and water quality. Techniques include including soil conservation, erosion control and nonpoint source pollution, surface and subsurface waters, habitat restoration, control of noxious weed and poisonous plants, agricultural out leasing, range management, identification and protection of wetlands, watersheds, floodplains management, landscaping, and grounds maintenance.

3.10.1 Objectives

- Coordinate with ITAM to provide expertise and support for erosion control projects and stabilization plantings
- Work with Grounds Maintenance section to ensure only native plants are used in landscaping

3.10.2 ITAM

ITAM is an Army-wide program designed to provide quality training environments in order to support the Army's military mission, and is the primary method of land management employed at Fort Rucker. This program is managed by the Training Division, Range Branch. ITAM is at the core of the Sustainable Range Program, and was initiated at a time when the Army realized that training lands were being degraded to the point where their capabilities to sustain military missions were in jeopardy.

Goals and objectives specific to ITAM as well as more information regarding the program can be found in the ITAM Program Strategy, which is updated annually as part of the Range Complex Master Plan. The ITAM program consists of the following components: TRI, LRAM, RTLA, Sustainable Range Awareness (SRA), and GIS. Of these components, LRAM and RTLA are the most applicable to this INRMP.

3.10.2.1. RTLA

The RTLA component utilizes a wide array of natural resources data such as soil information, ground cover data, above-ground vegetation surveys, stem density counts, disturbance types, and more to assess the condition of land, with emphasis on the effects to these resources as a result of the military mission. However, this data can also be used by land managers and trainers to examine long term impacts and needs.

- The application of these assessments can:
- better distribute training loads on the land,
- reduce the need for expensive land rehabilitation programs,
- reduce the level of subjectivity involved in land management decisions,
- serve as a basis of use/non-use decisions for specific parcels of land,
- help ensure the sustained availability and productivity of Army lands, and
- provide input for implementing this INRMP and preparing NEPA documents.

Land Condition Trend Analysis (LCTA), the predecessor of RTLA, was initiated at Fort Rucker in 1997. Data collected and factors assessed included topographic features, soil characteristics, climatic variables, botanical composition, vegetative cover, wildlife diversity, and surface disturbance. The LCTA program was suspended in 2004 and reinstated in 2005 as RTLA. The mission was realigned with the intent to more specifically assess impacts of training activity on the training lands. However, RTLA data collected at Fort Rucker was of limited use, and RTLA funding was converted to LRAM support in 2007. Prescribed assessments are accomplished by qualified ITAM staff members and supplemented using resources such as Interactive Customer Evaluations, Monthly Inspection of Training Areas MITA report by the 110th Aviation Training Brigade, and Quarterly Inspection of Training Areas report by the USAF 23d Flying Training Squadron.

3.10.2.2. LRAM

The LRAM component is responsible for repair of lands damaged by training and use of land construction technology to avoid future damage to training lands. LRAM uses technologies such as revegetation and erosion control techniques to prevent site degradation, soil erosion, and water/wetlands pollution. These efforts are specifically designed to maintain quality military training lands, minimize long-term costs associated with continued land rehabilitation or additional land purchase, ensure compliance with environmental laws and regulations, and reduce erosion.

The process begins with identification of potential LRAM projects by the Fort Rucker ITAM team. RTLA and GIS data are used to help identify projects as well as direct communications between Training Division, Range Branch, and troop units. LRAM projects are planned in-house, but Fort Rucker has also used USACE expertise to help develop and design projects. Projects are designed on a site-specific basis. Under current conditions, there is no need to close entire TAs for LRAM work at Fort Rucker; however specific sites may be placed in an off-limits status for the duration of a project.

Each site-specific project must be coordinated through Training Division, via the ITAM Coordinator.

The ITAM Coordinator (DPTMS) coordinates with the DPW Agronomist to ensure that projects can be completed without interference with the military mission, Natural Resources to ensure that wildlife and forestry considerations are considered, and the Cultural Resources Manager regarding cultural resources in the area. Appropriate NEPA documentation is also provided for all projects.

The LRAM component on Fort Rucker, under the management of Range Branch, Training Division, prioritizes projects and manages ITAM funds. The extent to which the ITAM program can be implemented is subject to the availability of funding. LRAM is responsible for the repair of maneuver damage, but cannot be used to perform routine range maintenance, range modifications, or other Sustainment, Restoration and Modernization responsibilities. ITAM funds may not be used to support environmental conservation or environmental compliance requirements.

3.11 Agricultural Outleasing

Agricultural Outleasing generates funds that are primarily allocated for agricultural outlease improvements. These funds also may be used for natural resources management and stewardship projects, including INRMP Stewardship Projects, once the primary objective is met. Agricultural Outleasing funds should be considered as a potential funding source for Fort Rucker INRMP Projects that are not classified as environmental compliance projects.

3.11.1 Objectives

- Annually evaluate agricultural outleases for needed changes
- Conduct site visits to ensure leaseholder is abiding by requirements in the lease

3.11.2 Agricultural Outleases

Agricultural outleasing is used on Fort Rucker to maintain forced landing zones around airfields and stagefields. Prior to agricultural outleasing, these areas required an annual expense of fall mowing to reduce fire hazards, control weedy growth, and provide a safer landing area in the event an aircraft experienced engine failure. Outleasing to local farmers for hay production eliminates the annual expense of mowing and generates revenue. The fields are planted in Tifton 78 hybrid Bermuda grass. Fort Rucker's leased hay land totals 106 acres.

The lessee is responsible for the application of required fertilizers, based on soil test recommendations (done by lessees). Lessees may apply additional fertilizer to improve the growth of grass. However, the lessee is responsible for reporting and using only approved chemical herbicides and methods on Fort Rucker. Lessees generally cut leased areas 2-3 times each growing season. At the discretion of the government, additional work requirements, such as soil and water conservation projects, wildlife habitat improvements, etc., may be required of the lessee. In this case, lessees may be reimbursed for a portion of the cost by abatement of rental due the government.

Fort Rucker itself does not receive funds from agricultural leases. The agricultural leasing program is handled thru the USACE Mobile District. Typically, administrative costs associated with the program consume all revenue generated as a result of the leases. All funds generated are moved to the Department of the Army Agriculture Account.

Fort Rucker continues to evaluate other potential lease sites, such as inactive airfields and stagefields, Molinelli Forward Arming and Refueling Point, and the northern and southern sides of Hanchey stagefield. However, as a result of Installation Physical Security requirements, local farmers and landowners have expressed no interest in bidding on the remaining available hayfields that are within the security zone.

3.12 Geographic Information Systems Management, Data Integration, Access, and Reporting

GIS is an integral part of natural resources and environmental protection and planning. This powerful management tool provides the Installation and natural resource managers with a comprehensive database that includes a spatial component. Information such as aerial photographs, survey and monitoring data, and various other natural resource information are all tied to a geographical coordinate system which enhances the Installation's ability to effectively coordinate and ensure that current and planned mission activities do not adversely impact natural resources that must be protected, conserved, and managed using an ecosystem approach. Additionally, efficient and effective land use planning supports military readiness and sustainability, while protecting and enhancing the natural resources for multiple use, sustained yield, and biological integrity.

3.12.1 Objectives

- Coordinate with Natural Resources personnel to determine priority GIS support requirements
- Obtain aerial imagery from the National Geospatial Agency (NGA)

3.12.2 Geographic Information System (GIS)

The Fort Rucker GIS is managed by the Fort Rucker ITAM office. An enterprise GIS data collection repository has been established and directorates throughout the installation are using and maintaining the data. A SQL Server/ArcSDE multi-user Geodatabase connects users from locations at Range Operations, Environmental, Engineers, Forestry, Land Management, and Fish and Wildlife to the GIS.

Spatial data analysis and map presentation are the primary tasks of the GIS. GIS has become an integral part of many Fort Rucker Natural Resources programs, and as databases are compiled and the GIS continues to aid the Fort Rucker natural resources program, use of the GIS is expected to expand further. Programs such as hazardous materials management, spill response, and ground water quality monitoring are obvious applications for GIS support. Natural Resources has utilized GIS in completing its Forestry Inventory (Section 3.5.4), completing the Gopher Tortoise Habitat Suitability Survey (Section 3.1.3), and in supporting NEPA documentation. The GIS can support other civilian and military programs on the installation, such as grounds maintenance, range road maintenance, utility corridor planning, and antenna siting. In the future, the

enterprise GIS effort will be focused on increasing the user database. **Appendix 14** includes databases already developed for Fort Rucker.

3.12.3 Imagery

Aerial photographs are a useful survey tool to persons interested in managing relatively large pieces of land or analyzing long-term vegetation changes. Combined with GIS, these images can become even more powerful. The oldest known aerial known photographs of Fort Rucker were taken in 1942. Since then, complete post aerial photographs have been taken in 1979, 1988, 1995, 1998, 1999, and 2002. DigitalGlobe satellite imagery of Fort Rucker's entire flying area was collected in 2007, 2009 and 2013. In 1997, a contract with Kansas State University also provided aerial color photographs of five airfields and 18 stagefields. Fort Rucker had LIDAR data collected in 2009 at a resolution of 60 cm. This data has immensely improved Fort Rucker's elevation models.

During 2018-2022, Fort Rucker will use satellite imagery to enhance its ecosystem monitoring capabilities. Considering the size of the installation, this is the most economical means of regularly monitoring changes to the landscape. One of the ways in which this analysis will be performed is change detection. Change detection can be done by comparing, either by computer or by trained personnel, two images taken at different times. In the past, Fort Rucker has utilized DigitalGlobe (1:12,000) and Landsat (1:100,000) imagery for these comparisons. However, it is likely that The NGA has imagery that could be used by Fort Rucker. The NGA is the nation's primary source of geospatial intelligence for the DoD and US Intelligence Community. The acquisition of imagery collected in past years from NGA would facilitate change analysis over a period of time.

3.13 Outdoor Recreation

The Sikes Act requires that the public be allowed access to military lands for recreational purposes and encourages access to hunting, fishing, and other outdoor recreation opportunities for disabled veterans. However, DoD policy grants authority to the local military commander to decide the extent of public access to the installation based on security and safety considerations. Following the events that occurred on September 11, 2001, public access to most military installations has been significantly reduced.

3.13.1 Objectives

- Evaluate effectiveness of process for coordinating with Range Operations to ensure that an up-to-date roster of closed areas and areas designated for hunting and fishing is available at all times
- Encourage the development of facilities that improve use and enjoyment of fishing, hunting, and other natural resources-based recreation, and increase the use of underutilized areas

Fort Rucker's open space and the outdoor recreation opportunities associated with it are perhaps the Installation's best attributes in terms of community quality of life.

Most outdoor recreation programs within this INRMP are the responsibility of the Outdoor Recreation Branch, but other branches within the Community Recreation Division also assist with implementation.

Recreation activities at Fort Rucker are classified according to their essential nature in supporting the military mission. Below are the classifications:

Category “A” Mission - Sustaining Activities are considered essential to sustaining readiness; these activities generally enhance and promote the physical and mental wellbeing of Soldiers. Activities in this category have little or no capacity for generating non-appropriated funds (NAFs) income and are supported by appropriated funds (APFs). The only Category A activities affected by this plan are parks and picnic areas at Lake Tholocco, Parcours Lake, Ech Lake, Buckhorn Lake, and Beaver Lake on Fort Rucker.

Category “B” Mission - Community Support Activities are closely related, in terms of supporting the military mission, to those grouped in Category A. They satisfy the basic physiological and psychological needs of Soldiers and their Families and provide, to the extent possible, the community support systems that make military installations temporary hometowns for a mobile military population. These support programs should receive substantial amounts of APF support, but differ from that in Category A, in part, because of their ability to generate NAF revenues. That ability to generate revenue is limited; however and in no case may they be sustained without substantial APF support. Most outdoor recreation activities, including hunting and fishing, are Category B.

Category “C” Mission - Revenue-Generating Activities have less impact on readiness. They offer desirable social and recreational opportunities. Activities in this group have the capability of generating enough income to cover most of their operating expenses, but they lack the ability to sustain themselves based purely on their business activity; consequently, they receive limited APF support. The Riding Stables are a Category C activity affected by this plan.

Fort Rucker is required to have an Outdoor Recreation Plan, which is a joint responsibility between DFMWR and DPW. This INRMP, especially this chapter, is that Outdoor Recreation Plan.

3.13.2 Military Mission Considerations

The military mission has priority over all outdoor recreation with respect to range access. The Fort Rucker Outdoor Recreation Advisory Council is used to help resolve conflicts between military mission requirements and hunting and fishing aspects of outdoor recreation. The impact area is off-limits for all recreation programs.

3.13.3 Lake Tholocco

The Outdoor Recreation program at Fort Rucker was originally organized around Lake Tholocco when it was constructed around 1940 by the communities of Daleville, Ozark, and Enterprise.

With the establishment of Camp Rucker in 1942 came the need for outdoor recreation for troops based and trained at the new installation. From the 1940s to 1990s, various structures were built to improve on recreational activities around the lake including piers,

picnic pavilions, a marina, a rental facility, a snack bar, storage areas, and the Wildlife Administration Building. Total accountable money invested for construction of facilities from 1946 through 1990 totals \$505,870. Lake Tholocco flooded and the emergency spillway eroded through to the reservoir and drained the lake on March 17, 1990.

On October 22, 1999 a ground restoration ceremony was held to mark the beginning of the reconstruction of Lake Tholocco. Major General Anthony R. Jones, commander of the U.S. Army Aviation Center, lead the effort to ensure the restoration of the lake and its surrounding recreational facilities. In September of 2003, DFMWR contracted with Parsons Engineering and Plans Company to complete developmental tasks and prepare a Lake Tholocco Area Development Plan. The development plan covered five general recreation areas based upon location (East beach; Lake Tholocco Marina; West Beach; Singing Pines; and Engineer Beach Recreational Vehicle (RV) Park, with a proposed trail system for hiking and jogging. This plan was reviewed and updated by PBS&J from Panama City, Florida with the USACE, Mobile District office.

The East Beach recreational area proposed 33 cottages, a lodge, pavilion, fishing pier, and infrastructure. The Lake Tholocco Marina area included a new marina on the water, support building, boat storage, paving, two pavilions, playground, and infrastructure. The West Beach area proposed improving the designated swimming area, adding three pavilions, two playgrounds, and infrastructure. The Singing Pines area proposed developing an area for 10 to 12 cabins, a multipurpose building, and infrastructure. The Engineer Beach RV Park area proposed adding 30 RV camp sites and infrastructure. The hiking/jogging trail is proposed to connect the five recreation areas by circling all of Lake Tholocco.

DFMWR utilized this plan to justify projects and to improve the area for outdoor recreation needs of Soldiers and Families. DFMWR began receiving approval for funding to begin construction. In 2004, 30 campsites, with electricity, water, RV camping pad and a new sewage drain field and disposal area was added to the Engineer Beach RV Park area for a cost of \$750,000. In May 2004, Lake Tholocco opened for fishing.

In 2006, DFMWR received approval and funding for \$1,500,000 to begin construction on 12 cabins, infrastructure, and all aspects of utilities for the Singing Pines area. The facilities opened February 2008.

Multiple projects took place from 2008-2009. In 2008, playground equipment was installed at West Beach, Singing Pines, and Engineer Beach RV park areas for a cost of \$112,000. In 2008-2009, the Lake Tholocco Marina was constructed on the west side of the lake for a cost of \$348,000. In 2009, a gazebo was constructed in the West Beach park area for a cost of \$90,000. Also, the West Beach swimming areas was enclosed for a cost of \$115,000. During this time, a renovation project was begun to pave driveways and correct erosion issues at the Singing Pines cabin location. This project cost \$29,000. Singing Pines park area was also provided a boat slip dock area for a cost of \$52,000.

Lake Tholocco is critical to Fort Rucker fishing, important to hunting, and very important to the conservation of biological diversity in general. Outdoor Recreation operates and oversees patron use of four other pond/park areas on the installation as well. This includes Parours, Ech, Buckhorn, and Beaver. The areas are also open for fishing and park activities.

3.13.4 Hunting, Fishing, and Trapping Programs

Hunting, fishing, and general outdoor recreation programs are the responsibility of the DFMWR, Community Recreation Division, and the Outdoor Recreation program. FR Reg. 215-1 (**Appendix 15**), *Hunting, Fishing, Water Safety, and Trapping*, is the primary source of information regarding regulations for these activities.

Hunting pressure has been dropping in recent years. FR Reg. 215-1 requires every hunter to contact Hunt Control to reserve a hunting area at Fort Rucker. The hunter is also required to check in and out of his assigned hunting area and report his kill for the day during all seasons except during the month of February, the end of quail and rabbit seasons.

One-page flyers are frequently used to inform the Fort Rucker angling and hunting public of opportunities for participation on the post. Examples of materials available at the Outdoor Recreation Customer Service Center include:

- *Alabama Tree Stand Safety*, published by the Alabama Department of Natural Resources and Conservation;
- Alabama hunting and fishing regulations;
- 10 Commandments of Firearms Safety;
- Archery range information sheet;
- Skeet and Trap Club information sheet;
- Certified Hunter Education Course information sheet;
- Fishing lakes, ponds, and streams map and directions to get there.

DFMWR updates its website <http://rucker.armymwr.com/us/rucker/categories/outdoor-recreation> regularly to provide current information to patrons. During 2018-2022, Fort Rucker will update and improve methods of informing outdoor enthusiasts of the opportunities available on the installation, as appropriate.

Deer hunting is the most popular consumptive-use activity with the largest number of man-days. Deer hunting on Fort Rucker occurs from 15 October through January. The early part of the season through about 20 November is archery-only, with gun or bow hunting authorized the rest of the season. Some areas are archery-only for the entire season due to safety concerns. Fort Rucker follows State of Alabama guidelines on harvest dates and bag limits, with the exception of the QDM program restrictions.

Fishing is second, although there is no accurate means of recording man-days.

All lakes, streams, and rivers on Fort Rucker are available for recreational fishing, provided they are not closed due to military training, fisheries management, renovation, or other activity. Fish harvest for each body of water is designated by creel, possession, and length limits for each game fish species. Possession and length limits are posted at each managed lake.

Turkey hunting comes next, followed by small game hunting. The early turkey season is from mid-March through the end of April and the late turkey season is approximately 10 days during the latter part of October with a limit of five gobblers per year. A walk-in wild

turkey hunting program has been instituted, with assistance from the National Wild Turkey Federation, to provide hunters with areas where vehicles do not interfere with hunting. These areas are closed to vehicle traffic from 1 March through July to decrease nest disruptions.

Hunting is allowed in Areas A1, E, F, G (North Creek), H (East Creek) and I with shotguns in accordance with FR Reg. 215-1. All hunters must verify the areas are open by checking with Range Operations and contact ODR to sign into the approved hunting areas.

Trapping has a very small participation, although the feral pig program has had widespread participation.

Feral pig numbers are increasing on Fort Rucker, as reflected in the 2015 harvest of over 400 pigs. Since feral pigs are considered an invasive species, there is no closed season on feral pigs except during spring turkey season for safety purposes. During deer archery season, pig hunters must also use archery equipment. There is no daily bag limit. Fort Rucker has instituted a successful feral pig trapping program. Due to competition with native wildlife species, it is the strategy to harvest as many feral pigs as possible from the installation. Feral pig control is discussed in further detail in Section 3.8.3.2.

Some fields have been planted and are managed specifically for dove. Outdoor Recreation uses these fields to sponsor special dove hunts. The installation also uses Alabama duck seasons and bag limits, which are within limits established by the USFWS. Fort Rucker follows the state established seasons and bag limits for the eastern cottontail and swamp rabbit. There is very little demand for rabbit hunting on Fort Rucker.

Computer-generated records at Outdoor Recreation show sales of various hunting, fishing, and trapping permits for each sales year. Also recorded are sales organized by each of the 14 types of purchasers. These include active duty, retired, and civilian communities. Individuals meeting the Alabama criteria as totally disabled and possessing a special annual State of Alabama fishing license for totally disabled persons are permitted to fish on Fort Rucker at no cost. Personnel 65 years of age and older are permitted to hunt, fish, and trap on Fort Rucker at no cost.

3.13.4.1. Growth Potential for Hunting and Fishing Programs

Hunting, fishing, and trapping programs are ultimately tied to the success of the game management program (discussed in Section 3.4.3). There is potential to increase the use of some hunting, fishing, and trapping programs, but fulfilling that potential is not easy in most cases.

There is potential for increases in deer hunting, especially for archery and black powder hunting. In 2011 a recovery program was started for the white-tailed deer as the population was well below carrying capacity. An antlerless harvesting restriction was imposed along with QDM guidelines and aggressive coyote/pig trapping. After 4 years, harvest weights have increased by an average of 20 pounds and high quality bucks are now being harvested with increasing numbers. Turkeys are also increasing throughout Fort Rucker, and there are growth potentials for hunting. Turkey hunters require considerably more space than other hunters, thus the potential for increase is not as great if quality hunting conditions are to be maintained. There is potential for increased feral pig hunting, and this would help keep their numbers reduced. There is especially room

for additional tree stand hunters for feral pigs. Most small game populations vary considerably from year to year due to factors largely out of control of Fort Rucker wildlife managers. Potential for growth of hunting small game is relatively unpredictable, and some of these species have little demand. Hunting, Trapping, and Fishing Regulations

The Alabama Division of Wildlife and Freshwater Fisheries issues regulations for hunters, anglers, and trappers in Alabama, including those who use Fort Rucker. AR 200-1, *Environmental Protection and Enhancement* and FR Reg. 215-1, *Hunting, Fishing, Water Safety, and Trapping*, are primary means of establishing controls on hunting, trapping, and fishing, as well as other natural resources-related activities on Fort Rucker. When hunters purchase their permits, as discussed in Section 3.13.4.1.1, they are also given a copy of FR Reg. 215-1. AR 215-1, *Morale, Welfare and Recreation Activities and Nonappropriated Fund Instrumentalities*, provides the regulatory framework for managing recreational aspects of hunting and fishing on Army installations.

3.13.4.1.1. Fort Rucker Permits

To participate in hunting, fishing, or trapping on Fort Rucker, individuals must obtain appropriate post permits and stamps from Outdoor Recreation. Costs of these permits and stamps are subject to change. In accordance with DoDI 4715.03, the installation must use the same fee schedule for all participants with the exception of senior citizens, children, and the handicapped. Permit fees are used for fish and wildlife management by DPW, Natural Resources in compliance with the Sikes Act, with 10% of these fees going to Outdoor Recreation to offset the cost of selling permits. Tree stand fees are an Outdoor Recreation rental service. The use of permit funds for fish and wildlife management (90 percent of Sikes Act fees) is described in Section 4.4.2.

3.13.4.1.2. State License Sales

Persons are responsible for obtaining Alabama hunting, fishing, or trapping licenses before obtaining post permits. The Outdoor Recreation Branch sells state licenses, but it does not sell Federal or State waterfowl stamps. The sale of State and Post licenses/permits/stamps is facilitated using a microcomputer, which reduces sales cost, administrative overhead, and printing costs as well as provides immediate access to records for safety and law enforcement purposes. Outdoor Recreation receives a \$0.25 fee for each State license sold.

3.13.4.1.3. Check-out and Clearing Procedures

Fort Rucker Regulation 215-1 outlines specific requirements of hunters, anglers, and trappers for check-out and clearing procedures. This regulation can change frequently, the most current version is available at the Fort Rucker MWR website: <https://rucker.armymwr.com/us/rucker/programs/hunting-and-fishing>. All hunting is controlled through the iSportsman system, which is an automated system. No hunting is allowed during Thanksgiving, Christmas, and New Years' Day. Range Operations notifies Outdoor Recreation of areas open or closed to hunting daily, subject to aircraft/training changes. Hunters are required to use the iSportsman system prior to hunting and following hunting to clear the area. Hunters are also required to call Range Operations

prior to hunting to confirm areas are open at times other than during deer season. Harvested deer and turkeys must be registered through the weigh-in stations.

Anglers are not required to check-in or check-out. When ponds or streams are closed for any reason, notices will be placed on the Outdoor Recreation web site.

Trappers are required to check with Range Operations and utilize the iSportsman system prior to entering areas for trapping. Trapping is only allowed in open training areas. Trappers must check with Range Operations and iSportsman each day to determine if areas with traps are open the following day. If they are to be closed for training, all traps in areas to be closed must be removed prior to that day. This provision is very restrictive, and it is a primary reason for the extremely limited use of traps on Fort Rucker. FR Reg. 215-1 includes additional trapping provisions including the requirement to report take to the Fish and Wildlife Section.

3.13.4.1.4. Hunting/Fishing Maps

Fort Rucker maps are essential for hunter and angler use of range areas. These maps are included in FR Reg. 215-1, and are distributed to hunters and anglers upon purchasing a Fort Rucker Permit. These maps feature off-limits areas, hunting areas, fishable ponds and streams, and training areas. In addition, Outdoor Recreation Branch has a single-page map of ponds and streams open to fishing.

3.13.4.1.5. Safety Considerations

Hunters born on or after 1 August 1977 must satisfactorily complete a State-certified hunter education course before being authorized to purchase a Fort Rucker hunting permit. In addition, all persons who hunt on Fort Rucker are required to view a safety film prior to purchasing post permits. Dogs may not be used on Fort Rucker for deer drives. FR Reg. 215-1 contains many references to hunting, fishing, and water safety practices and requirements.

Privately Owned Weapons Security

The Army, in general, is concerned over the security of privately owned weapons. Many of these are used for hunting. At Fort Rucker, FR Reg. 190-31, *Crime Prevention Program*, and FR Reg. 600-1, *Prohibited and Regulated Conduct*, provide means for commanders to designate where soldiers store their privately owned weapons. Military hunters who live on post must abide by these weapons storage decisions.

Organized Hunts and Fishing Tournaments

The Outdoor Recreation Advisory Council Hunting Chairman, along with the Fish and Wildlife Administrator, Chief Game Law Enforcement Officer, and Manager, Outdoor Recreation Branch are designated agents for the coordination, supervision, and approval of group hunts.

Fort Rucker hunters participate in the Buckmasters Project Venison annually. Through this program, hunters provide extra game meat to deserving underprivileged persons.

3.13.5 Lake Tholocco and Other Ponds

From the 1940s to 1990s, various structures were built to improve on recreational activities around Lake Tholocco, including piers, picnic pavilions, a marina, a rental facility, a snack bar, storage areas, and the Wildlife Administration Building. Lake Tholocco flooded and the emergency spillway eroded through to the reservoir and drained the lake in 1990. In 1999, a ground restoration ceremony was held to mark the beginning of the reconstruction of Lake Tholocco. The restoration project included numerous fishery improvements, including construction of 10 islands and two jetties, installation of fish attractors, and the construction of ditches with adjacent concrete rubble piles. In the upper portion of the lake, where trees were not removed, navigation paths and openings were created for access and structure. Spawning areas have been created using pea gravel in four to six feet of water.

The gate to the lake in 2001 was closed and the process of refilling the lake began. The installation rebuilt facilities within and surrounding the lake, including renovations to the East and West Beach gatehouses, Engineer Beach bathhouse, Singing Pines cabins, restrooms on East and West Beach, Outdoor Recreation Office and Equipment Issue facility, boat ramps, and Snack Bar/Game Room Facility. New additions included a new restroom facility built in the marina area, poles for erosion on East and West beaches, 2 new fishing piers with lights (one East Beach and one West Beach), 3 new finger piers (2 Marina area and 1 East Beach), swimming enhancements and the creation of a development plan.

The lake was restocked in 2002 with bream, bluegill and shell cracker hatchlings, along with largemouth bass, hybrid stripers and channel catfish, and was reopened April 2002.

The 640-acre lake provides opportunities for outdoor activities to include fishing, wind surfing, jet skiing, canoeing, swimming and hunting.

The 2003 Lake Tholocco Area Development Plan covered five general recreation areas based upon location (East beach; Lake Tholocco Marina; West Beach; Singing Pines; and Engineer Beach RV Park), with a proposed trail system for hiking and jogging. Over the years, this plan has been used as the basis for projects around the lake.

Four ponds (Parcours, Ech, Buckhorn, and Beaver) are also open for fishing. Parcours is limited for youngsters 15 years and under. Outdoor Recreation operates and oversees patron use of the four pond/park areas.

3.13.6 Other Natural Resources Oriented Outdoor Recreation

Fort Rucker has a plethora of natural resources-related recreational activities other than hunting, trapping, and fishing. These range from more passive activities such as picnicking, wildlife watching, nut and berry picking, and nature photography to more active recreational outlets such as hiking, horseback riding, recreational shooting, and camping.

3.13.6.1. Camping and Picnicking

Fort Rucker has one travel camp with 18 rustic and 30 modern campsites for recreational vehicle or tent camping. Sites have water and electrical hookups. A rest room with showers and a recreational vehicle dumpsite are also available at the camp.

There is a one-way loop access road that generally follows the existing outer loop of the facility. The existing latrine, pump-house, and lake-front pavilion are to be preserved. The RV sewage dump station will remain in the existing location with improved access (asphalt) and increased capacity (1,000 gallon). The park includes 16 drive-through and 14 back-in campsites.

The post has five picnic and playground areas with an annual usage by 120,000 military and civilian personnel. Areas around fishing ponds are maintained and mowed. There are plans for latrines at Beaver and Buckhorn lakes, both of which are popular recreation sites.

3.13.6.2. Boating and Canoeing

Boating and associated water activities are important aspects of the Outdoor Recreation program and have increased tremendously with the restoration of Lake Tholocco. The post has four concrete boat launch ramps at Lake Tholocco. Repairs to the ramps were completed in 2001 by the 46th Engineers prior to the refilling of the lake. Ramps at the Marina and Engineer Beach were extended for improved access.

A canoe trail has been developed along Claybank Creek and Blacks Mill Creek. This canoe trail still needs work, but it can be used following rainfall.

Since the restoration of the lake, Outdoor Recreation has added 4 pontoon boats, 4 fishing boats and 4 wakeboards to the fleet that are available for issue. An 18-boat covered slip marina, with electricity is available for customers for boat storage.

3.13.6.3. Nature Trails and Watchable Wildlife

Although there are many opportunities to observe wildlife at Fort Rucker, there are some special projects planned to facilitate the observation of wildlife.

A nature trail on the banks of Claybank Creek allows people to observe many native species of birds and game animals. Numerous blue bird houses were constructed and placed in the rough areas of the golf course and various other locations throughout Fort Rucker. In addition to the nature trails, there are numerous locations on the post where one might observe or photograph wildlife.

Fort Rucker has also established a Watchable Wildlife area on a former 9-hole golf course. The project consisted of tree planting, construction of wildlife feeders, development of supplemental feed plots, an interpretative nature trail, and observation blinds.

Artificial nest structures and plantings designed to benefit wildlife may be established and maintained at appropriate areas near campgrounds and outdoor recreation areas.

3.13.6.4. Outdoor Equipment Checkout

Outdoor Recreation operates an outdoor equipment checkout center. For reasonable fees personnel may obtain camping, boating, jet skiing, and other assorted outdoor recreation equipment for designated time periods. Funds received from the Army Community of Excellence were utilized to acquire new equipment and needed items for the checkout facility. Equipment is now updated each year with items desired by Army

patrons. With the reopening of Lake Tholocco, boats have been procured for patron use. Boats, camping equipment and canopies are presently the most popular requested items.

3.13.6.5. Recreational Shooting

Recreational shooting is an important aspect of the Fort Rucker outdoor recreation program. The post has a skeet range and an archery range. The skeet range is the responsibility of DFMWR, but it is rented and operated by a private organization, the Fort Rucker Skeet and Trap Club. The facility includes six skeet ranges, two trap ranges, and a clubhouse. In FY-1995, the post spent \$7,000 for new trap machines for this facility. It is generally open weekends and holidays.

The archery range is operated and maintained by an approved private organization, the Southeast Alabama Archers club. The facility has a National Field Archery Association style range with an 80-yard practice/zero range. The club has field, hunter, animal, and 3D shoots. The facility is located at Lake Tholocco.

3.13.6.6. Riding Stables

In 1986, a new Fort Rucker Riding Stables was opened under the auspices of DFMWR to replace an aged facility operated by a private association. The Riding Stables includes 80 stalls with paddocks, 18 box stalls, three transient barns with 72 stalls, a farrier shed with a double wash rack, two hay barns, a clubhouse with office and kitchen, three lighted arenas, three pastures, two round pens, and over 50 miles of trails. About 2,000--3,000 trips on horse trails are made annually.

Retirees and "other status" users of the Riding Stables are important to the cohesiveness of the Riding Stables, due to the transitory nature of active duty Soldiers. It is open to virtually all members of the Fort Rucker community, and approximately half of the horse stalls are rented by active duty personnel.

The Riding Stables are operated by one full-time Program Manager and staff. Funds for operations come from patrons fees for boarding.

3.13.6.7. All-Terrain Vehicles

All-Terrain Vehicles and other ORVs have great potential to damage natural resources. Army Regulation (AR 200-1) is very restrictive on the use of ORVs for recreation. No off-road driving is allowed on Fort Rucker. Vehicles commonly used as ORVs must remain on gravel or paved roads. Exceptions to this policy include handicapped hunters, military use, law enforcement, retrieval of deer by Area Guides, and Natural Resources Branch activities.

3.13.7 Recreation and Ecosystem Management

A basic tenet of ecosystem management is the "human values and use" component. Fort Rucker's outdoor recreation program affects ecosystems in terms of both products (fish and game species harvested and plant products) and disturbance associated with recreational use. Fort Rucker is aware of the over-riding need to ensure these activities do not significantly impact overall ecosystem integrity. Activities such as game harvest, horseback riding, recreational shooting, and water sports, are closely monitored by NRB,

ODR, GLE and ENV staffing for impacts on ecosystem integrity. Special consideration will be given to protection of critical areas (nesting sites, highly erodible areas, etc.) from negative impacts due to outdoor recreation.

3.14 Wildlife Aircraft Strike Hazard

The purpose of the WASH Plan, is to minimize aircraft exposure to potentially hazardous bird strikes or strikes with other wildlife. The plan is designed to:

- Establish procedures to identify high-hazard situations and to aid supervisors and pilots in altering/discontinuing flying operations when required
- Establish aircraft and airfield operating procedures to avoid high-hazard conditions
- Provide for disseminating information to all assigned and transient pilots on bird hazards and procedures for bird avoidance
- Establish guidelines to decrease airfield attractiveness to birds
- Provide guidelines for dispersing birds when they occur on the airfield
- Establish a Bird Hazard Working Group and designate responsibilities to its members
- The plan addresses hazards from resident and migratory bird species.

3.14.1 Objectives

- Clarify the roles and responsibilities of Natural Resources with the WASH program
- Establish protocol for how Natural Resources supports the WASH program for bird and wildlife control, and vegetation management near airfields

Birds and wildlife have the potential to cause millions of dollars in damage to aircraft as well as the loss of human life of aircrews and passengers. DPTMSEC is the office of primary responsibility for monitoring and implementation of the *WASH Plan*. Natural Resources provides support as requested with bird and wildlife issues at the airfields.

3.15 Wildland Fire Management

Fort Rucker's Integrated Wildland Fire Management Plan (IWFMP) was developed to ensure that the fire management program and military activities are integrated and comply with federal stewardship requirements. The four major functions involved in the forest management program involve; fire detection, fire suppression, prescribed burning, and trail/firebreak maintenance.

3.15.1 Objectives

Wildfire Suppression

- Train and maintain staff that is properly training and has proper equipped with latest technology in PPE and vehicles.
- In fire management planning utilize the National Fire Danger Rating System.
- Monitor areas and reevaluate areas of special consideration periodically.

- On an annual basis maintain firebreaks (50 miles) and trails on a two to three year basis (200 miles).
- Evaluate the effectiveness and take corrective actions as needed of Alabama's BMPs on forest roads, trails, and firebreaks.
- To prevent fire trespasses on adjoining land owners property detect and suppress fires near the installation boundary promptly.
- When installing firebreaks use Alabama's BMPs for Forestry.
- Whenever feasible allow wildfires to burn to avoid unacceptable smoke management risks, but suppression of some fires will be necessary to protect personnel and facilities.
- Do not plow firebreaks, maintain through other means (USFWS Biological Opinion, September 2002).
- Establish and develop a strategy for the management of wildfires defining what fires are suppressed and what fires are allowed to burn.
- Monitor the impacts of fire on hardwood communities.

Prescribed Burning

- Maintain a realistic training environment and to support the habitat needs of listed and other species of conservation concern use prescribed burns.
- Restore and maintain longleaf pine communities, enhance overall plant community diversity, and support habitat management needs of the Gopher Tortoise.
- Prioritize prescribed burns to the extent achievable within a military training environment to best reflect the goals of longleaf pine ecosystem restoration and listed species recovery or maintenance.
- Prioritize prescribed burns based on concerns and recommendations for forest decline management with regard to frequency, timing, and intensity of prescribed burns.
- Monitor the effects of prescribed burning on hardwood control, longleaf pine regeneration, rare plants, and native herbaceous species recovery.
- Monitor the effects of prescribed burn frequency, timing, and intensity on forest decline.
- Develop an educational program to increase the public's awareness of the benefits of prescribed fire within the framework of sound silvicultural practices.
- Apply prescribed fire to top kill small hardwoods that consistently encroach into pine dominant stands, to reduce fuel loads and fire intensity (thus providing a safer environment for military training), to prepare sites for tree planting and timber marking, to enhance wildlife habitat by improving the quality and quantity of food, and to promote a longleaf pine ecosystem with biological diversity.

- Maintain open understories and improve accessibility for troop training and recreational opportunities through prescribed fire.
- Restore pyrophytic grasses and other native plants characteristic of the understory of the longleaf ecosystem by introduction or by the use of prescribed fire.
- Use an adaptive management approach to introduce fire to other hardwood communities that depend on fire for their maintenance and do not purposely burn bottomland hardwood communities.
- Maintain and/or restore natural ecotones between wetlands and uplands use fire.
- Use fire and other silvicultural activities as the primary management tools to conserve ecotones between pine and hardwood communities in upland, slope, and bottomland sites by using fire and other
- Use existing natural and previously constructed, human-made firebreaks as much as possible; if new firebreaks are needed, avoid placing them in ecotones. Let fire determine the characteristics of ecotones, except when detrimental to listed plant species or native plant communities.
- Maintain trails, firebreaks, and roads consistent with Alabama's BMPs for Forestry.
- Promote public acceptance and, in cooperation with the USFWS, develop and implement a public relations campaign to inform the public of the benefits and necessity of prescribed burning.

3.15.2 Responsibilities

As required by IMCOM, the Fort Rucker Forestry Section has an IWFMP that was approved on 13 January 2015. The IWFMP coordinates plans and actions between the Forestry Section, the Fire Department, and Emergency Services. The prescribed burning program is an integral and essential part of this INRMP, as an aggressive prescribed burning program is the most important and effective tool in minimizing wildfire potential. The IWFMP was developed to reduce wildfire potential, effectively protect and enhance valuable natural resources, and implement ecosystem management goals and objectives. The IWFMP directly supports installation missions and is consistent with installation emergency operations plans.

Currently, the DPS Fire Department and DPW Natural Resources share responsibility for prevention and suppression of wildfires. NRB is responsible for prescribed burning and the establishment and maintenance of firebreaks. Section 3.5.7.2 describes prescribed burning activities for wildlife management and forest management. As outlined by Army Wildland Fire Policy Guidance, the Garrison Commander will appoint a Wildland Fire Program Manager who is responsible for the updates to the IWFMP. Currently, the Wildland Fire Program Manager is the Installation DPS, Fire Chief. The Wildland Fire Program Manager reviews and approves burn plans for prescribed fires to insure consistency with IWFMP, the INRMP, and any other applicable operating instructions.

3.15.3 Forest Fire Record

The table below indicates the forest fire (wildfire) record on Fort Rucker since 1951. Forest fires have become almost inconsequential since 1988, largely due to the controlled burning program. The table below does not include fires within the impact area unless they required suppression response (a rare occurrence).

Table 3-10 Forest Fire (Wildfire) Record

Fiscal Year	Average Number of Fires	Average Acres Burned	Average Acres/Fire	Average Reportable Fires	Average Impact Area Fires*
1950-1959	9.56	376.89	12.24	1	1.33
1960-1969	19.9	116	8.07	0.9	2.3
1970-1979	16.1	112	7.45	1.6	2.5
1980-1989	8.7	127.91	9.18	1.9	1
1990-1999	1.5	3.15	1.43	0.7	0.1
2000-2009	2	14.9	5.5	1.9	0.2
2010-2014	0.2	0.05	0.05	0.2	0

The Fiscal Year started in 1951.

In 1979 the change in fiscal year that added three month (July –September)

* Requiring suppression responses.

3.15.4 Fire Prevention and Suppression

March through October is the main wildfire season. Fort Rucker uses three means to limit the extent of wildfires: firebreaks, early detection, and fuel reduction via controlled burning. The primary wildfire prevention technique is reduction of fuel using controlled (or prescribed) burns.

The firebreak system is maintained on a three-year rotation, in conjunction with the three-year prescribed burning program. Boundary firebreaks are twelve feet wide, and timber plantation firebreaks are about ten feet wide. Firebreaks are maintained with a fire plow or dozer blade. Many roads, wetlands, trails, and streams act as firebreaks.

3.16 Training of Natural Resource Personnel

Environmental staff should participate in periodic training courses and workshops to keep up-to-date on natural resource management issues and laws as they relate to natural resources management at military installations. Other environmental and natural resources training activities should be undertaken, as needed, to ensure that natural resources personnel are prepared to handle any land management issues that may occur.

Environmental staff should receive periodic training for implementation of erosion and sediment control measures, forestry management, outdoor recreation, ground maintenance for identification of wetlands, and plants, trees, and shrubs to avoid impacts to key vegetation species and wetland habitats identified in this INRMP for conservation and protection. Training of natural resources personnel is also applicable to fish and

wildlife management at Fort Rucker. Other environmental and natural resources training activities should be undertaken, as needed, to ensure that natural resources personnel are prepared to handle any natural resource management issues that may occur and use of effective best management practices.

3.16.1 Objectives

- Identify personnel with required training needs and schedule training
- Establish tracking system for professional certifications, safety training requirements, wildland fire qualifications, herbicide/pesticide applicator certifications, and other training requirements to ensure they are maintained
- Annually prioritize optional trainings and meetings in accordance with Natural Resources priorities

3.17 Coastal/Marine Management

Not Applicable. Fort Rucker is located in Dale County. Alabama coastal zone extends inland to the continuous 10-foot contour in Mobile and Baldwin Counties (NOAA, 2016).

3.18 Floodplains Management

Floodplains management is the use of preventative measures to limit encroachment into floodplains and to reduce the risk of flooding.

3.18.1 Objectives

- Coordinate with ITAM to provide expertise and support for projects that protect and restore wetlands and floodplains
- Protect the water regime of the “bay swamp” below the beaver dam on Brooking Mill Creek, south of the southeastern perimeter road (sector 38)

Floodplains are lowland areas adjacent to surface water bodies (i.e., lakes, wetlands, and rivers) that are periodically covered by water during flooding events. These areas are protected under Executive Order 11988 (Floodplain Management), and must be considered during NEPA reviews. Areas classified as wetlands or riparian areas are delineated and avoided during timber sales and construction activities. These ecosystems are protected as undisturbed. All timber sale operations are conducted with strict adherence to the Alabama BMP requirements.

4.0 IMPLEMENTATION

INRMP implementation includes, but is not limited to, the following:

- Execute prioritized projects and activities in accordance with specific timeframes identified in the INRMP
- Ensure sufficient professionally trained natural resources management personnel are available to perform the tasks required by the INRMP
- Review the INRMP annually, update goals and objectives, and coordinate changes with regulators, as appropriate

- Document specific INRMP accomplishments undertaken each year

4.1 Process for Preparing Project Prescriptions

Management methodologies are prepared by the program managers and supporting staff. In addition to the actions listed in Section 3.0, additional documentation in the form of work plans, RECs, CXs, and NEPA documents may be created within the framework established by this INRMP. These projects are then reviewed by appropriate staff, approved by the Director of Public Works, and are coordinated with mission personnel. Once approved, projects may be accomplished as permitted by funding.

The USFWS, Daphne, Alabama field office and ADCNR will have opportunities to review the project list approved by the Director of Public works during annual INRMP reviews.

4.2 Achieving No Net Loss

The purpose of this INRMP is to ensure no permanent net loss of military training capability on Fort Rucker's lands as a result of Natural Resource restrictions or actions. At this time, there are no significant restrictions to training because of natural resource issues; however there are constraints which may apply to specific projects or actions as stated in Section 2.1.3. These constraints are typically temporary in nature and can be avoided by proper communication and planning.

4.2.1 Natural Resources Staffing

Fort Rucker's goals and objectives are primarily carried out as duties and responsibilities of the Natural Resources staff. When possible, other organizations, contractors, and volunteers are utilized to supplement Natural Resources staff efforts. Efforts beyond the capabilities of the installation are carried forward as projects to IMCOM for inclusion in the budget review.

Fort Rucker Natural Resources has Two (2) direct funded and Four (4) reimbursable government positions. Due to current IMCOM staffing scenarios, the program supplements the completion of its goals and objectives through contractor support with current annual requirements equivalent to six (6) man-years. Additionally, one (1) man-year of volunteer labor is provided for invasive species control. The grand total of all direct, reimbursable, contract and volunteer manpower for the current Natural Resources program is approximately thirteen (13) man-years. Analysis of labor, program costs, forestry income and recreational income receipts for the current program compared to the desired program needs to reveal a deficit of four (4) man-years.

Current program staffing includes the following positions: One (1) GS-12 Natural Resources Manager, One (1) GS-12 Fish and Wildlife Administrator, One (1) GS-11 Forester, One (1) GS-09 Forestry Technician, One (1) GS-07 Forestry Technician, One (1) GS-05 Forestry Technician and 6 Natural Resources Technical Contractors.

4.3 Use of Cooperative Agreements

Implementation of this INRMP will require active assistance from Fort Rucker's partners, both signatory and otherwise. Section 2.4 indicates agencies, organizations, and others in this category. Specific needs from organizations external to Fort Rucker are indicated

throughout this document. It is impossible for Fort Rucker to hire the specialized expertise needed for some projects within this INRMP. Fort Rucker will require considerable expertise from universities, agencies, and contractors to accomplish some tasks within this Plan. When possible, Fort Rucker will reimburse parties for this assistance.

4.4 Funding

Natural resources management relies on a variety of funding mechanisms, some of which are self-generating and all of which have different application rules. Below are general discussions about different sources of funding to implement this INRMP.

4.4.1 Forestry Funds

Proceeds from the sale of forest products are commonly called P7 funds, and the account is called the Forest Reserve Account, which is centrally controlled. Funds are to be used only for items directly related to management of the forest ecosystem, including timber management, reforestation, timber stand improvement, inventories, fire protection, construction and maintenance of timber area access roads, purchase of forestry equipment, disease and insect control, planning (including compliance with laws), marking, inspections, sales preparations, personnel training, and sales. Fort Rucker is limited to recovering its approved expenses for forest management. The remainder of the money generated by the Fort Rucker forestry program is split 60:40 between the U.S. Treasury and the adjoining counties. AR 200-1 Defense Financing and Accounting Service- Indianapolis Regulation 37-1, Chapter 25 outline collection and expenditure systems.

The Forestry program will generate an average of about \$480,000 annually during 2018-2022. Of this income, about \$450,000 will be required to operate the Forestry program and purchase equipment annually, with the remainder apportioned between the adjoining counties and the U.S. Treasury.

4.4.2 Sikes Act Funds

Sikes Act funds are collected via sales of hunting and fishing licenses. They are authorized by the Sikes Act and regulated via AR 200-1. These funds may be used only for fish and wildlife management on the installation where they are collected. They cannot be used for recreational aspects of fish and wildlife management. They are exempt from the Base Level Commercial Equipment and have no year-end (unobligated funds carry over on 1 October). Fee collection and administration (i.e., printing and issuing the State Sikes Act Permit) costs (not to exceed 10% of the annual Sikes Act revenue) are authorized.

Monies accrued from the collection of Sikes Act Permit fees will be expended in support of the NRB Fish and Wildlife program on Fort Rucker and for no other purpose. Collections and disbursements will be accounted for in accordance with guidance provided for the appropriation titled "Wildlife Conservation, Military Reservations", Army Account 21X5095 (AR 37-100 and 37-108). Unobligated balances shall be accumulated with current fee collections, and the total amount accumulated at the Installation will be available for obligation as apportioned by the Office of Management and Budget.

Army policy encourages financial self-sufficiency with regard to managing game populations on military lands. Fort Rucker is examining options to increase Sikes Act income to maintain the game base for its quality hunting and fishing program.

4.4.3 Agricultural Funds

Agricultural funds are derived from agricultural leases on installations. They are centrally controlled at both Department of Army and Major Command levels with no requirements for spending in the same location where they were generated. AR 200-1 outlines procedures for collection and spending these funds. These funds are primarily intended to offset costs of maintaining agricultural leases, but they are also available for preparing and implementing INRMPs. These are the broadest use funds available exclusively to natural resources managers. They are exempt from BCE limits on the purchase of equipment.

AR-200-1 lists the following uses of agricultural funds:

- Administrative and operational expenses of agricultural leases.
- Initiation, improvement, and perpetuation of agricultural leases.
- Preparation, revisions, and requirements of integrated natural resources management plans.
- Implementation of integrated natural resources management plans.

Services in lieu of payments must provide these same categories of services.

Fort Rucker itself does not normally receive funds from agricultural leases. The agricultural leasing program is handled through the USACE, Mobile District, and their administrative costs in handling the program consume all monies that are generated as a result of the leases.

4.4.4 Environmental Funds

Environmental funds are a special subcategory of Operations and Maintenance (O&M) funds. Compliance with laws is the highest priority for environmental funding. The funding process heavily favors high priority funding projects to return to compliance with federal or state laws, especially if non-compliances are backed by Notices of Violation or other enforcement agency action.

“Must fund” classifications include mitigation identified within a FNSI and items required within Federal Facilities Compliance Agreements. This INRMP is a Federal Facilities Requirement Agreement, and some projects and programs within it are also used to mitigate various military activities.

The total Environmental Fund budget for this INRMP is estimated at \$7,560,911.00 for FY 2018-2022. These estimates will be adjusted, as needed, on a yearly basis.

4.4.5 Other Funds

The only other funding for natural resources programs on Fort Rucker is the use of O&M funds, generally obtained through DPW. These funds are used for erosion control and some fish and wildlife program support. For cost estimation purposes, annual costs of \$30,000 are included from O&M funds for implementation of this INRMP. It is understood

that O&M funds may also be used for other maintenance projects during the next five years.

NAF are used to defray the outdoor recreation costs associated with this INRMP. However, these funds are not specifically included within this plan.

Fort Rucker, IMCOM, the USFWS, and Alabama DCNR recognize that year-to-year congressional appropriations for the implementation of the Army's mission or changes in the Fort Rucker mission resulting from Base Realignment and Closure or Force Drawdown may reflect or necessitate different priorities. If these priorities require deferral, re-direction, or cancellation of anticipated projects or plans, Fort Rucker, in consultation with IMCOM, will determine which projects or plans should be implemented first. In every case, Fort Rucker and IMCOM will ensure that constraints on the military mission are minimized and avoided to the greatest extent possible.

4.4.6 Anti-Deficiency Act Statement

All requirements set forth in this INRMP requiring the expenditure of funds are expressly subject to the availability of appropriations and the requirements of the Anti-Deficiency Act (31 USC Section 131). No obligation undertaken by Fort Rucker under the terms of this INRMP will require or be interpreted to require a commitment to expend funds not obligated for a particular purpose.

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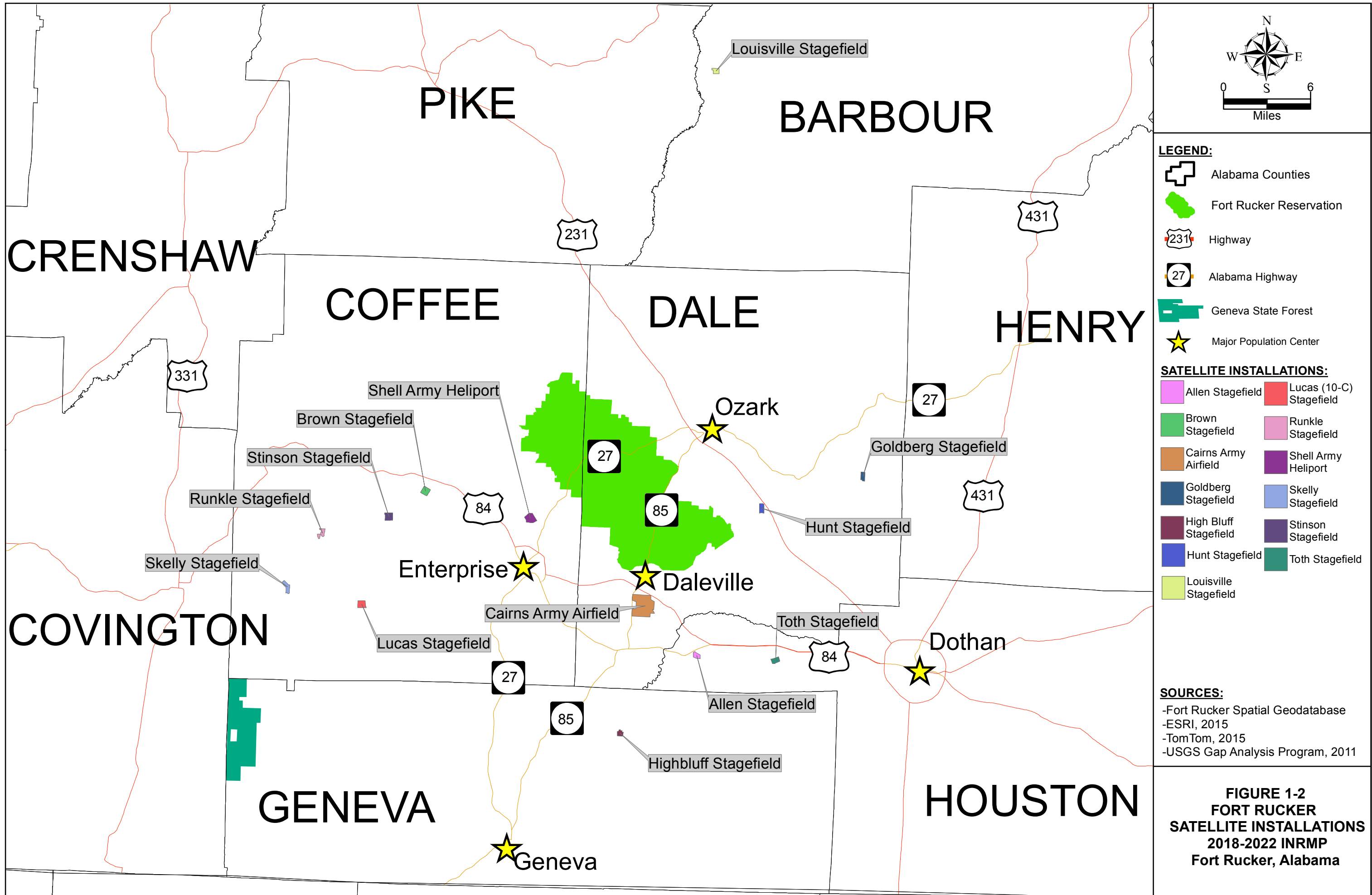
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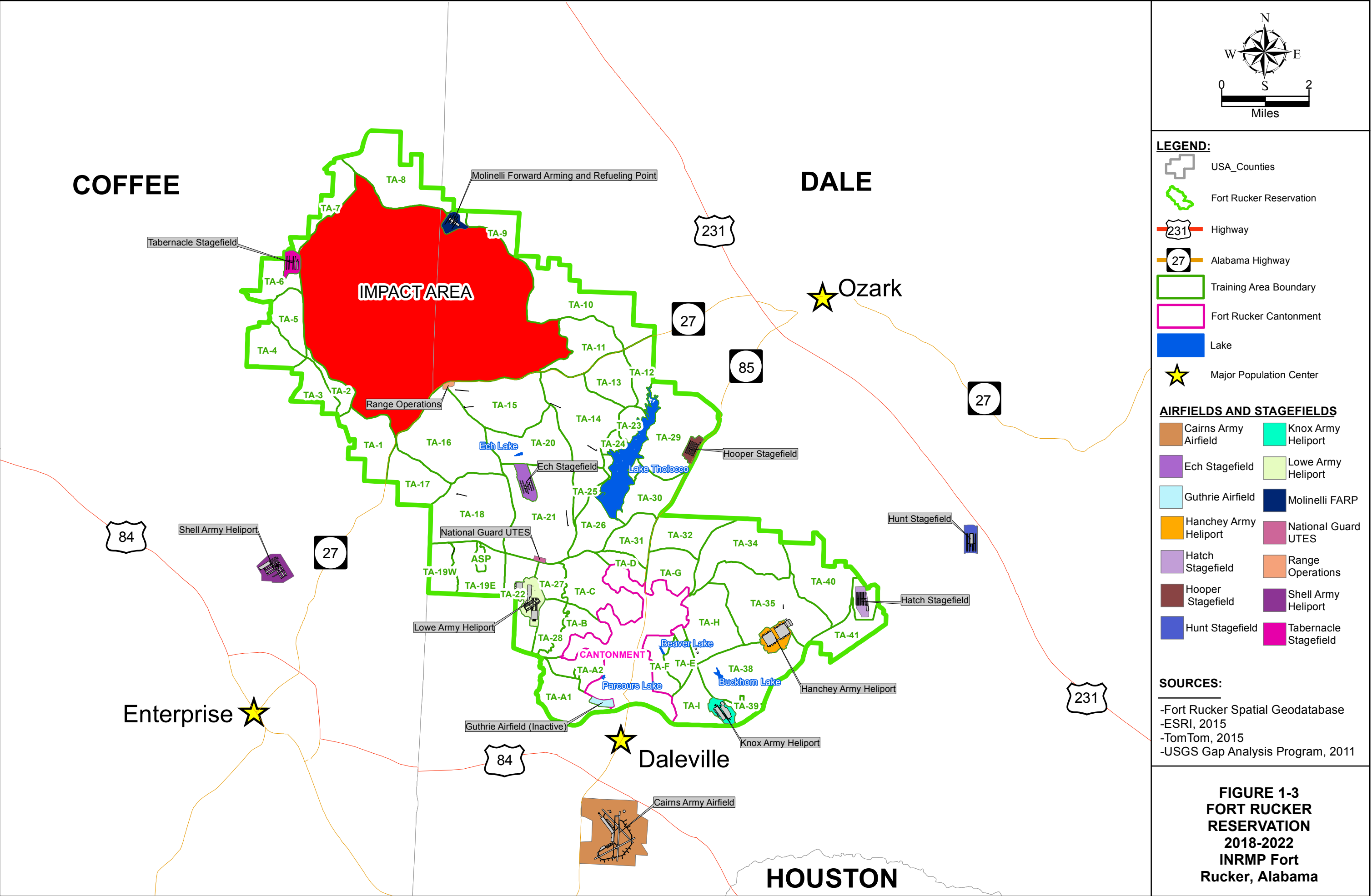
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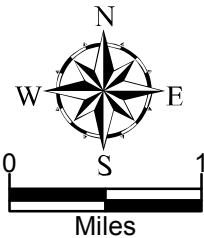
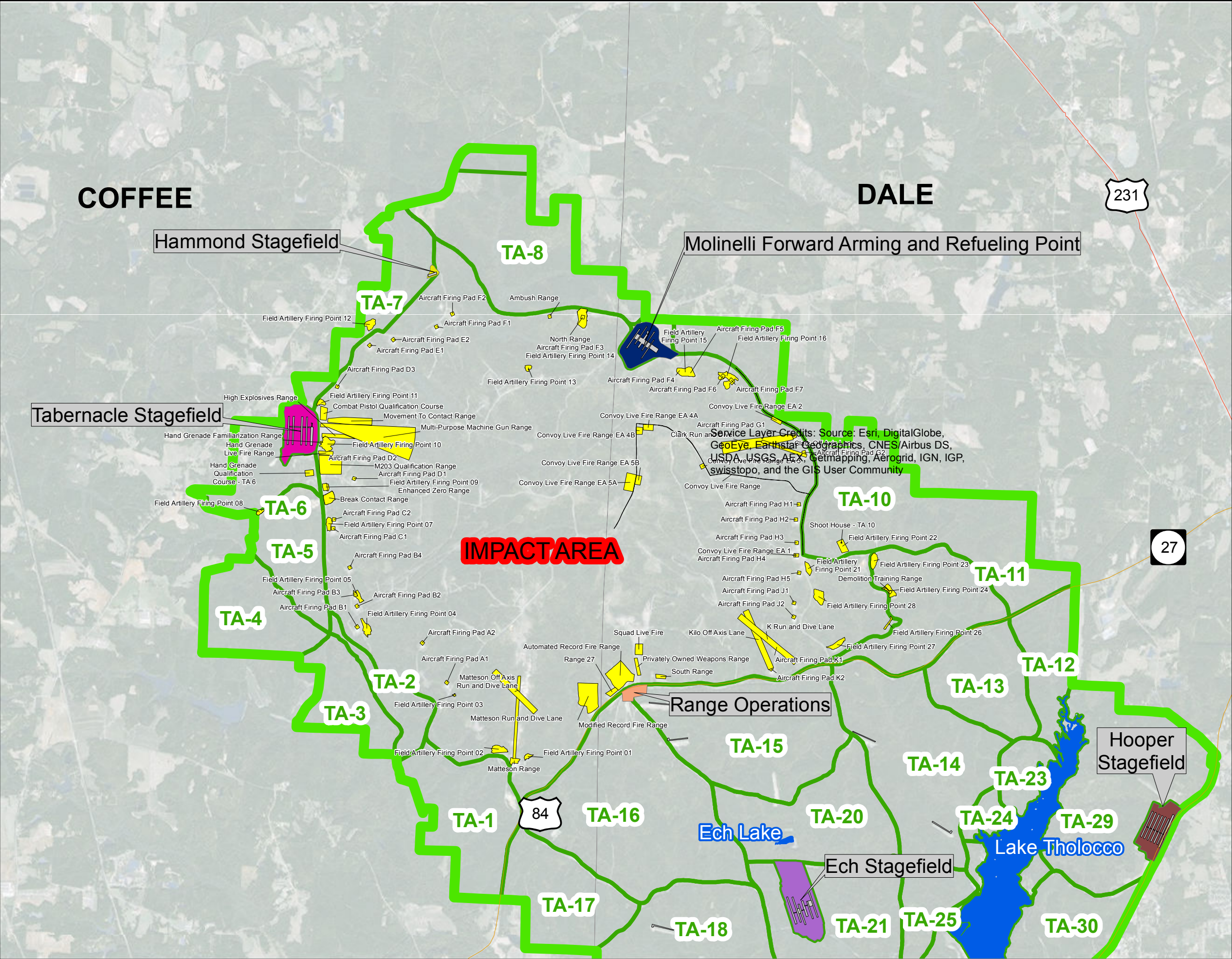
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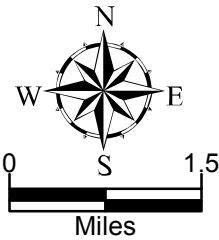
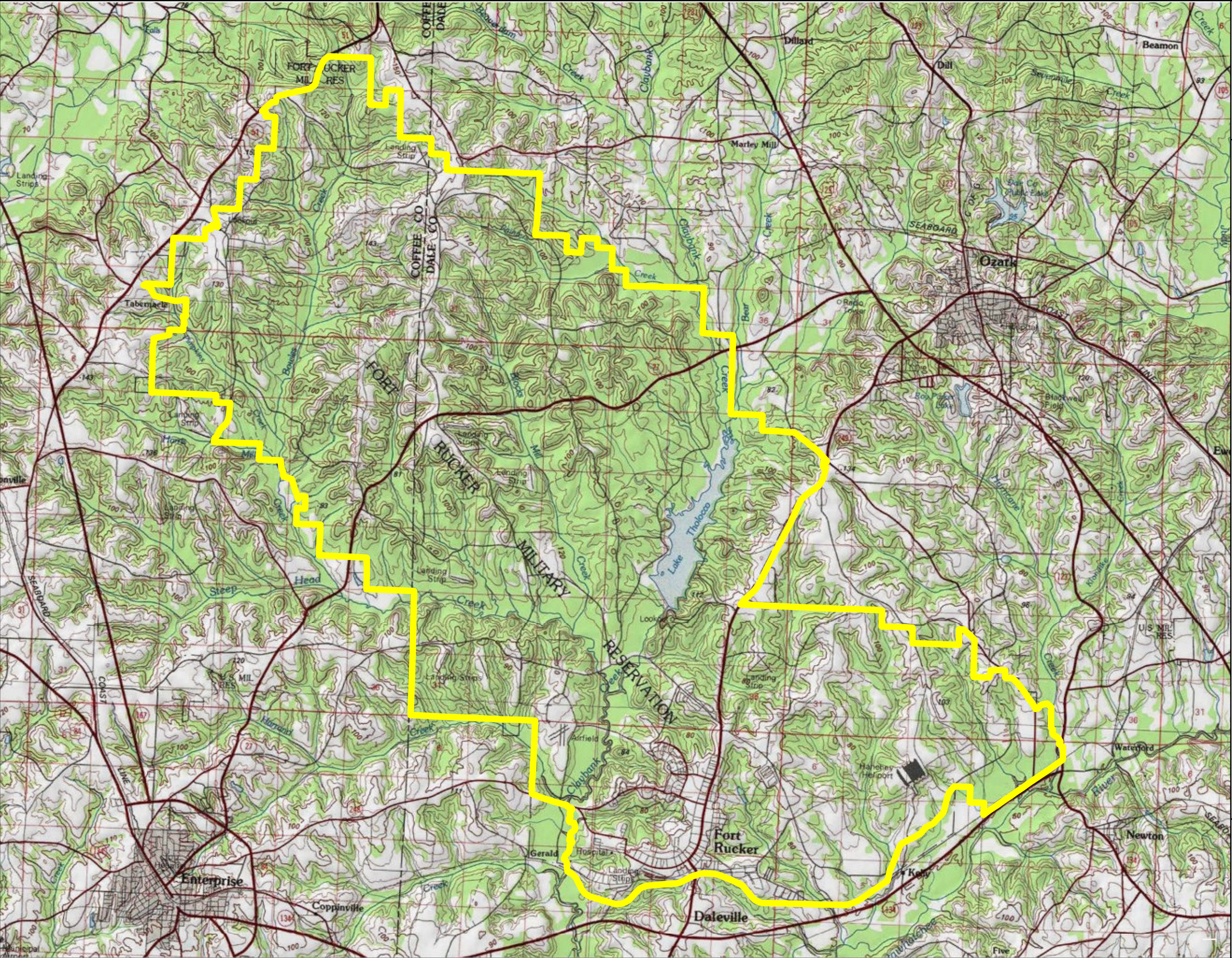



- LEGEND:**
- Alabama Counties
 - Fort Rucker Reservation
 - Current Ranges
 - Highway
 - Alabama Highway
 - Training Area Boundary
 - Lake

- AIRFIELDS AND STAGEFIELDS**
- Ech Stagefield
 - Hooper Stagefield
 - Molinelli FARP Range
 - Operations
 - Tabernacle Stagefield

- SOURCES:**
- Fort Rucker Spatial Geodatabase
 - DigitalGlobe, 2015
 - ESRI, 2015
 - TomTom, 2015
 - USGS Gap Analysis Program, 2011

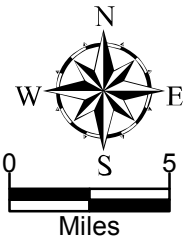
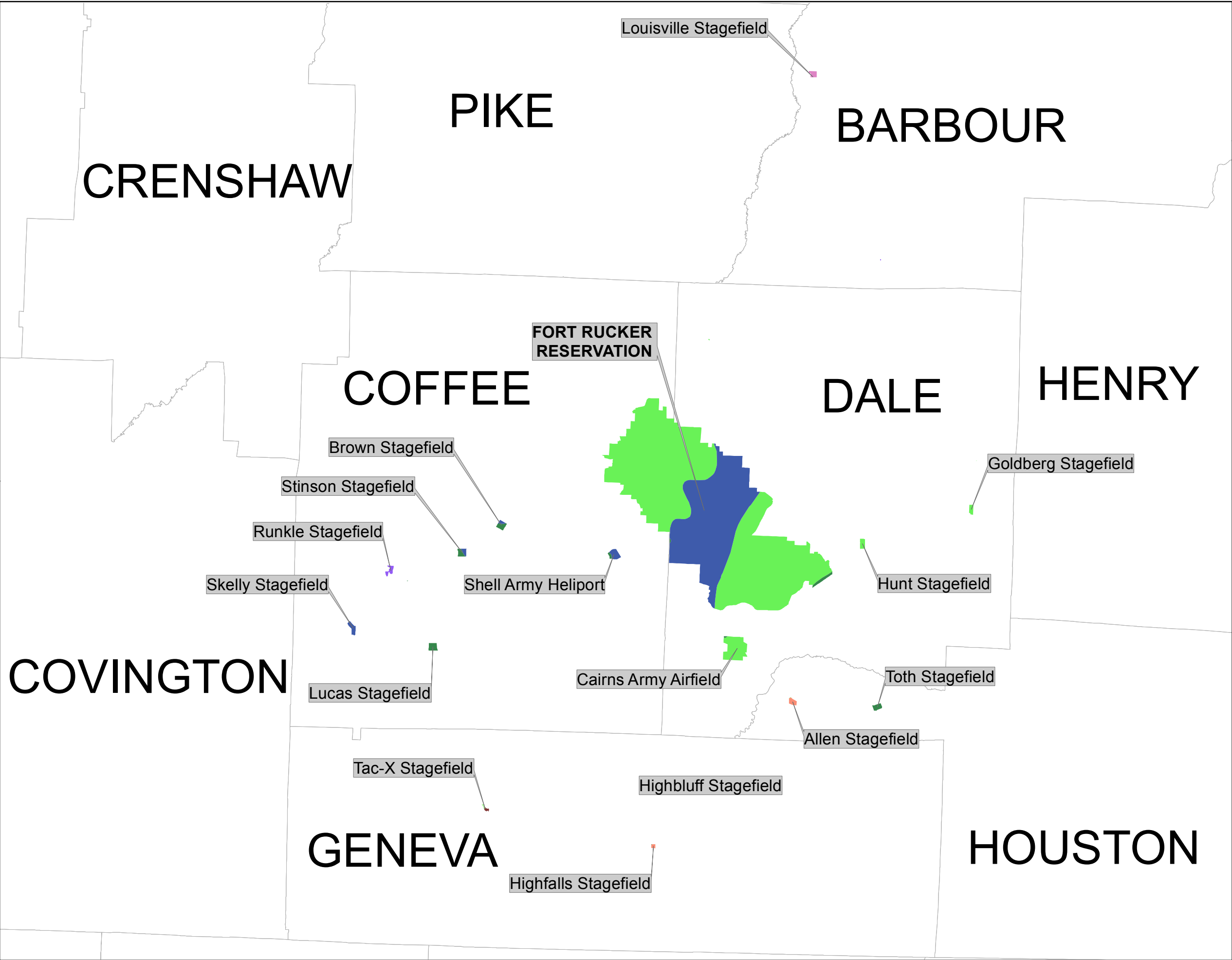
**FIGURE 1-4
FORT RUCKER
FIRING RANGES
2018-2022
INRMP Fort
Rucker, Alabama**



LEGEND:
 Fort Rucker Reservation

SOURCES:
- Fort Rucker Spatial Geodatabase
- National Geographic Society and i-cubed, 2013

**FIGURE 1-5
TOPOGRAPHIC MAP
2018-2022 INRMP
Fort Rucker, Alabama**



LEGEND:

 Alabama Counties

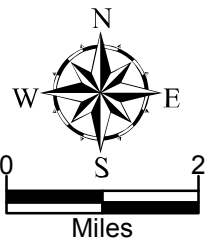
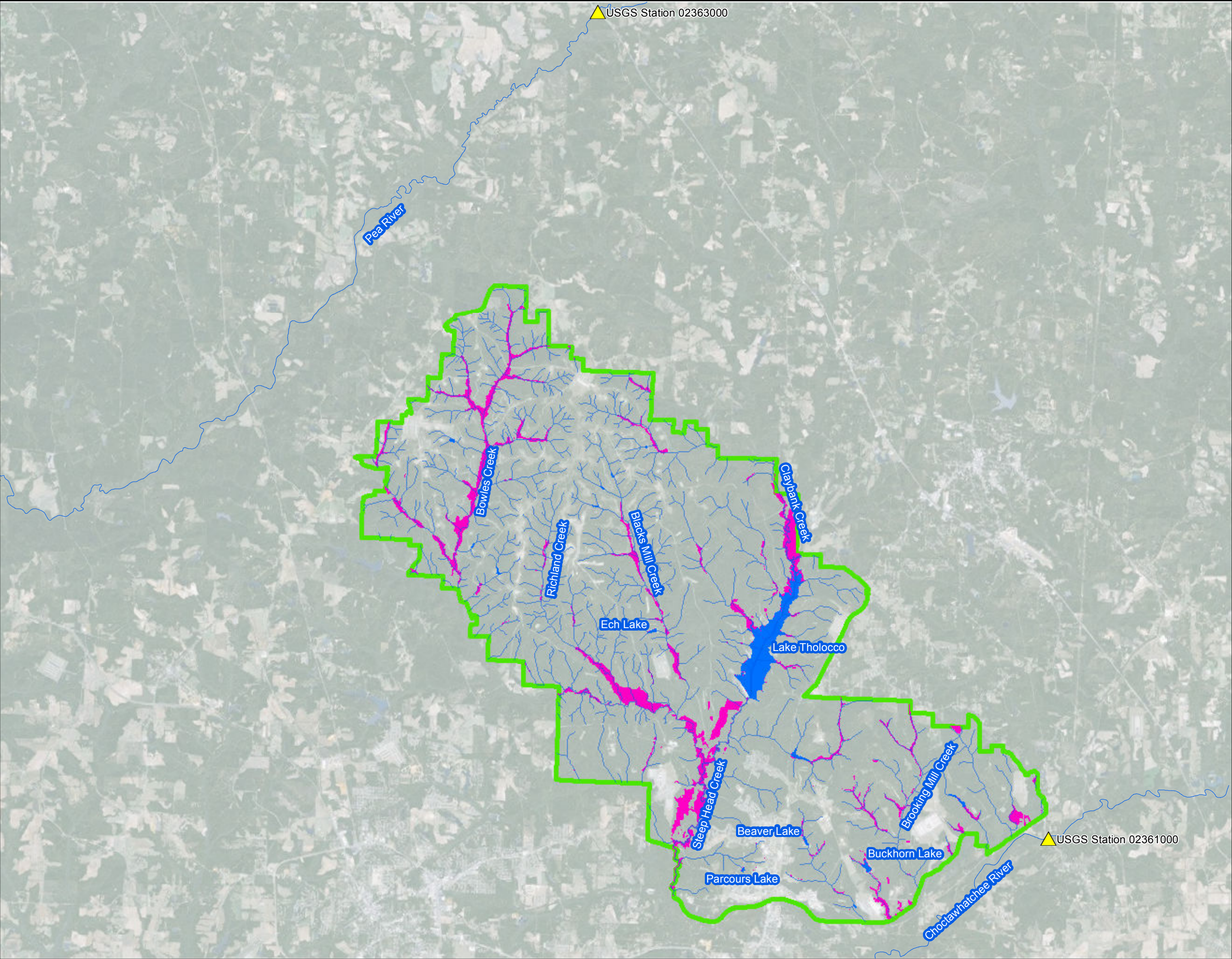
SOIL TYPES

-  Kalmia-Eunola-Bigbee-Bibb-Alpin
-  Orangeburg-Fuquay-Dothan-Cowarts
-  Pickney-Grady-Dorovan-Bigbee-Bibb
-  Rains-Lucy-Fuquay-Dothan-Clarendon-Bonifay
-  Rains-Mantachie-Iuka-Cahaba-Bibb
-  Springhill-Cowarts
-  Troup-Luverne-Conecuh
-  Troup-Orangeburg-Luverne
-  Troup-Orangeburg-Nankin-Lucy
-  Troup-Red Bay-Orangeburg
-  Wahee-Riverview-Chewacla

SOURCES:

- Fort Rucker Spatial Geodatabase
- USDA NRCS, 2015

**FIGURE 1-6 SOIL
SERIES
2018-2022 INRMP
Fort Rucker,
Alabama**

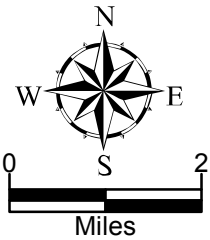
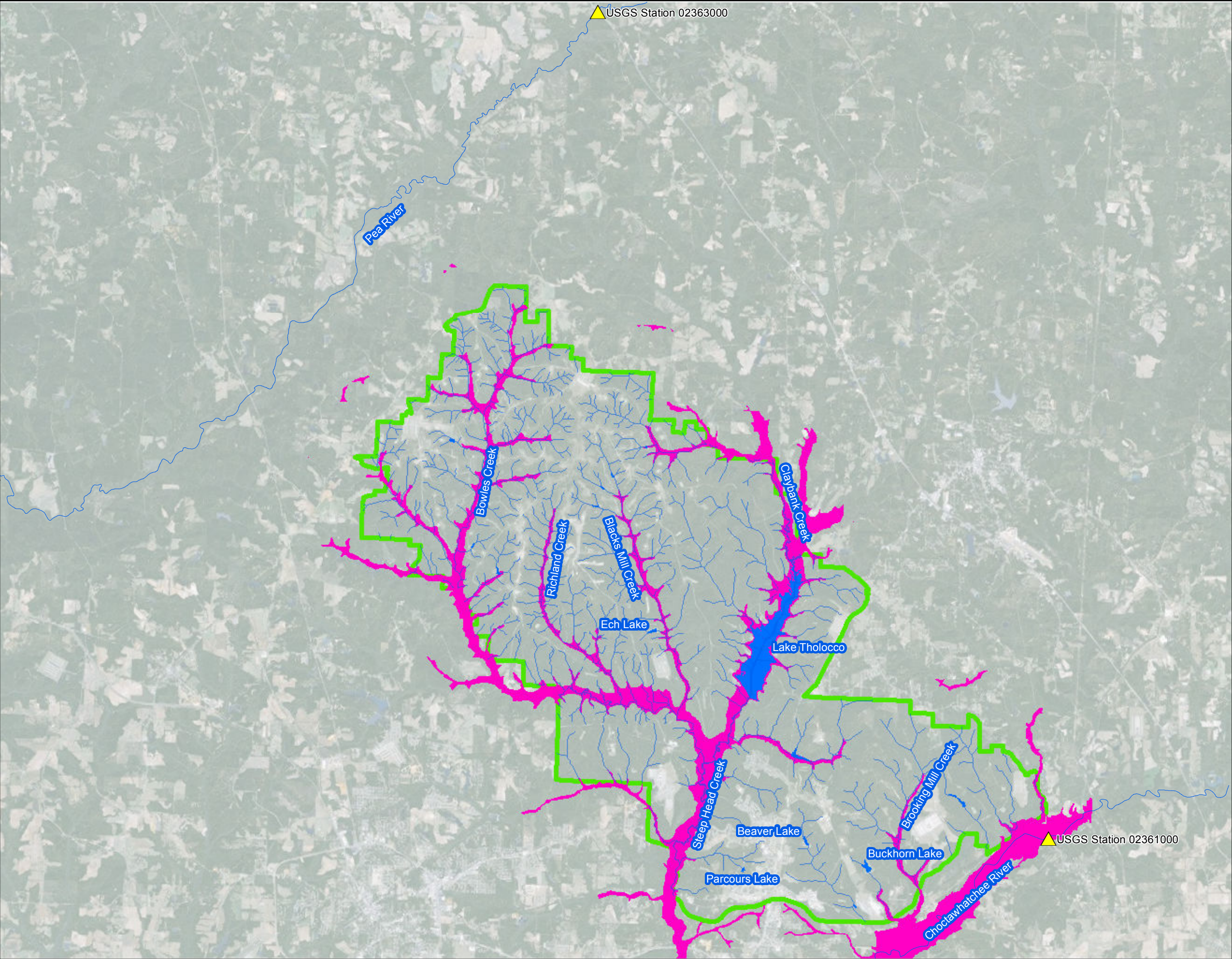


- LEGEND:**
- Wetlands
 - Water Bodies
 - USGS Stations
 - Fort Rucker Reservation

SOURCES:

- Fort Rucker Spatial Geodatabase
- DigitalGlobe, 2015
- ESRI, 2015
- USGS Water Data for the Nation, 2015

**FIGURE 1-7
WETLANDS
2018-2022 INRMP
Fort Rucker,
Alabama**

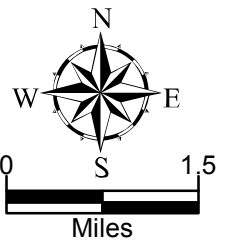
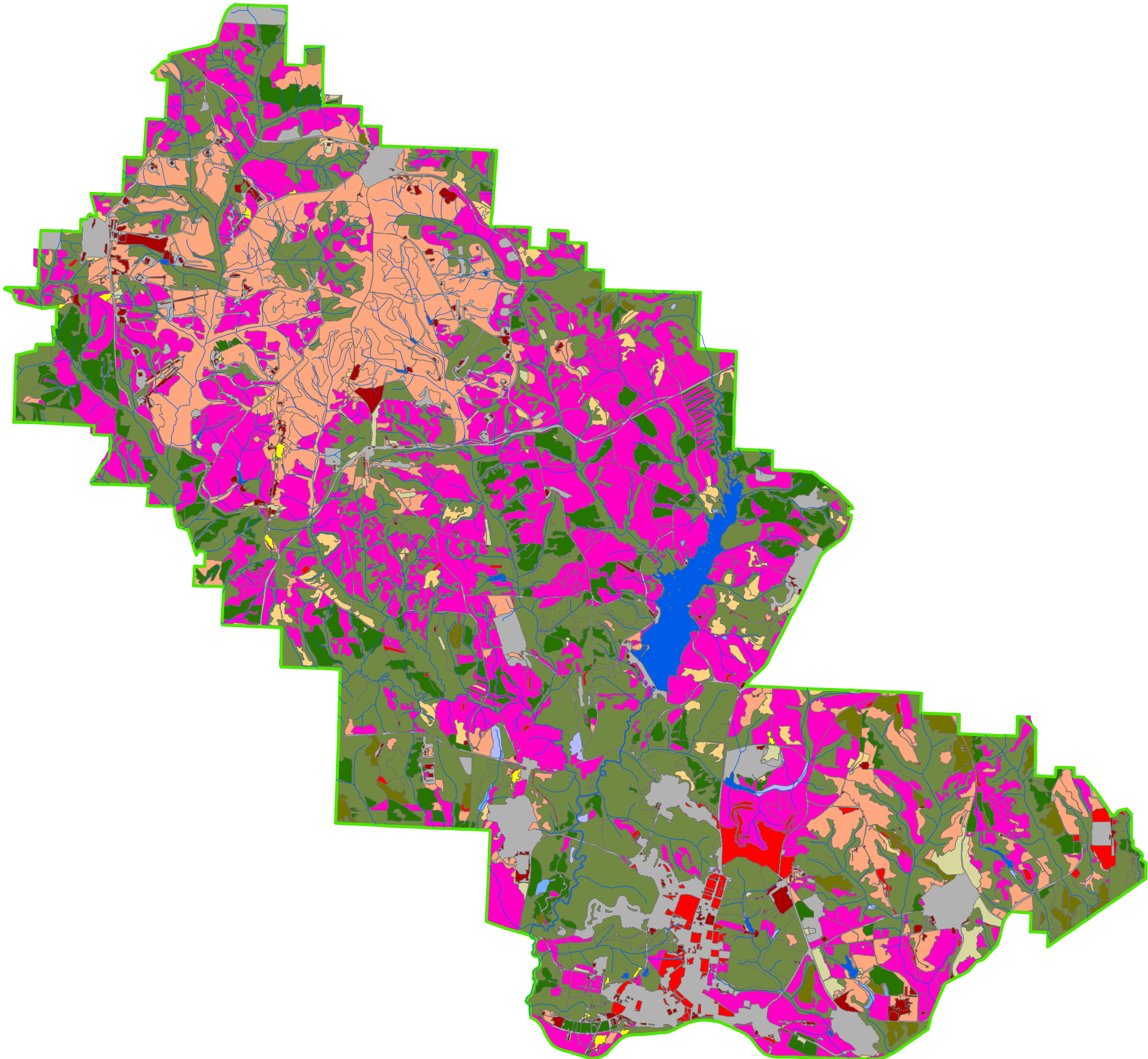



- LEGEND:**
- 100 Year Floodplains
 - Water Bodies
 - USGS Stations
 - Fort Rucker Reservation



SOURCES:

- Fort Rucker Spatial Geodatabase
- DigitalGlobe, 2015
- ESRI, 2015
- USGS Water Data for the Nation, 2015

**FIGURE 1-8
FLOODPLAINS
2018-2022 INRMP
Fort Rucker,
Alabama**

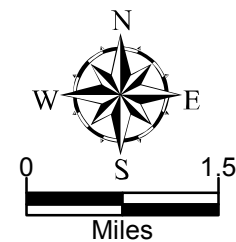
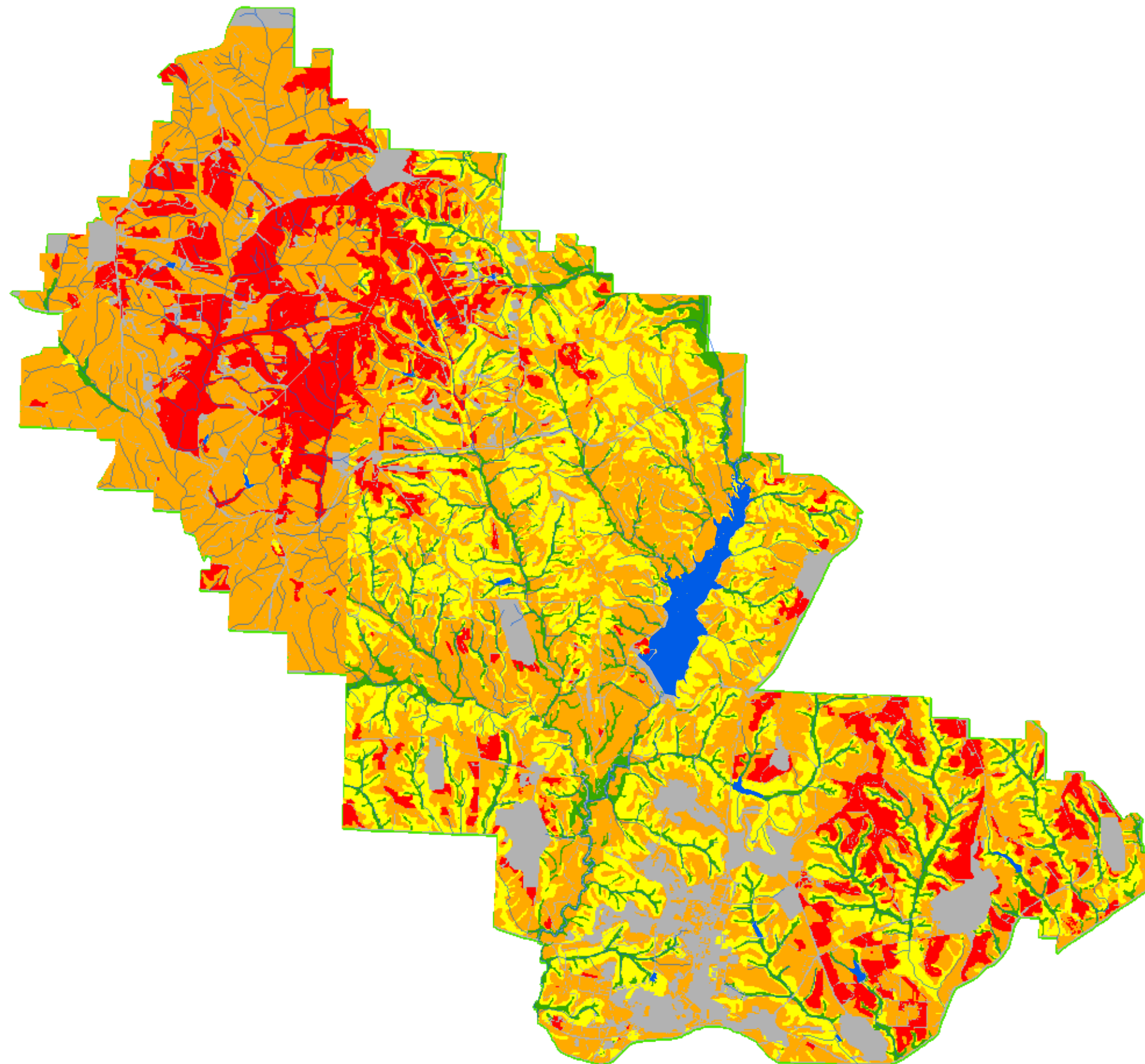


LEGEND:
 Fort Rucker Reservation

- HABITAT TYPES:**
-  Agricultural Land, Fallow Fields and Old Fields
 -  Badly Eroded Sites, Wasted Areas, Quarries
 -  Beaver Ponds
 -  Borrow Pits
 -  Changed Land-use
 -  Golf Courses and Similar Places
 -  Hardwood Dominated Mesic Forests
 -  Hardwood-Dominated Mesic Forests
 -  Water
 -  Mid-Aged Pine Stands
 -  Mixed Pine-Hardwood Mesic Forests
 -  Seeps, Bogs and Wet Meadows
 -  Xeric Forests Clayhill Type
 -  Xeric Forests Sandhill Type
 -  Young Pine Stands

SOURCES:
-Fort Rucker Spatial Geodatabase

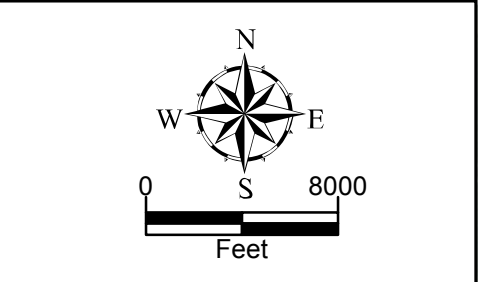
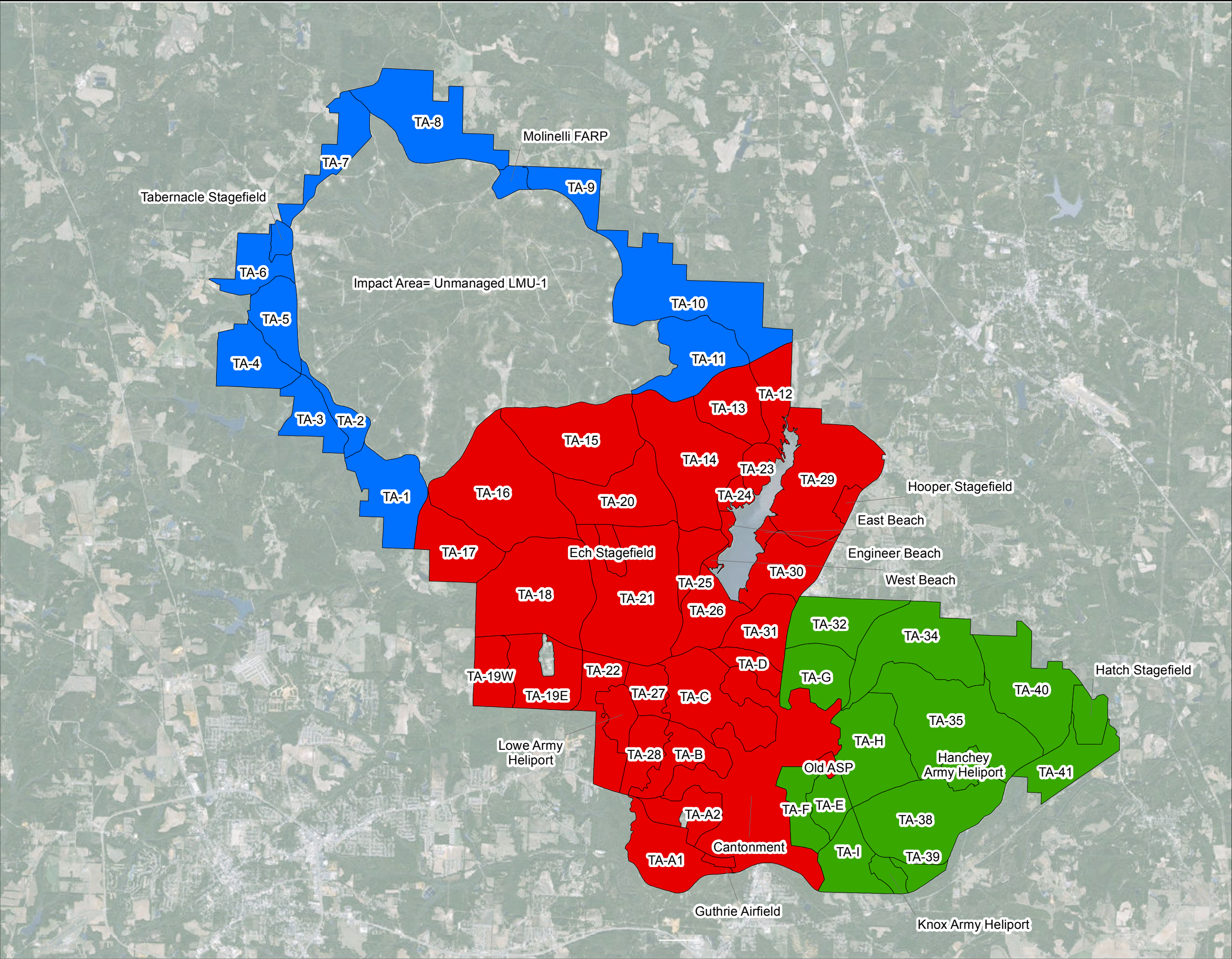
**FIGURE 1-9 HABITAT
TYPES
2018-2022 INRMP
Fort Rucker,
Alabama**



- LEGEND:**
- Fort Rucker Reservation
 - Habitat Suitability**
 - Unsuitable Habitat
 - Unlikely Habitat
 - Suitable Habitat
 - Preferred Habitat
 - Changed Land Use Areas
 - Water Bodies

SOURCES:
-Fort Rucker Spatial Geodatabase

**FIGURE 3-1 GOPHER
TORTOISE HABITAT
SUITABILITY
2018-2022 INRMP
Fort Rucker, Alabama**



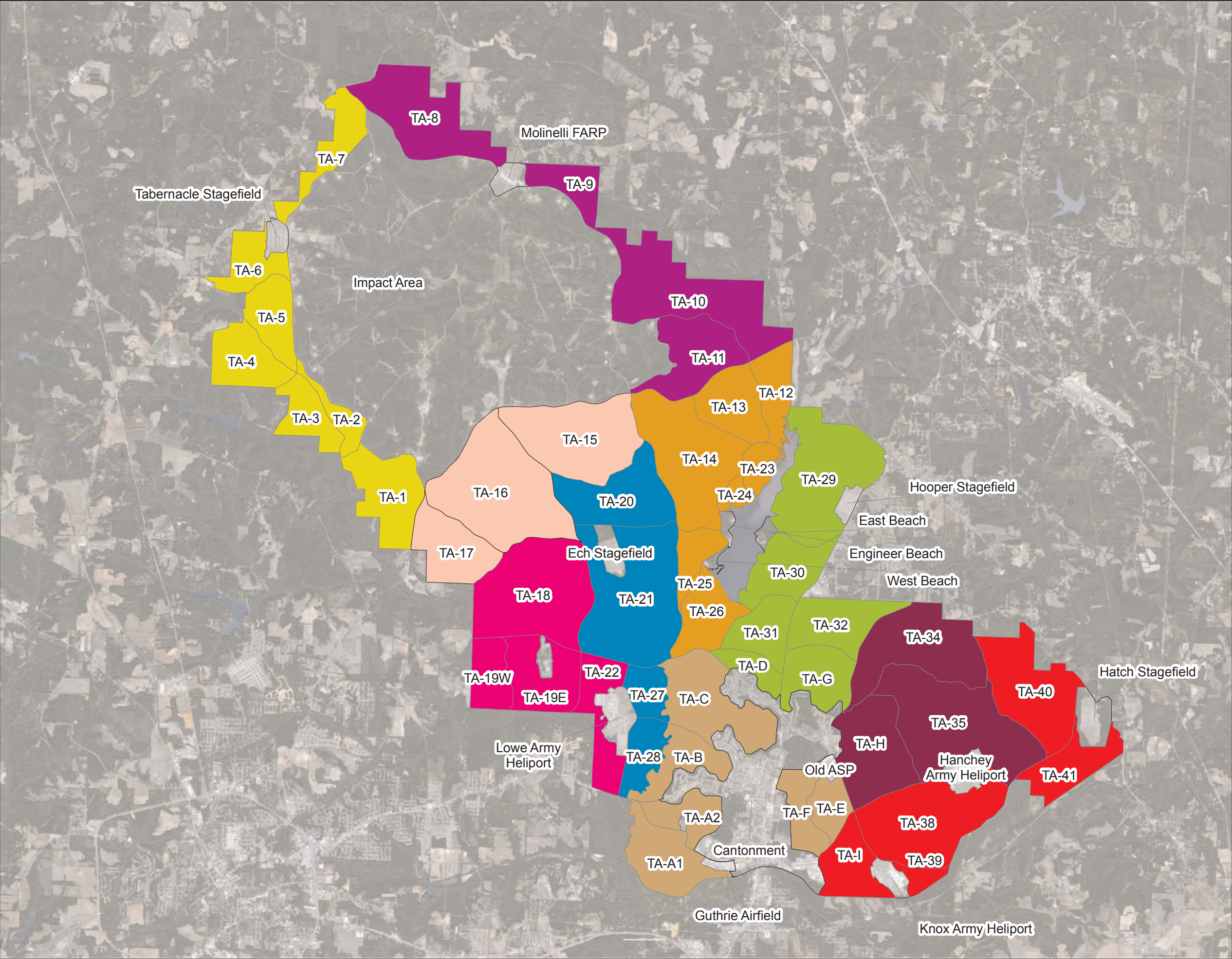
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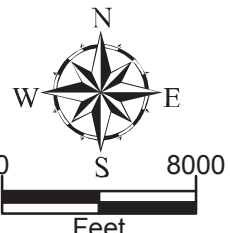
LMU 1	LMU 2	LMU 3
-------	-------	-------

SOURCES:

- Fort Rucker Spatial Geodatabase
- ESRI, 2015












FIGURE 3-2
LAND MANAGEMENT
UNITS
2018-2022 INRMP Fort
Rucker, Alabama





LEGEND:

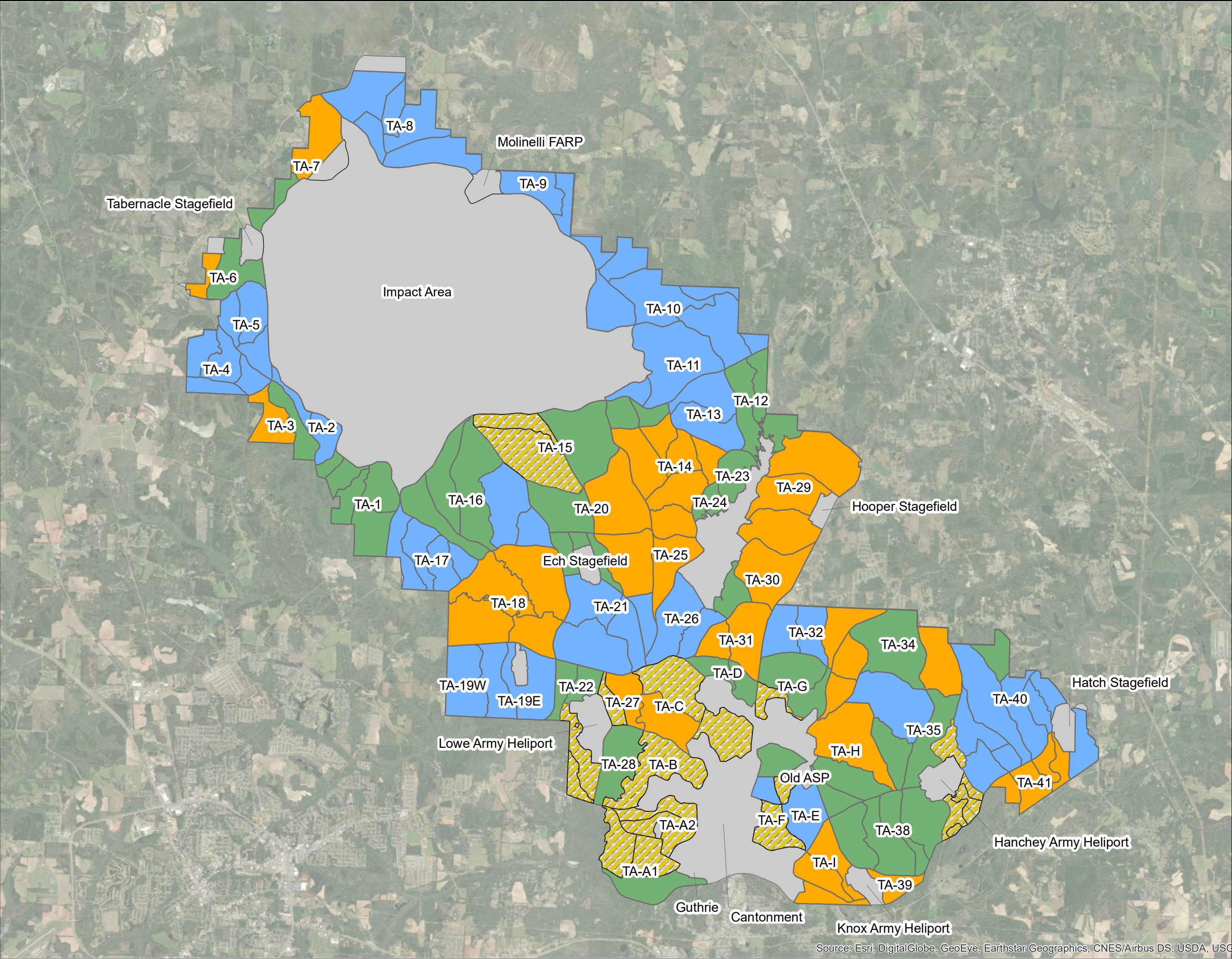
Master Cutting Units

	Unmanaged Areas
	2023
	2024
	2015
	2016
	2017
	2018
	2019
	2020
	2021
	2022

SOURCES:

-Fort Rucker Spatial Geodatabase
-ESRI, 2015

**FIGURE 3-3 MASTER CUTTING UNITS
2018-2022
INRMP Fort Rucker,
Alabama**



LEGEND:

- 2019
- 2020
- 2021
- Excluded

SOURCES:

-Fort Rucker Spatial Geodatabase
-ESRI, 2015

**FIGURE 3-4
BURN UNIT
ROTATION
2018-2022 INRMP
Fort Rucker, Alabama**

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS

Appendix 1

List of Abbreviations and Acronyms

°F	Degrees Fahrenheit
13-13-13	13 percent nitrogen, 13 percent phosphorous, and 13 percent potassium fertilizer
15-0-15	15 percent nitrogen, 0 percent phosphorous, and 15 percent potassium fertilizer
AAF	Army airfield
ABSO	Aviation Branch Safety Office
ACLC	Aviation Center Logistics Command
ACNWTF	Alabama Chapter of the National Wild Turkey Federation
ADCNR	Alabama Department of Conservation and Natural Resources
ADEM	Alabama Department of Environmental Management
ADWFF	Alabama Division of Wildlife and Freshwater Fisheries
AEC	Army Environmental Command
AGRC	Aerial Gunnery Range Complex
AHP	Army Heliport
AO	Area of operation
APF	Appropriated fund
APHIS	Animal Plant Health Inspection Service
AR	Army Regulation
ARNG	Alabama Army National Guard
ATSCOM	Air Traffic Services Command
ATTACC	Army Training and Testing Area Carrying Capacity
BASH	Bird Aircraft Strike Hazard
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best management practice
BOSS	Better Opportunities for Single Service Members
CCA	Candidate Conservation Agreement
CFI	Continuous forest inventory plots
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CSM	Command Sergeant Major
CWA	Clean Water Act
CX	Categorical exclusion
DA	Department of the Army
DENTAC	U.S. Army Dental Clinic Command

DES	Directorate of Evaluation and Standardization
DFMWR	Directorate of Family Morale, Welfare, and Recreation
DoD	Department of Defense
DoDI	Department of Defense Instruction
DOTD	Directorate of Training and Doctrine
DPS	Directorate of Public Safety
DPS	Directorate of Public Safety
DPTMS	Directorate of Plans, Training, Mobilization and Security
DPTMSEC	Directorate of Plans, Training, Mobilization and Security
DPW	Directorate of Public Works
DQP	Deer and Quail Peas
DRM	Directorate of Resources Management
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMS	Environmental Management System
EO	Executive Order
ESA	Endangered Species Act
FNSI	Finding of No Significant Impact
FR Reg.	Fort Rucker Regulation
FY	Fiscal year
GCN	Greatest Conservation Need
GERB	Garrison Environmental Requirement Build
GIS	Geographic information system
GLE	Game Law Enforcement
gpm	Gallons per minute
GSO	Garrison Safety Office
ID	Identification
IMCOM	United States Army Installation Management Command
INRMP	Integrated Natural Resources Management Plan
IPA	Intergovernmental Personnel Act
IPM	Integrated pest management
IRAC	Internal Review and Audit Compliance Office
ITAM	Integrated Training Area Management
IWFMP	Integrated Wildland Fire Management Plan
LCTA	Land Condition Trend Analysis
LIDAR	Light detection and ranging
LMU	Land Management Unit
LRAM	Land Rehabilitation and Maintenance

MBTA	Migratory Bird Treaty Act
MP	Military Police
msl	Mean sea level
MSO	Methylated seed oil
MWR	Morale, Welfare, Recreation
NAF	Non-appropriated fund
NCOA	Noncommissioned Officer Academy
NEPA	National Environmental Policy Act
NGA	National Geospatial-Intelligence Agency
NOA	Notice of Availability
NRB	Natural Resources Branch
NRCS	Natural Resources Conservation Service
O&M	Operations and Maintenance
OJT	On the job training
ORISE	Oak Ridge Institute for Science & Education
ORV	Off-road vehicle
PAIO	Plans, Analysis and Integration Office
PAO	Public Affairs Office
PGR	Plant growth regulators
PPE	Personal protective equipment
QDM	Quality deer management
REC	Record of Environmental Consideration
RMO	Resource Management Office
RPMP	Real Property Master Plan
RTLA	Range and Training Land Assessment
RV	Recreational vehicle
SAIA	Sikes Act Improvement Act
SAR	Species at Risk
SCA	Student Conservation Association
SERE	Survival, Escape, Resistance, and Evasion
SHPO	State Historic Preservation Office
SJA	Staff Judge Advocate
SMZ	Streamside Management Zone or Special Management Zone
SRA	Sustainable Range Awareness
SRP	Sustainable Range Program
SWAP	State Wildlife Action Plan
TA	Training Area
TRADOC	U.S. Army Training and Doctrine Command
TRI	Training Requirements Integration

TSI	Timber stand improvement
U.S.	United States
USAAMC	U.S. Army Aeromedical Center
USAARL	U.S. Army Aeromedical Research Laboratory
USACE	U.S. Army Corps of Engineers
USAPHC	U.S. Army Public Health Command
USASAM	U.S. Army School of Aviation Medicine
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geologic Survey
VFR	Visual flight rules
WOCC	Warrant Officer Career College

Appendix 2

Specific Items of Cooperation Between the U.S. Fish and Wildlife Service, Alabama Department of Wildlife and Freshwater Fisheries, and Fort Rucker

PURPOSE: The purpose of this document is to specifically list items to be provided by the Alabama Department of Wildlife and Freshwater Fisheries (ADWFF), U.S. Fish and Wildlife Service (USFWS), and Fort Rucker for cooperative implementation of the Fort Rucker Integrated Natural Resources Management Plan. Items not specifically listed will generally be the responsibility of Fort Rucker unless the other agencies agree to assist with their implementation.

AUTHORITY: In accordance with the authority contained in Title 10, U.S. Code, Section 2671, and Title 16, U.S. Code, Section 670 the Department of Defense, the Department of Interior, and the State of Alabama, through their duly designated representatives whose signatures appear on the Fort Rucker Integrated Natural Resources Management Plan, specifically approve the Integrated Natural Resources Management Plan and the below specific items of cooperation between the three agencies.

MUTUAL AGREEMENT:

- Persons hunting, trapping, or fishing the lands or waters of Fort Rucker shall be required to obtain special Fort Rucker hunting, trapping, or fishing licenses unless exempt by Fort Rucker regulations. Funds derived from the sale of these licenses will be used exclusively for the implementation of the fish and wildlife management portion of the Fort Rucker Integrated Natural Resources Plan in accordance with Army regulations and the Sikes Act. Fees charged shall be established by the installation in accordance with Army regulations. Persons guilty of violating the requirement for these special licenses may be prosecuted under 10 USC 2671(c).
 - Up to 10% of the Sikes Act fee may be used by the Morale, Welfare, and Recreation (MWR) organization to defray the cost of selling permits. A separate community recreation hunting and fishing activity fee, not accounted for as Sikes Act hunting and fishing fees, may be charged to users of optional hunting and fishing services, in accordance with Army Regulation 200-3. Revenues generated from these recreational activity fees will be deposited in the Fort Rucker MWR fund.
 - Persons hunting, trapping, or fishing the lands of Fort Rucker must purchase State licenses, tags, and stamps as required by ADWFF, unless exempt by ADWFF regulations. ADWFF agrees that military personnel on active duty and permanently stationed in Alabama may purchase hunting, fishing, and trapping licenses at resident prices.
 - A Federal waterfowl stamp is required for hunting waterfowl as prescribed by Federal laws.
 - All hunting, fishing, and trapping on Fort Rucker will be in accordance with federal and state fish and game laws.
 - Representatives of the ADWFF and the USFWS will be admitted to the installation at reasonable times, subject to requirements of military necessity and security. Such personnel may use U.S. Army transportation on a non-reimbursable basis, to include aircraft, for wildlife related functions
-

on Fort Rucker provided such transportation is available without detriment to the military mission.

- The ADWFF and USFWS shall furnish technical assistance for development and implementation of professionally sound natural resources programs on Fort Rucker provided funding for such support is available.
 - Fort Rucker shall furnish assistance and facilities to ADWFF and/or USFWS for mutually agreed upon natural resources research projects. It shall be the policy of the Commanding General, Fort Rucker to encourage and support research conducted by the participating agencies. To this end, suitable land areas, animals, facilities, and personnel may be made available at the Commanding General's discretion, when requested, providing the proposed studies are compatible with, and in no way limit, accomplishment of the military mission.
 - No exotic species of fish or wildlife will be introduced on Fort Rucker lands without prior written approval of the Army, ADWFF, and the USFWS.
 - ADWFF shall establish season and bag limits for harvest of game species on Fort Rucker. Fort Rucker may make special requests for such regulations according to procedures established by ADWFF. Requests for regulations not in accordance with those established statewide will be based on data specific to Fort Rucker or designed to meet Fort Rucker's training schedules.
 - Hunting, trapping, and fishing on Fort Rucker will be authorized and controlled by the installation commander in accordance with locally published installation regulations promulgated in compliance with applicable Federal and State laws, Army regulations, military requirements, and the Integrated Natural Resources Management Plan.
 - Fort Rucker will operate biological check stations to collect harvest data required by ADCNR and Fort Rucker. ADWFF may collect additional data on fish or wildlife resources at Fort Rucker with approval of Fort Rucker for access to training lands.
 - Public access for hunting, trapping, and fishing is approved under a system of controls established by Fort Rucker in cooperation with ADWFF. Civilians will be considered on an equal basis with military and Army civilian employees for permits and access to hunting and fishing areas. Should there be a need for quotas on the number of hunters permitted on a daily or seasonal basis for reasons of safety or recreational carrying capacity, such quotas will not be instituted prior to consultation with ADWFF. Persons holding hunting, fishing, or trapping permits will stand at par with each other for use privileges.
 - Hunting, trapping, and fishing will be allowed only on those areas where there is no conflict with military training activities and no unreasonable safety hazard to participants, military personnel and dependents, or Army civilian employees. Certain areas will be closed to hunting and fishing, including, but not limited to impact areas containing unexploded ordnance.
 - Fort Rucker has concurrent jurisdiction with regard to law enforcement. In areas of concurrent jurisdiction, Alabama laws may be enforced by either federal or state commissioned enforcement personnel. Enforcement will be a joint responsibility of Fort Rucker, ADWFF, and the USFWS.
-

- Fort Rucker agrees to cooperate with USFWS and ADWFF for management of any threatened or endangered species residing on the installation. Such efforts will be in compliance with Federal and State laws and applicable Army regulations.
- ADWFF and the USFWS will provide technical and professional advice on all matter concerning wildlife and fish management when necessary.
- Fort Rucker has the option to directly transfer funds to the ADWFF and USFWS for implementation of this Integrated Natural Resources Management Plan.
- It is understood that implementation of this INRMP requires certain latitude with regard to professional decisions. However, Fort Rucker agrees that any land use change which significantly impacts natural resources must include modification of this INRMP in addition to any other environmental compliance requirements.

LIMITATIONS:

The military mission of Fort Rucker supersedes natural resources management and associated recreational activities; and, such activities must in all instances be compatible with the military mission. However, where there is conflict between the military mission and provisions of the Endangered Species Act, the Sikes Act, or any other law associated with natural resources conservation, such conflicts will be resolved according to statutory requirements.

REQUIRED REFERENCES:

- Nothing contained in this agreement shall modify any rights granted by treaty to any Native American tribe or to members thereof.
- The possession of a special permit for hunting migratory game birds will not relieve the permittees of the requirements of the Migratory Bird Stamp Act, as amended.
- This INRMP is a Federal Facilities Compliance Agreement.
- As required by the Sikes Act, the following agreements are made:

(1) This Fort Rucker Integrated Natural Resources Management Plan is the planning document required by the Sikes Act, as amended. This Plan contains those items specifically required by law. In the event the Sikes Act is amended after this INRMP is signed, this plan will be amended to conform to the new requirements within the Sikes Act if needed.

(2) This plan will be reviewed by ADWFF, USFWS, and Fort Rucker on a regular basis, but not less often than every 5 years.

(3) No land or forest products from land on Fort Rucker will be sold under Section 2665 (a) or (b), Title 10 USC and no land will be leased on Fort Rucker under Section 2667 of such Title 10 unless the effects of such sales or leases are compatible with the purposes of the Integrated Natural Resources Management Plan.

(4) With regard to the implementation and enforcement of the Fort Rucker Integrated Natural Resources Management Plan, neither Office of Management and Budget Circular A-76 nor any successor circular thereto applies to the procurement of services that are necessary for that implementation and enforcement, and priority shall be given to the entering into of contracts for the procurement of such implementation and enforcement services with Federal and State agencies having responsibility for the conservation or management of fish or wildlife.

(5) The Fort Rucker Integrated Natural Resources Management Plan is not, nor will be treated as, a cooperative agreement to which chapter 63 of title 31, United States Code applies.

Appendix 3

Integrated Wildland Fire Management Plan (IWFMP)

Fort Rucker Army Installation

Fort Rucker, Alabama

Executive Summary

Purpose

The primary purpose of Fort Rucker's Integrated Wildland Fire Management Plan (IWFMP) is to ensure that fire management program area and military activities on Fort Rucker mission land and cantonment areas are integrated and consistent with federal stewardship requirements. As a result, the IWFMP serves as the Garrison Commander's comprehensive plan for deliberately managing fire-related activities to attain and sustain stewardship requirements while optimizing primary activities on mission land and, where compatible, conducting secondary activities.

Mission land is defined as the area—typically unimproved acres outside the cantonment area—where military operations are, or could be, conducted. The execution of mission operations represents the primary activity and provides the justification for the Army having land at Fort Rucker, which is the Nation's premier training facility for the U.S. Army Aviation. All other activities that have the potential to compete with the primary activity, either by using needed space or by the additional consumption of natural resources, represent secondary activities (except when they directly contribute to the sustainable use of mission land by the primary activity). Secondary activities can include production of commercial forest products, fishing and hunting, other forms of outdoor recreation, etc.

Authority

Army Wildland Fire Policy Guidance is provided in Army Memorandum DAIM-ZA (200-3), 4 September 2002. This policy guidance has the same applicability as AR 420-1, Fire and Emergency services and AR 200-3, Natural Resources – Land, Forest, and Wildlife Management. This policy guidance supplements these Army Regulations. In addition, it is applicable under Transformation of Installation Management. This policy guidance requires that installations with unimproved grounds that present a wildfire hazard and / or installations that utilize prescribed burns as a Natural Resources tool will develop and implement an Integrated Wildland Fire Management Plan (IWFMP) that is compliant and integral with the Integrated Natural Resources Management Plan (INRMP), the installation's existing fire and emergency services program, and the Integrated Cultural Resources Management Plan (ICRMP).

Program Authority

Program Authority and responsibilities for the Assistant Chief of Staff for Installation Management (ACSIM), the Garrison Commander or appropriate designee, the installation Wildland Fire Program Manager, and the Director of Military Support are discussed in the following excerpt from Army Wildland Fire Policy Guidance, Army Memorandum DAIM-ZA (200-3), 4 September 2002:

4.0 Program Authority

4.1 The Assistant Chief of Staff for Installation Management (ACSIM) is responsible for oversight of the program, updating policy, and resolving policy questions through the Facilities and Housing Directorate in coordination with the Environmental Programs Directorate.

4.2 The ACSIM, through the HQ Installation Management Agency, Regions and the Headquarters, National Guard Bureau (HQ, NGB) will provide information to installations necessary to perform wildland fire management in accordance with this guidance. The ACSIM and HQ, NGB will assure that wildland fire program reviews are incorporated into Fire and Emergency Services Operational Readiness Inspections and Environmental Compliance Assessment Screenings.

4.3 The garrison commander, or appropriate designee, defines the roles and responsibilities for wildland fire management on the installation, plans and programs resources, and will designate

an installation Wildland Fire Program Manager in either the Fire and Emergency Services or Natural Resources organization.

4.4 The garrison commander, or appropriate designee, approves the installation IWFMP.

4.5 The garrison commander approves the deployment of Army civilian firefighters to any off installation incident.

4.6 The installation Wildland Fire Program Manager is responsible for development of the IWFMP. Additionally, the Wildland Fire Program Manager reviews and approves burn plans for prescribed fires to insure consistency with the IWFMP, the INRMP, and other applicable operating instructions such as State and local regulations.

4.7 The Director of Military Support is responsible for deployment of military firefighters and equipment.

Management Philosophy

Fort Rucker's approach to natural resources management is embodied in its vision of the relationship between the military mission and natural resources upon which that mission depends. The installation also has developed a natural resources management mission statement for how Fort Rucker will manage its lands.

Fort Rucker's Vision—Support the military mission while promoting the ecological integrity of the Fort Rucker landscape.

Fort Rucker's Natural Resource Management Mission—through a collaborative effort between natural resource professionals and military personnel, Fort Rucker will strive to promote the long-term ecological sustainability of its lands for multiple-use opportunities. Fort Rucker will apply sound fire management practices and adaptive management strategies that conserve ecological integrity through the restoration, maintenance, and preservation of natural biotic communities and otherwise promote the health of installation ecosystems through rehabilitation and maintenance. This ecosystem management approach will encompass stakeholder interests, regulatory requirements, and fiscal constraints.

The underlying theme of this vision and mission statement is an ecosystem-based approach to management. Ecosystem management represents a proactive approach for federal agencies such as the Department of Defense

(DoD) to make important contributions to sustaining healthy ecosystems and conserving ecological integrity (INRMP, 2001).

Scope

Fire affects the landscape in a positive way promoting ecological integrity and biodiversity. The fire management program consists of four major functions: fire detection, fire suppression, prescribed burning, and trail/firebreak maintenance. The fire detection function includes locating wildfires, coordinating fire suppression activities, and dispatching personnel and equipment to the fire scene. The fire suppression function is synonymous with fire fighting and includes containing, controlling, and mopping up wildfires. The trail/firebreak maintenance function includes maintaining unimproved roads, trails, and firebreaks to ensure access for natural resource management activities, military training, recreation, and research. The fourth function is prescribed burning, which includes planning, coordinating, executing, evaluating, and monitoring the effects of prescribed burns.

The purposes for prescribed burning are numerous and include the following: (1) reduce levels of hazardous fuels; (2) prepare sites identified for reforestation for seeding and/or planting; (3) improve and maintain listed (threatened and endangered) species habitat; (4) improve other native species habitat, especially forage for game species; (5) manage understory hardwoods; (6) control disease; (7) improve access; (8) enhance appearance; and (9) provide a safe military training environment.

Planned Initiatives

The underlying theme of the INRMP and the IWFMP, in support of the INRMP, is an ecosystem-based approach. Ecosystem management principles and ecosystem-based approaches have slowly entered the governmental, scientific, and resource management vocabularies over recent years. The Department of Defense was a cosigner, along with other federal agencies, of a December 15, 1995 "Memorandum of Understanding to Foster the Ecosystem Approach." A critical assumption of the INRMP is that the availability of future training lands at Fort Rucker depends on a sustainable natural resource base and that sustainability is achievable through ecosystem-based approaches.

To implement an ecosystem-based approach at Fort Rucker through the INRMP, desired future conditions are necessary to provide natural resource managers with target conditions and long-term goals for ecosystem management. Ecosystem-level targets include the upland longleaf pine ecosystem, slope

hardwood ecosystem, seepage bogs, depressional wetlands, and Fall Line streams and bottoms. Species-level targets include longleaf pine, gopher tortoise, and relict trillium. All programs within natural resources management are aligned to attain the desired future conditions.

A key principle of ecosystem management is that management must be adaptive; that is, the response of natural systems to management actions must be monitored and subsequent management actions modified accordingly. As a result, fire management practices and monitoring outlined below are expressed in terms of an adaptive management framework.

Fire management practices – Prescribed fire will be used at the frequencies and intensities appropriate to maintain the longleaf pine communities and overall plant community diversity at Fort Rucker. Prescribed burns, like timber harvest prescriptions, will be planned and will account for potential impacts to the floral and faunal resources present. In striving to meet the goal of the INRMP's desired future conditions of ecological integrity and biodiversity across the landscape, the application of prescribed fire will also continue to contribute to the sustainability of Fort Rucker's training lands by controlling understory vegetation; thereby, improving training visibility, training accessibility, and promoting a safe training environment.

Monitoring.—Without monitoring, adaptive management and an ecosystem approach in general are not achievable. Monitoring activities must be appropriate to the management objectives they are designed to support, repeatable, statistically analyzable, and scientifically rigorous. The results of monitoring must translate into information that resource managers can use to craft appropriate management responses to changing resource conditions.

The INRMP implementation strategy builds in part on the preexisting Range and Training Land Assessment (RTLA) component of ITAM to develop an ecosystem-based monitoring program. Resource condition is evaluated on a watershed basis to help direct management actions at that level and is assessed with respect to the ecological group(s) or ecologically unique areas present in a particular watershed. Additional monitoring activities are conducted in support of specific programs, e.g., monitoring of listed species and post-burn effects of a prescribed fire.

The relationship between fire management and military training has been locally addressed by a variety of studies as well as regional and national efforts. Local studies indicated that periodic burning (three year cycle) of areas with high levels of disturbance, near complete disruption of vegetation associated with tracked

vehicle training, resulted in significantly slowed recovery. Other studies found that plant growth and productivity as well as already hindered soil processes in the moderate to heavily disturbed areas were further altered by periodic burning. In studied recovery areas, these processes were only affected by burn frequencies less than a three year rotation. Finally, the rate of recovery in these areas as well as the magnitude of combined effects of training disturbance and fire management was also affected by soil type and topographic setting.

In moderately disturbed training areas, those areas that are forested to partially forested and less frequently used, forest and fire management practices have been proposed to affect forest health and susceptibility and likelihood of the establishment and magnified affects of forest pathogens. Various studies addressing these issues are on-going, but early results indicate that frequent or intense burning may serve as a short term stressor on poor soils, heavily trained areas, or during periods of drought. Other studies elsewhere, suggest that vehicle traffic (military, forest management) combined with burning may result in brief periods of high levels of fine root mortality, particularly if the area has a limited history of past burning. Again, the level of fine root damage appears to be associated with other stressors as well as site quality and season of activity. Future research initiatives involving fire and the assessment of fire impacts are focused toward forest health questions.

Benefits of Implementation or Desired Outcomes

Over the course of its implementation, the IWFMP, like the INRMP will (1) enable Fort Rucker to make progress toward achieving a sustainable natural resource base and a safe, realistic training environment in support of the military mission; (2) establish appropriate stewardship policies that serve to protect both natural and cultural resources; (3) facilitate compliance with environmental laws; (4) provide a continuity of direction and effort that can accommodate changes in personnel and leadership; (5) promote cost-effectiveness through improved planning and coordination and by adapting management actions to changes in resource condition; (6) improve the quality of installation life by enhancing recreational opportunities consistent with the military mission and natural resource management goals; (7) promote good public relations by demonstrating the installation's commitment to air quality and smoke management; (8) accommodate multiple uses; and (9) make use of innovative strategies to accomplish specific management objectives (INRMP, 2009).

WILDLAND FIRE MANAGEMENT

1. Goals and Objectives:

- a. **Wildfire Suppression Goal:** Prevent, Detect, and Suppress Wildfires Occurring On Woodlands and Ranges while Managing Sustainability and Ecological Integrity of the Natural Resources. By meeting the following wildfire suppression objectives the wildfire suppression goal may be achieved:
- 1) Objective 1: Maintain a trained staff that is equipped with latest technology in PPE, vehicles, and equipment.
 - 2) Objective 2: Utilize the National Fire Danger Rating System in fire management planning.
 - 3) Objective 3: Reevaluate and monitor areas of special consideration periodically.
 - 4) Objective 4: Maintain firebreaks on an annual basis (50 miles) and trails on a two to three year basis (200 miles).
 - 5) Objective 5: Evaluate the effectiveness of Alabama's BMPs on forest roads, trails, and firebreaks and take corrective action as needed.
 - 6) Objective 6: Detect and suppress fires near the installation boundary promptly to prevent fire trespasses on adjoining land owners property.
 - 7) Objective 7: Use Alabama's BMPs for Forestry when installing firebreaks.
 - 8) Objective 8: Allow wildfires to burn whenever feasible, but suppression of some fires will be necessary to protect personnel and facilities, to avoid unacceptable smoke management risks.
 - 9) Objective 9: Do not plow firebreaks in (USFWS Biological Opinion, September 2002).
 - 10) Objective 10: Develop a strategy for the management of wildfires that defines what fires are suppressed and what fires are allowed to burn.
 - 11) Objective 11: Monitor the impacts of fire on hardwood communities.
- b. **Prescribed Burning Goal:** Use Prescribed Burns as Part of an Adaptive Management Approach that Focuses on the Ecological Integrity of the Landscape as Its Primary End State. By meeting the

following prescribed burning objectives the prescribed goal may be achieved:

- 1) Objective 1: Use prescribed burns to maintain a realistic training environment and to support the habitat needs of listed and other species of conservation concern.
- 2) Objective 2: Use prescribed fire at the frequencies, timing, and intensities appropriate to restore and maintain longleaf pine communities, to enhance overall plant community diversity, and to support habitat management needs of the Gopher Tortoise.
- 3) Objective 3: Prioritize prescribed burns on an annual basis such that (to the extent achievable within a military training environment) the priority best reflects the goals of longleaf pine ecosystem restoration and listed species recovery or maintenance.
- 4) Objective 4: Monitor the effects of prescribed burning on hardwood control, longleaf pine regeneration, rare plants, and native herbaceous species recovery.
- 5) Objective 5: Prioritize prescribed burns based on forest decline management concerns and recommendations to include frequency, timing, and intensity of prescribed burns.
- 6) Objective 6: Monitor the effects of prescribed burn frequency, timing, and intensity on forest decline.
- 7) Objective 7: Develop an educational program to increase the public's awareness of the benefits of prescribed fire within the framework of sound silvicultural practices.
- 8) Objective 8: Apply prescribed fire to top kill small hardwoods that consistently encroach into pine dominant stands, to reduce fuel loads and fire intensity (thus providing a safer environment for military training), to prepare sites for tree planting and timber marking, to enhance wildlife habitat by improving the quality and quantity of food, and to promote a longleaf pine ecosystem with biological diversity.
- 9) Objective 9: Apply prescribed fire to maintain open understories and to improve accessibility for troop training and recreational opportunities.

- 10) Objective 10: Restore by introduction and / or by the use of prescribed fire, those pyrophytic grasses and other native plants characteristic of the understory of the longleaf ecosystem.
- 11) Objective 11: Do not purposely burn bottomland hardwood communities. Use an adaptive management approach to introduce fire to other hardwood communities that depend on fire for their maintenance.
- 12) Objective 12: Use fire to restore and / or maintain natural ecotones between wetlands and uplands.
- 13) Objective 13: Conserve ecotones between pine and hardwood communities in upland, slope, and bottomland sites by using fire and other silvicultural activities as the primary management tools.
- 14) Objective 14: Use existing natural and previously constructed, human-made firebreaks as much as possible; if new firebreaks are needed, avoid placing them in ecotones. Let fire determine the characteristics of ecotones, except when detrimental to listed plant species or native plant communities.
- 15) Objective 15: Use Alabama's BMPs for Forestry when maintaining trails, firebreaks, and roads.
- 16) Objective 16: In order to promote public acceptance, in cooperation with the USFWS develop and implement a public relations campaign to inform the public of the benefits and necessity of prescribed burning.

The IWFMP prescribed burning objectives support and supplement the INRMP fire management goals and objectives. It is essential that the following IWFMP prescribed burning objectives are met in order to achieve the INRMP prescribed burning goal with supporting objectives:

2. Military Training:

- 1) Burn training compartments to improve access and training activities. For example, training sites over grown with dense undergrowth can be burned to improve visibility and movement.
- 2) Burn to improve and maintain safe training conditions by reducing potentially hazardous fuels loads in training sites.

3. Fuel Reduction:

- 1) Reduce hazardous fuel loads in training compartments and cantonment areas by burning every three to 4 years or as needed ("as needed" means burning prior to a problematic fuel load buildup).
- 2) Burn during winter months (dormant season) to reduce high fuel loads before conducting growing season burns to avoid mortality of pine and pine/hardwood stands.
- 3) Burn during winter/dormant season months in stands that are in the maintenance stage with respect to hardwood control and preponderance of herbaceous ground cover.
- 4) Burn during winter/dormant season months in stands that were recently harvested and where a considerable amount of logging slash is present to avoid unnecessary mortality.

4. Forest Management:

- 1) Conduct growing season burns (April through September) as frequently as weather conditions/logistics (fuel load, drought index, humidity, wind direction, smoke dispersion, air quality, and site access/military training) allow to maximize the control of invasive hardwoods that hinder pine (especially longleaf) regeneration.
- 2) Burn pine stands in need of extensive hardwood control after hardwood leaves have fully emerged.
- 3) Frequently update information on locations of marked timber, timber harvest operations, and longleaf pine restoration projects (e.g. planted longleaf pine seedling sites, longleaf pine plantations, and uneven-age stand management sites).
- 4) Coordinate burn activities to identify high pine cone productivity sites, marked timber stands, pine plantations, and harvested sites so that proper burn time frame is prescribed.
- 5) Use timber management data concerning cone crop and pine regeneration to determine proper burn time frame.
- 6) Conduct site preparation burns for longleaf pine restoration during the growing season.
- 7) Burn planted pines during cooler/winter months to minimize stress.

- 8) Burn to control brown spot needle blight so longleaf pine seedling survival is maintained.
- 9) Consider burning stands identified as high-to-extreme forest decline risk in the dormant season when fires are less intense, thus preventing damage and stress to root systems that makes them less vulnerable to *Leptographium* spp. attacks.
- 10) Burn to improve timber-marking efficiency and to increase paint visibility by loggers.
- 11) Burn to improve accessibility to and visibility within timber stands to facilitate harvests.

5. Fire Ecology:

- 1) Whenever possible, vary the season, frequency, and intensity of burns in training compartments to maximize overall floristic diversity.
- 2) Restore and/or maintain native pyrophytic grasses (such as *Andropogon* spp., *Sorghastrum* spp., etc.) and other native plants characteristic of the understory of the longleaf pine ecosystem by burning during strategic months. Strategic burning (e.g. burning during a specific season/window such as during the growing season) can induce or increase flowering of many grass species, resulting in increased regeneration.
- 3) Allow burns to create, maintain, and restore natural ecotones between hardwood bottoms and pine uplands. For example, burn so that a fire will back into a drain. (Per Dr. Van Lear there may be cases when you want a head fire to go into a drain to change the ecotones vegetative composition while favoring fire tolerant hardwoods.)
- 4) If possible, avoid burning Unique Ecological Areas known to be fire intolerant or when burn conditions are not within prescribed parameters. Set fires downwind or upslope from these areas to minimize fire intensity.

6. Threatened and Endangered Species/Species of Conservation Concern:

- 1) Conduct prescribed burning to enhance and maintain Gopher tortoise habitat as required by the Memorandum regarding Management Guidelines for the gopher tortoise on Army installations distributed in March 2008.
- 2) Burn to control hardwood midstory and regeneration in pine uplands and to reduce problematic ground fuel buildup so that an open pine/park-like landscape can be maintained.
- 3) Monitor the effects of prescribed burning on rare plants such as incised groovebur, flyr's nemesis, Baltzell's sedge and Alabama angle pond that may occur on Fort Rucker Military Reservation resulting from survey by A.R. Diamond and M. Woods of Troy State University, November 2002.

7. Game Management

- 1) Burn to increase the yield and quality of herbaceous cover and to produce new sprouts for browse for target game species.

8. Monitoring:

- 1) Evaluate proposed burn sites to develop strategic and prioritized burn prescriptions (e.g. prioritized hardwood control and fuel reduction needs). Such evaluations can take place on an annual basis.
- 2) The Installation Forester will revise/modify post burn evaluations to improve evaluation efficiency. For example, the assessment of remaining crown scorch can be achieved using broad categories (e.g., 0, <1/3, 1/3, 2/3, >2/3 crown scorch) and evaluated at a large scale (burn compartment level) with fewer plots.
- 3) Monitor the effects of burning on forest decline, specifically, *Leptographium* spp.

9. Compliance with Policy

It is the intent of the IWFMP to be in compliance with the following regulations, policies and guidelines:

- 1) DoD Instruction 6055.6, 10 Oct 00, *DoD Fire and Emergency Service Program*.

- 2) Army Regulations 200-2, 200-3 and 420-1.
- 3) Army Memorandum (04 September 2002), *Army Wildland Fire Policy Guidance*.
- 4) Installation INRMP, ICRMP, fire and emergency services plan.
- 5) Review and update of the 1995 Federal Wildland Fire Management Policy, Jan 01.
- 6) NWCG Wildland Fire Qualifications Subsystem Guide,
- 7) PMS 310-1/NFES 1414, October 2012.
- 8) State and local laws and ordinances for burning and air quality.

10. Location and Description

Fort Rucker is located on the East Gulf Coastal Plain in southeastern Coffee and southwestern Dale counties, Alabama, some 25 miles northwest of Dothan between the cities of Daleville, Enterprise and Ozark. This is the "Wiregrass" region of southeast Alabama, so named for the wiry appearance of Pineland three-awn (*Aristida stricta*), that once grew profusely in the area. The main military reservation extends northwestward from the floodplain of the Choctawhatchee River. The main reservation comprises 57,772 acres (63,251 acres, including satellite and leased lands) (Directorate of Plans, Training, Mobilization, and Security [DPTMS], 2009) and is nearly rectangular in shape, averaging 17 miles long by 9 miles wide.

Cairns Army Airfield (AAF), located east of State Highway 85 in Dale County, 2.8 miles south of Fort Rucker's main reservation, comprises an additional 1,326 acres. The airfield is situated on a ridge top extending from the main reservation on the north through Daleville and Cairns AAF on the south. The main runway complex is at elevations 305-325 feet mean sea level (msl) with forested slopes dropping gradually both eastward and westward to floodplains (164 feet msl) of Claybank Creek and the Choctawhatchee River, respectively (McGee, 1987; 1204th Engineer Co., 1995; Rust Environment and Infrastructure, 1999).

Fort Rucker uses 64 leased sites to support its military mission. These sites total 1,734 acres and are located in Alabama and Florida. Leased sites are not included within this INRMP in terms of management of natural resources. These sites are maintained in accordance with the lease agreements.

Many of the principal aviation training facilities are located off the Fort Rucker main reservation. The following paragraphs provide a description of these facilities and their current uses at the time this plan was written.

Allen Stagefield. Allen stagefield (114 acres) is located in Houston County, 13 miles southeast of Fort Rucker's cantonment area. Principal aircraft using this facility are TH-67 training helicopters.

Brown Stagefield. Brown stagefield (176 acres) is located 2.5 miles west of New Brockton, southeast of Fort Rucker's cantonment area. Principal aircraft using this facility are OH-58 AC scout helicopters.

Cairns Army Airfield. Cairns AAF (1,326 acres) is situated three miles south of Fort Rucker's cantonment area. Principal aircraft using this facility are TH-67 training helicopters and fixed wing aircraft assigned to the Army Aviation Center of Excellence.

Goldberg Stagefield. Goldberg stagefield (101 acres) is located in Dale County, four miles south of Echo. Principal aircraft using this facility are CH-47D cargo helicopters.

High Bluff Stagefield. High Bluff stagefield (190 acres) is located in Geneva County, 3.75 miles northwest Hartford. Principal aircraft using this facility are TH-67 training helicopters.

Highfalls Stagefield. Highfalls stagefield (40 acres) is located in Geneva County, 5.7 miles west of Hartford. Principal aircraft using this facility are helicopters used in test and research activities conducted by the U.S. Army Aviation Development Test Activity.

Hunt Stagefield. Hunt stagefield (153 acres) is located east of Fort Rucker, near Highway 231 and five miles (8 km) north-northeast of Newton in Dale County. Principal aircraft using this facility OH-58D scout helicopters.

Louisville Stagefield. Louisville stagefield (105 acres) is located near Louisville, Alabama approximately 35 miles north of Fort Rucker. Louisville stagefield is currently inactive.

Lucas Stagefield. Lucas stagefield (180 acres) is located in Coffee County, 25 miles southwest of Fort Rucker between Highway 87 and Phillips Creek. Principal aircraft using this facility are TH-67 training helicopters.

Runkle Stagefield. Runkle stagefield (235 acres) is located in Coffee County, 28 miles west of Fort Rucker on the east side of the Pea River

Shell Army Heliport. Shell Army Heliport (296 acres) is located in Coffee County, 4 miles west of the Installation boundary and 5 miles north of downtown Enterprise within the Enterprise city limits. Principal aircraft using this facility are OH-58AC scout training helicopters.

Skelly Stagefield. Skelly stagefield (194 acres) is located in Coffee County, 35 miles west of Fort Rucker on the north side of Highway 134 and just west of the Pea River. Principal aircraft using this facility are UH-1/UH-60 utility helicopters.

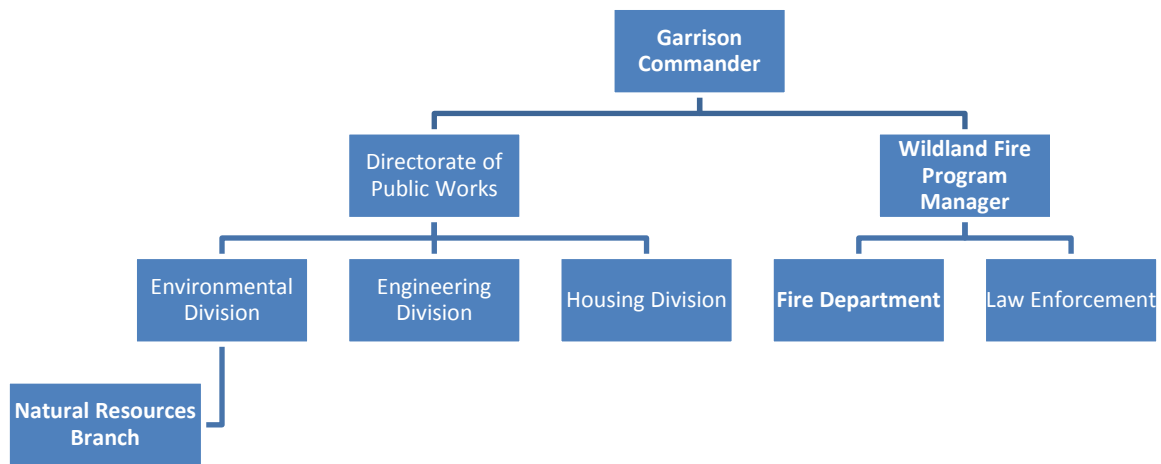
Stinson Stagefield. Stinson stagefield (191 acres) is located in Coffee County, west of Fort Rucker and three miles southeast of Elba. Principal aircraft using this facility are UH-60 utility helicopters.

TAC-X Stagefield. TAC-X stagefield (111 acres) is a special-use facility located 30 miles south of Fort Rucker in Geneva County, on the west bank of Double Bridges Creek and about 2 miles north of Highway 52.

Toth Stagefield. Toth stagefield (128 acres) is located 10 miles southeast of Fort Rucker, on the south side of Highway 84 in Houston County. Principal aircraft using this facility are AH-64 attack helicopters.

Organizational Structure and Responsibilities

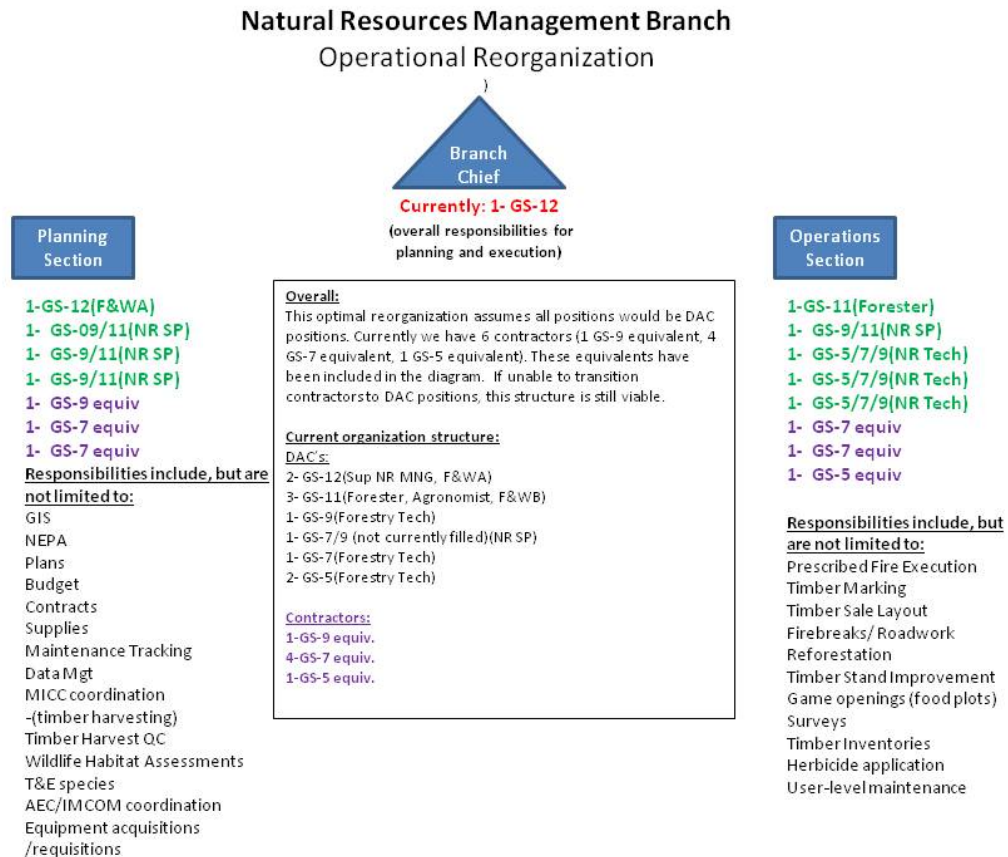
1. The Command Structure



- a. The **Garrison Commander, or appropriate designee**, defines the roles and responsibilities for Wildland fire management on the installation, plans and programs resources, and will designate an installation Wildland Fire Program Manager in either the Fire or Emergency Services or Natural Resources organization. The Garrison Commander, or appropriate designee also approves the installation IWFMP, assures the maintenance of training records (e.g., through the Civilian Personnel Office, Wildland Fire Program Manager, or Fire Chief), and approves the deployment of Army civilian and Military firefighters to any off installation fire incident.
- b. The **Wildland Fire Program Manager** (Installation Fire Chief) develops the IWFMP, reviews and approves burn plans for prescribed fires to insure consistency with the IWFMP, the INRMP, and other applicable operating instructions such as state and local regulations.

The installation fire department responds to fires on ranges and in cantonment area woodlands. Generally, the fire department is the first responder to fire incidents occurring in cantonment area woodlands.

2. Natural Resource Branch (NRB) Structure



The Installation Fire Chief serves as the installation's Wildland Fire Program Manager and sets policy with respect to the fire management program. The NRB team leaders serve in an administrative capacity with respect to fire management activities performing fire planning (Planning Section team leader) and implementation functions (Operations Section team leader). The Operations Section team leader also provides guidance and oversight of the fire management program.

The NRB forest technicians perform duties in all four of the fire management program areas: Wildland fire suppression, fire detection, prescribed burning, and trail/firebreak maintenance. Forest technicians serve as additional fire suppression support to the fire department and respond to Wildland fires and emergencies during and after regular duty hours. In addition to performing fire management duties forest technicians perform timber management duties including forest stand typing, timber marking, reforestation, and timber sale preparation.

Current staffing in the NRB is inappropriate to meet the objectives in the IWFMP. The NRB is currently understaffed by four positions annually. In addition to positions needed to be filled there is the need to create one Wildland Fire Manager. This position's responsibility is to coordinate all prescribed fires with the program manager and assist in the management of this plan.

3. Range Fires During Military Training

In the event of a fire on the ranges, it is the responsibility of the unit to promptly report the fire to Training Division, Range Branch will make notification to E911 for fire department response. Commanders of troops using training areas will not order their personnel to extinguish fires in their locality. Fires in impact areas will be reported only.

Fire suppression and prescribed burning are discussed in the Environmental Awareness Training Course. The target audience for this course is military leadership. The required training can be accomplished by the military unit's trained Environmental Compliance Officer or by Fort Rucker's Environmental Awareness Trainer, Environmental Management Division, and Directorate of Public Works.

4. Interagency Cooperation and Mutual Aid Agreements

Currently there are no written agreements in place with Fort Rucker for federal interagency cooperation or mutual aid for Wildland fire incidents occurring off the installation. Fort Rucker maintains cooperative verbal agreements with the Alabama Forestry Commission (AFC) when fires occur adjacent to the installation boundary. Fort Rucker does have an MOU and contract with the AFC for fire detection services off the installation. Fort Rucker Fire Department has mutual aid agreements with all surrounding fire departments in the event of a large scale incident (structural and HAZ-MAT emergencies).

Wildland fires that occur on the installation are suppressed by in-house firefighters from the installation fire department and/or the NRB. Due to the three to four year fire return interval and low fuel loads Wildland fires are manageable by installation personnel and resources. Therefore, it has not been necessary to request outside assistance or support from other agencies to suppress fires. If the fire return interval is lengthened due to internal or external constraints on

prescribed burning a situation may develop where in-house personnel can no longer manage fire suppression activities and outside assistance from other agencies is required. If this situation were to develop over time the installation would need to become a member of the National Wildfire Coordinating Group.

Currently, Fort Rucker is not a member of the National Wildfire Coordinating Group (NWCG). Therefore, there are no mutual aid agreements planned and there is no plan to request firefighting assistance from other agencies in the NWCG. In addition, there is no plan to deploy civilian firefighters from NRB to off-installation fires through the Geographic Area Coordinating Center.

5. Smoke Management and Air Quality

It is Fort Rucker's mission to eliminate or minimize the adverse impacts of fire related activities on the environment. Prescribed burning will be accomplished in accordance with NWCG publication PMS 420-2, NFES 1279, Smoke Management Guide for Prescribed and Wildland Fires, 2001 Edition. Currently, a prescribed burn plan is prepared for each burn unit prior to executing the burn. This plan includes preferred fire weather parameters as well as a smoke screening form (Mobley, 1991). Prescribed burning is conducted within the preferred fire weather parameters. The smoke screening forms and maps identify smoke impact distances, zones, and smoke sensitive areas (SSAs) within the zone. The goal is to eliminate or minimize smoke that may impact the SSAs. In order to mitigate smoke on roads and highways smoke signs with lights are posted to warn motorists of the impending danger from low visibility. In addition, SSAs such as range control, all airfields, state forestry, surrounding cities fire departments, etc. are notified prior to executing the burn so they can take the necessary precautions. In addition, the Public Affairs Office and Military Police are notified concerning the location of burn areas.

SSAs that occur on and near Fort Rucker include but are not limited to the following: Main Post cantonment area, Ech, Molinelli, Tabernacle, Shell, Cairns, Hunt, Lowe, Hatch, Hanchey airfields, East Beach, Engineer Beach, schools, hospitals, Ozark, Enterprise and Daleville municipalities, Ammunition Supply Point, Highway 27, Highway 51, Highway 84, Highway 167, Highway 134, Highway 123, Highway 248 and Highway 249.

GIS or ArcGIS is used in preparing smoke screening maps which identify smoke impact distances and zones, SSAs, creeks and drainages, creek and drainage crossings, railroad crossings, and the location of smoke signs. GIS is also used to show the primary SSAs on the installation.

Currently there are no smoke models being utilized that show smoke plume effects or direction.

Safety and Emergency Operations

1. INSTALLATION SPECIFIC SAFETY AND EMERGENCY OPERATIONS PROTOCOLS (REQUIRED).

Currently there are an undetermined amount of dud (UXO) areas located on Fort Rucker. They are located around the Silver Wings Golf course and in the impact area. The impact area is a restricted area and off limits to firefighting activities. Currently there is an undertaking to remove all UXO from around the golf course. Dud areas are surrounded by roads, creeks, or firebreaks. For this reason fires occurring in these areas are allowed to burn. Firefighting activities involve back setting the natural or artificial firebreaks around the dud areas to prevent a spot over and burning the area out in order to disperse the smoke sooner rather than letting it linger for several days causing an air quality problem. The only exception to the "off limits" policy is when firefighters are escorted by EOD personnel. Fires in the impact area will have a standing "let burn" policy unless there is an immediate life hazard.

In addition to dud areas there are other dangerous areas and conditions to consider when fighting fires. Steep slopes, gullies, wetlands, and darkness magnify the hazards of fighting wildfires. For this reason, all fires are suppressed with a two-person crew. All fires are thoroughly reconnoitered and sized-up before any attack is initiated. Steep slopes, ravines, and gullies are encountered in almost all of the training areas. Extra caution is critical to prevent the roll-over of a crawler tractor. Scouting the terrain and proper equipment speed reduces the threat of this hazard. In addition, steep terrain increases the fire's rate of spread uphill. For this reason, personnel must exercise caution when working uphill from a fire. Wetlands and bogs are also found throughout Fort Rucker. Scouting and sound judgment reduces the possibility of equipment becoming bogged down or stuck. Due to darkness fighting fires at night is hazardous. The limited visibility from darkness compounds firefighting efforts making steep slopes, gullies, wetlands, and obstacles, such as concertina wire and foxholes, difficult to see. Extreme caution must be exercised when fighting fires in the dark. Proper lighting, communications, scouting, and judgment are required to fight fires safely at night. Lights on equipment, especially crawler tractors, must be checked for operability before leaving the motor pool at night.

Supervisors, incident commander, and burn bosses will ensure that personnel involved in firefighting and prescribed burning activities are properly equipped

with personal protective equipment and clothing in accordance with the National Fire Protection Association (NFPA) 1977 – *Standard on Protective Clothing and Equipment for Wildland Fire Fighting*.

Firefighters need to be aware of the 10 Standard Firefighting Orders and fight all fires safely (**Box 1**).

Box 1. Ten Standard Firefighting Orders

1. Keep informed on fire weather conditions and forecast.
2. Know what your fire is doing at all times.
3. Base all actions on current and expected behavior of fire.
4. Have escape routes for everyone, and make them known.
5. Post lookouts when there is possible danger.
6. Be alert, keep calm, think clearly, act decisively.
7. Maintain prompt communication with your crew, your boss, and adjoining forces.
8. Give clear instructions, and be sure they are understood.
9. Maintain control of your personnel at all times.
10. Fight fire aggressively, but provide for safety first.

When firefighting in cantonment areas and along highways or main roads firefighters ensure warning lights on vehicles are operational and turned on to warn motorists. Smoke signs are utilized to warn motorists of the smoke ahead and to exercise caution. The military police are notified when smoke reduces visibility on roads or highways. If necessary, they can direct traffic and utilize their warning lights and signals to alert motorists.

A certified prescribed burner serves as burn boss, providing instructions and guidance on all prescribed burns on Fort Rucker. All burn bosses are required to have formal training and experience in Wildland firefighting and smoke management.

2. Risk Assessment / Decision Analysis Process

The AFC Forestry Weather and Smoke Management Forecast is the primary source of information used in deciding whether to implement a prescribed burn because it takes into account the fire weather parameters that will effect smoke direction and dispersion, fire intensity, rate of spread, and fog potential. This forecast is used in conjunction with the Air Quality Index (AQI), ozone forecast and Keetch-Byram Drought Index (KBDI) (F). The AQI, ozone forecast, KBDI, Smoke Dispersion Index (SDI), mixing height, transport wind speed, surface wind

speed, canopy wind speed, relative humidity, fuel moisture, and fog potential must be considered before a prescribed burn is considered a “Go” or “No Go”. These parameters must fall within a predetermined range prior to ignition / execution of a prescribed burn. A “Prescribed Burn Checklist” has been developed to aid burn bosses in making prescribed burn decisions.

Cold fronts, droughts, and tropical development affect fire behavior on the installation. Cold fronts affect fire behavior because they are accompanied with increased wind speeds and gusts which increase a fire’s rate of speed (ROS). Cold fronts can also cause sudden wind shifts from southerly wind directions to northerly wind directions turning backing fires into heading fires. Firefighting conditions can be hazardous with the passage of a cold front and firefighters must stay alert for approaching cold fronts. Droughts reduce fuel moisture increasing fuel loads and making more fuel available to the fire. Fires occurring during drought conditions will burn more intensely making suppression activities more difficult and hazardous.

1. Wildland Fire History

Wildfire season refers to the time of year when most wildfires occur in a particular state or region. In Alabama the main fire season is during the dry and windy months of February through May. Changes in annual weather conditions can make the season earlier, later, or longer. Fires can occur anytime after the first killing frost in late fall because more fine fuels are added to the dead fuel load making these fuels available to the combustion process.

Cold front systems dominate the weather patterns in the southeast during the winter months. These systems move from west to east or northwest to southeast. Burn bosses and firefighters must be aware of these frontal systems due to the abrupt change in wind direction that accompanies these fronts. Cold fronts move faster than warm fronts and have higher wind speeds after they pass. Wind speed movement is always clockwise with the passage of a cold front. Generally winds are southwesterly prior to the passage of a cold front shifting to the northwest as the front passes. During the summer months Bermuda highs dominate the weather patterns unless there is tropical development. Bermuda highs are warm dry air masses that are generally not displaced by frontal systems during the summer. Due to moisture out of the Gulf afternoon thunderstorms are common with the day time heating of the land mass.

2. Fire Management Zones / Units

Fire management units consist of training areas (TAs) as identified by Range Division. Utilizing TAs as burn units facilitates scheduling with Range Division, military units, and other users. NRB, Range Division, military units, and other

users of the installation's training lands, schedule or reserve their TAs by entering their requests in RFMSS (Range Facility Management Support System). The TAs are compatible with fire management units because they are surrounded by natural (creeks, stream, and drainages) and artificial firebreaks (trails, roads, and railroads). Although management objectives will vary from one TA to another fire suppression activities will be the same.

The fire history will vary from one TA to another depending on the fuel type. Those TAs that are predominantly longleaf pine will preferably have a two year fire return interval while those TAs that are mixed pine (loblolly and shortleaf) and mixed pine-hardwood will have a three year fire return interval. In addition, TAs located on the installation boundary will have a two year return interval regardless of forest type. The goal is to keep the fuel load low near the installation boundary to eliminate fire trespasses off the installation.

3. Fuel Models

The fuel models that best characterize the fuel on Fort Rucker are fuel models 7 and 9. Fuel model 7 includes southern rough under a southern yellow pine overstory. The rough is dense and averages two-three feet in height. This rough carries the fire very well. Expected rate of spread and intensity are both moderate. Total fuel loading for this model is 4.9 tons per acre. Fuel model 9 includes both long-needled conifers and hardwood stands, especially the oak-hickory type with loosely compacted litter. This model also includes southern pine plantations. Fire spread is primarily in surface litter such as concentrations of dead, dry, leaves or needles in the fall or spring. Stands can be long needle conifers, hardwoods, or mixed hardwoods-conifers. One hour time lag fuels strongly predominate. Surface fuels are mostly loosely compacted long needle pine or hardwood foliage litter. Total fuel loading for this model is 3.5 tons per acre.

With respect to the Fort Rucker Title V. Air Emissions Inventory 65% of the area burned annually is considered short needle pine and 35% is long needle pine.

There are seven principal fuel characteristics that influence fire behavior: fuel loading, size and shape, compactness, horizontal continuity, vertical arrangement, moisture content and chemical properties.

Fuel loading is the oven dry weight of fuels in a given area. Natural fuel loadings vary greatly by fuel model or vegetative type. Fires will move quickly and burn less intensely through the light fuel loads found in grasslands. These fuels are exposed to the wind and sunlight and dry out faster than fuels under a forest canopy. On the other hand, fires will burn with moderate rates of spread

but more intensely through the heavy fuel loads found in slash and dense brush. These fuels are less exposed to the wind and sunlight and dry out more slowly. Fuel loads will dictate the type of suppression methods used. A small grass fire may be fought directly while a slash fire will be fought indirectly due to the intense radiant heat. Since Fort Rucker is on a three to four year fire return interval fuel loads consist of three to four year roughs. Therefore, fires can be suppressed from one TA to another utilizing the same fire suppression techniques or methods. Generally, under normal weather conditions fires across the installation may be suppressed using the direct attack method due to the low fuel loads. Pumper trucks and crawler tractors are capable of suppressing all fires on the installation as long as the fire return interval remains at three to four years.

Size and shape of fuels affects the surface area to volume ratio of fuels. There are five fuel size classes: 1) 1-hour timelag fuels are < ¼ inch in diameter (grass, pine needles, hardwood leaves, and small twigs); 2) 10-hour timelag fuels are ¼ to 1 inch in diameter (twigs and small stems); 3) 100-hour timelag fuels are 1 to 3 inches in diameter (branches, pine cones); 4) 1,000-hour timelag fuels are 3 to 6 inches in diameter (large stems and branches); 5) 10,000-hour timelag fuels are > 6 inches diameter (logs and snags). Timelag is the time needed under specified conditions for a fuel particle to lose about 63 percent of the difference between its initial moisture content and its equilibrium moisture content. Small fuels (1-hour and 10-hour timelag fuels) and flat fuels have a greater surface area to volume ratio than large fuels. Less heat is required to ignite small fuels. The burnout time required for small fuels is less than large fuels. Fuel moisture content changes more rapidly in small fuels than in large fuels. Small fuels dry out faster and ignite sooner than large fuels. Small fuels produce short range spotting because they can only sustain combustion for a short time. Large fuels, on the other hand, like tree branches can produce long range spotting because they sustain combustion much longer than small fuels. Burning tree branches when lifted into a fire's convection column may be deposited miles downwind from the fire. Spotting distance is critical to a firefighter's safety because embers and firebrands can set fires on the opposite side of firefighters trapping them between two fires.

In addition to size, fuel shape is a significant factor in spotting. For example, flat fuels (hardwood leaves and bark plates) have a greater aerodynamic quality. Therefore, they are more easily lifted in fire convection columns to greater altitudes. In addition, round shaped fuels (pine cones and logs) have a tendency to spot downhill as a rolling firebrand.

Spotting is short range on the installation and usually occurs close to the firebreak within view of firefighters. It may be aerial spotting or surface spotting

(rolling firebrand). For this reason, firefighters patrol their firebreaks with a backpack pump or fire rake looking for a spot over to suppress.

Fuel compaction influences fire behavior. Fuel compaction is the space that occurs between fuel particles. Fuel compaction affects the rate of combustion. Loosely compacted fuels have more surface area exposed to air circulation. They usually have lower fuel moisture contents. For this reason they require less time for ignition and combustion resulting in a faster rate of spread. Therefore, loosely compacted fuels contribute to more hazardous firefighting conditions. Generally, the longer needle pine stands have more loosely compacted fuels. Therefore, these stands require additional caution during firefighting activities.

Fuel horizontal continuity is another condition that influences fire behavior. It is the extent of horizontal distribution of fuels. Fuels may be continuous or patchy. For example, open areas may have patches of fuel making it difficult for the fire to spread from one patch to another unless there is sufficient wind to cause spotting. Horizontal continuity influences where a fire will spread, how fast it will spread, and whether the fire travels through surface fuels, aerial fuels, or both. Fuels on the installation can be classified as continuous except on firing ranges (patchy grass), recent Clearcut (scattered slash) and herbicide and planted stands (sparse and patchy fuel). Generally, fires occurring in patchy fuels are safer to suppress than fires occurring in continuous fuels. The bare patches occurring between islands of patches of fuel act as firebreaks slowing the fire down. It is difficult for fires burning in patchy fuels to gain momentum under normal weather conditions.

Vertical arrangement of fuels is another important fuel condition influencing fire behavior. Vertical arrangement is the relative heights of fuels above the ground as well as vertical continuity. This influences whether or not the fire reaches the various fuel levels within the stand. When a fuel is vertically continuous it is a ladder fuel. A ladder fuel can transport the fire from the surface level to the canopy level. When fuels are both horizontally and vertically continuous it poses a dangerous situation for firefighters. Fires will torch out and crown out in these conditions. Depending on the wind speed and terrain these fires may become dangerous crown fires with downwind spotting. Young pine plantations with drape or ladder fuels present such a situation. Firefighters must exercise additional caution when fighting fires under windy conditions in young pine plantations on the installation.

Fuel moisture content is an important fuel condition that influences fire behavior. Fuel moisture is the amount of water in fuels, especially dead fuels,

expressed as a per cent of the oven-dry weight of that fuel. Larger fuels retain their moisture longer than small fuels which dry out sooner and become more available to the combustion process. The moisture content in fine, dead fuels can change very rapidly. For this reason, smaller fuels will be available for burning sooner than large fuels after a precipitation event. This is the reason fires occur on ranges sooner than they occur in the woodlands. The range grasses (1-hour timelag fuels) are exposed to the wind and sunlight which lowers the moisture content faster. Due to the two to three year fire return interval the majority of the stands on the installation consist of small fuels < 1 inch in diameter (cured grasses, pine needles, small twigs, and herbaceous vegetation). These fuels are 1 hour and 10 hour timelag fuels. For this reason, most prescribed burns on the installation have a moderate to fast rate of spread (3-5 chp).

Chemical properties of fuels are the last fuel condition that influences fire behavior. Chemical properties include such volatile substances as oils, resins, wax, and pitch. Certain fuels have high amounts of these substances that contribute to rapid rates of spread and high fire intensities. Shrubs such as gall berry, wax myrtle, deerberry, and huckleberry are good examples in the southeast. On the other hand, certain fuels may have a high mineral content such as phosphorous or calcium which can reduce fire spread and intensity. Dogwood leaves have high calcium content and burn poorly.

4. Wildland Fuel Factors

The forest cover type contributes to the type of dead fuels that exist on the forest floor. Although the dead fuels consist of cured grasses and herbaceous vegetation, it also consists of pine needles, hardwood leaves, dead twigs, branches, and logs from the forest canopy and logging slash from timber harvest operations. The fuel loading on the installation can fall into one of two categories: 1) Fire behavior fuel model seven consisting of a southern rough with privet and other species under a pine overstory. The total fuel load for this model which includes the dead fuel load (1.1 tons / acre), the live fuel load foliage (0.4 tons / acre), and fuel bed depth (2.5 tons / acre) equals 4.9 tons per acre; or, 2) Fire behavior fuel model nine consisting of long needle conifer stands, southern pine plantations, and the oak-hickory forest type. This model is also a good second choice for fuel model C which is typical of Alabama. The total fuel load for this model which includes the dead fuel load (2.9 tons / acre), the live fuel load foliage (0.4 tons / acre), and the fuel bed depth (0.2 tons / acre) equals 3.5 tons / acre. The dead fuels on the installation may be classified according to the following generic forest types: 1) Hardwood; 2) Hardwood / Pine; 3) Longleaf Pine; 4) Longleaf Pine Plantations; 5) Mixed Pine / Longleaf Pine; 6) Pine / Hardwood; and 7) Pine.

The **hardwood** forest type consists of upland hardwood, bottomland hardwood, and scrub oak. These hardwood types contribute hardwood leaves, twigs, branches, and logs to the dead fuel component. The scrub oak type is found on sandy soils and the dead fuels consist of patchy areas of cured grass, twigs, and scrub oak leaves. This type will not carry fire well due to lack of horizontal continuity and light fuel loads making suppression efforts less difficult and hazardous. The bottomland hardwood forest type can be found on the wetter soils along streams and creeks. Dead fuels consist of hardwood leaves, twigs, branches, and logs. The grass and herbaceous component are minimal in this forest type. This forest type will not carry fire well due to the high fuel moisture content of the dead fuels. Fires rarely occur in these types unless there is a drought. Bottomland hardwood forest types serve as good natural firebreaks. Fires occurring in these types usually burn themselves out. Suppression efforts in these types are minimal. The biggest hazard in suppressing these fires is getting equipment stuck. The upland hardwood forest type can be found in hardwood drains on the upper slopes. The main upland hardwood type consists of the oak-hickory type. Dead fuels consist of hardwood leaves, twigs, branches, and logs, as well as, cured grasses and herbaceous vegetation to a lesser extent. This type is generally open and located on upland soils on steeper slopes. This forest type will carry fire well due to the size and shape of the leaves (mainly oaks), horizontal continuity, lower moisture content, and terrain. Fires occurring on this forest type can be difficult to suppress due to the steeper slopes. Dozer operators must exercise extra caution when suppressing fires on this terrain. Fires occurring on these types can become intense when burning uphill. Spotting across firebreaks and trails can be a problem.

The **hardwood / pine forest** type generally consists of mixed hardwoods or scrub oak with a mixed yellow pine component. This type occurs on uplands, bottomlands, and drains. This type contributes hardwood leaves, pine needles, twigs, branches, and logs to the dead fuel component. The bottomland hardwood / pine forest type can be found on the wetter soils along streams and creeks. The grass and herbaceous component are minimal in this forest type. This forest type will not carry fire well due to the high fuel moisture content of the dead fuels. Fires rarely occur on this type unless there is a drought. The hardwood / pine bottomland type serves as a good natural firebreak. Fires occurring on this type usually burn themselves out. Suppression efforts on this type are minimal. The biggest hazard in suppressing these fires is getting equipment stuck. The upland hardwood / pine forest type can be found in hardwood / pine drains on the upper slopes. Dead fuels consist of hardwood leaves, pine needles, twigs, branches, and logs, as well as, cured grasses and herbaceous vegetation to a lesser extent. This type is generally open and located on upland soils on steeper slopes. This forest type will carry fire well due to the size and shape of the hardwood leaves and pine needles, horizontal continuity, lower moisture content, and terrain. Fires occurring on this forest type

can be difficult to suppress due to the steeper slopes. Dozer operators must exercise extra caution when suppressing fires on this terrain. Fires occurring on these types can become intense when burning uphill. Spotting across firebreaks and trails can be a problem. The scrub oak / pine (mainly longleaf) forest type is found on sandy soils and the dead fuels consist of patchy areas of cured grass, pine needles, and scrub oak leaves. This type will not carry fire well due to lack of horizontal continuity and light fuel loads making suppression efforts less difficult and hazardous.

The **longleaf pine** forest type occurs on loamy soils and sandy soils. This type is found on moderately well-drained and well-drained soils on flat terrain and hilly terrain (sand hills). This type contributes long pine needles, pine cones, twigs, branches, and logs to the dead fuel component. The grass and herbaceous component is more prevalent in this forest type. The fuels under this forest type burn readily. Fuel loads are higher under this forest type due primarily to the long needles. Shedding of needles occurs throughout the year with heaviest shedding occurring between September and October. This forest type is found in association with grasses, bracken fern, and other herbaceous vegetation. Because of the abundance of pine straw, grasses, and herbaceous vegetation (fine fuels) fires can occur throughout the year in this forest type. Fires occurring in this forest type can be intense and difficult to control due to the conditions that contribute to the fire's fast ROS such as the abundance of fine fuels, horizontal continuity of fuels, and open park-like conditions exposing the fuels to the wind which promotes fast drying conditions. Fires occurring in this forest type move quickly making fire suppression by direct attack difficult and hazardous. This is especially true on hilly terrain. Dozer operators must exercise extreme caution when suppressing fires on the steeper slopes. Fires occurring on this forest type can become intense when burning uphill. Spotting across firebreaks and trails can be a problem. Because this type burns readily with a fast ROS making suppression efforts difficult and hazardous the goal is to maintain this forest type on a two year fire return interval.

The **longleaf pine plantation** forest type occurs on loamy and sandy soils on both flat and hilly terrain. The longleaf plantations on the installation are < 25 years old. This type contributes mainly pine needles to the dead fuel component. The grass component is more prevalent in the older plantations. The primary carrier of fire in this type is the long pine needles and grass when it is cured. Fires occurring in this type may be intense and hazardous to control. Fires in this type move quickly due to the abundance of pine straw from the density / stocking of the saplings. Depending on the wind speed and time of year these fires can become dangerous crown fires. Firefighters must look for torching and crowning out in longleaf pine plantations and take the necessary precautions if this fire behavior is observed. This forest type should be burned biennially in the dormant season.

The **mixed pine / longleaf pine** forest type consists primarily of loblolly pine and short leaf pine with scattered longleaf pine or patches of longleaf pine throughout. It occurs on flat to sloping terrain on sandy and loamy soils. This type contributes pine needles, pine cones, twigs, branches, and logs to the dead fuel component. Although grasses and herbaceous vegetation is prevalent, where burning has controlled the woody vegetation, there may be a woody component in the form of shrubs and weed trees mainly sweet gum. The primary carrier of fire is pine straw, cured grasses, and herbaceous vegetation. This forest type is prescribed burned on a three year fire return interval. Generally, fires occurring in this forest type can be suppressed directly with crawler tractors. The ROS is usually moderate (2-3 chp) under normal weather conditions. Dozer operators need to exercise caution on steeper terrain.

The **pine / hardwood** forest type consists predominantly of mixed yellow pine with a hardwood component. This type can be found across the installation on flat to sloping terrain on a variety of soils. This type contributes pine needles, hardwood leaves, pine cones, twigs, branches, and logs to the dead fuel component. The primary carrier of fire is pine straw, cured grasses, and herbaceous vegetation. This type is prescribed burned on a three year fire return interval. For this reason, fires occurring in this forest type are not as intense and can be suppressed directly with crawler tractors. The ROS is usually moderate (2-3 cph) under normal weather conditions. Dozer operators need to exercise caution on steeper terrain.

The **pine** forest type includes loblolly pine, shortleaf pine, slash pine or a mixture of loblolly pine and shortleaf pine. This forest type can be found across the installation on flat to rolling terrain on a variety of soil types. This is the most prevalent forest type on the installation. This type contributes pine needles, pine cones, twigs, branches, and logs to the dead fuel component. The primary carrier of fire is pine straw, cured grasses, and herbaceous vegetation. This type is prescribed burned on a three year fire return interval. For this reason, fires occurring in this forest type are not as intense and can be suppressed directly with crawler tractors. The ROS is usually moderate (2-3 cph) under normal weather conditions. Dozer operators need to exercise caution on steeper terrain.

Because the fire return interval is three to four years for the TAs across the installation fuel surveys are not collected. Prescribed burners and firefighters are working with a three to four year rough or fuel load. This fuel load will be consistent for each of the above forest types from one burn rotation to the next. As discussed above the fuel load will vary from one forest type to the other.

5. Natural and Cultural Resource Considerations

Sensitive natural and cultural resources occur across the installation. The following sensitive resources are given consideration prior to conducting any Wildland fire management activity: 1) Gopher tortoises, 2) Plants of special concern, 3) Bald eagle, 4) Archeology sites, 5) Cemeteries, 6) Unique Ecological Areas (UEAs), 7) Streams and creeks.

The **gopher tortoise** is listed as a threatened species in Alabama. Most gopher tortoises reside on the majority of the installation. Gopher tortoise management is normally in the form of protection of burrows and habitat. Sensitive Areas are defined as places on the installation where the soil must be protected. They may contain archaeological sites, protected plant species, or gopher tortoise colonies. Digging and off-road driving is prohibited in Sensitive Areas. No heavy equipment will be operated or firebreaks installed within 15 feet of a burrow (INRMP, September 2001).

The **bald eagle** is listed as federally threatened, Georgia endangered, and Alabama protected. There will be no prescribed burning within the primary zone (1500 feet radius from the nest) or the secondary zone (1 mile radius from the nest) during the breeding season from December 1 to June 1.

There are numerous **archeology sites** across the installation. Archeological sites are the material remains of past human activity, regardless of ethnic, race, or otherwise culturally defined origin. The Rust Environmental and Infrastructure, 1999) summarizes the 16 cultural resources surveys on Fort Rucker. Brockington and Associates, Inc. (1995) also summarize (pages 32-36) the 15 surveys prior to their survey. Fort Rucker has completed 100% of its Phase I surveys including leased lands. Five sites on Fort Rucker are eligible for inclusion on the National Register of Historic Places, and ten sites on Fort Rucker and eight sites on leased lands remain eligible. Only one structure on Fort Rucker is potentially eligible for the National Register. The inventory includes 315 archeological sites on Fort Rucker and 27 sites on leased lands (Harvey *et al.*, 1996). Brockington and Associates, Inc. (2008) reported that there are no Cold War-Era Resources (1955-1965) or Military Landscapes at Fort Rucker that are eligible for inclusion on the National Register of Historic Places. Headquarters, Department of the Army has adopted a Cultural Landscape Planning Approach as outlined in AR 200-4.2-1.b. This approach uses the principles of ecosystem management for planning and management of cultural resources within a context of the integrated management of land, resources, and infrastructure.

There are numerous **streams and creeks** across the installation. Water quality protection begins with recognizing watercourses and water bodies. According to

the federal Clean Water Act, “waters of the U.S.” include lakes, rivers, perennial and intermittent streams, wetlands, sloughs or natural ponds. Identifying stream types (perennial, intermittent, or ephemeral) is important in prescribing the level of protection through the implementation of Alabama’s BMPs (Alabama’s Best Management Practices for Forestry, Buffer strips, also known as streamside management zones (SMZs), are located adjacent to streams and creeks and should be managed with special considerations to protect water quality. The width of SMZs will vary depending on the slope of the land and the erosive potential of the soil. The steeper the slope and more erosive the soil the wider the SMZ should be. NRB personnel will comply with Alabama’s BMPs to protect and preserve water quality when suppressing fires or prescribed burning near streams and creeks. NRB personnel will comply with the following BMPs in the performance of fire management activities:

- 1) Where used, firebreaks should be installed parallel to streams and outside SMZs.
- 2) Minimize the intensity of prescribed fires in SMZs to maintain forest floor cover and protect the soil surface.
- 3) Exclude high intensity site preparation fires from the SMZ. Cool, low intensity hazard reduction fires that do not consume the duff layer are allowed.
- 4) Repair wildfire suppression firebreaks as soon as practical after the fire is under control to meet BMPs for pre-suppression firebreaks.
- 5) When possible use existing man-made and natural barriers such as roads, trails, streams, creeks, and fields as firebreaks.
- 6) Install firebreaks on the contour if possible. If not, use a gradual grade.
- 7) Use bladed or harrowed firebreaks NOT plowed firebreaks when possible.
- 8) On slopes exceeding 3%, install waterbars with water turnouts in firebreaks according to BMPs for skid trail retirement

(Exhibit 1).

Grade of Skid Trail Distance Between

or Firebreak (percent) Water Bars (feet)

2	250
5	135
10	80
15	60
20	45
30	35
40*	30

**Use grades of 40% and steeper only for short stretches.*

(Exhibit 2). *Spacing of Water Bars on Skid Trails
and Firebreaks*

- 1) Use hand tools or back blade firebreaks away from the edge of streams, creeks, roads, and gullies.
- 2) Install water bars and water turnouts at approaches to streams, roads, and gullies, to prevent channeling water from firebreaks into these areas.
- 3) Treat active gullies the same as streams, using appropriate buffers and plowing practices.
- 4) Avoid installing firebreaks that channel surface runoff into streams, roads, or gullies.
- 5) Avoid plowing firebreaks inside the SMZ.

The INRMP is the fundamental document or interagency strategy for all natural resource management programs, including fire management, with the goal of achieving ecosystem sustainability. This document was prepared by incorporating the expertise and knowledge of subject matter experts from universities, state and federal agencies, and research organizations.

Fire management through the use of prescribed burning will enhance public use of the installation's woodlands. Prescribed fire will remove dense woody vegetation and increase the amount of herbaceous vegetation for wildlife. This will improve visibility and access for public use whether it is hunting, fishing, hiking, or bird watching. Smoke management will be critical when prescribed burning in the vicinity of Sensitive Smoke Areas throughout the Installation.

Smoke will have an adverse effect on campers, boaters, and fishermen. Prescribed burners will also have to keep up-to-date on special events and take the necessary smoke management precautions.

Recreational Areas and the cantonment areas which include housing areas, administrative buildings, schools, medical clinic, recreational buildings, barracks, warehouses, motor pools, and other structures are at risk from wildfire. Although wildfires occur in cantonment areas they are infrequent. These fires have posed a threat to housing areas in the past. Due to the quick response time of the Fort Rucker Fire Department and NRB personnel these fires were suppressed while they were still small in size before they could spread into the living quarters. Currently, it is the responsibility of the fire department to suppress fires in the cantonment areas. The fire department contacts the NRB if they are unable to suppress a fire because of its location, size, and intensity.

6. Mission Consideration

The mission of the IWFMP is to prevent, detect, and suppress wildfires occurring on woodlands and ranges while managing sustainability and ecological integrity of the natural resources; and, to use prescribed burns as part of an adaptive management approach that focuses on the ecological integrity of the landscape as its primary end state while maintaining a realistic training environment. Fires will be suppressed when necessary to protect mission lands and resources whether they are military or natural. Prescribed fire will be used to maintain open understories by top-killing hardwoods and promoting herbaceous vegetation. These open understories are not only characteristic of desired future conditions (DFCs) of the ecological landscape but also improve visibility and accessibility for military training promoting a realistic training environment. In addition, prescribed burning will reduce fuel loads and fire intensity thus providing a safer environment for military training. Lower fuel loads will make fire suppression more manageable for troops and NRB personnel. Therefore, prescribed burning is compatible with maintaining the ecological integrity of the landscape as well as maintaining a realistic training environment.

The military mission affects the implementation of the IWFMP mission by limiting the opportunities to prescribe burn due to scheduling conflicts. Military units can schedule 13 weeks out. Depending on the unit or the FTX numerous TAs may be scheduled for days at a time. This makes these TAs unavailable for prescribed burning even if all the fire-related weather parameters are ideal for prescribed burning. Scheduling conflicts become more critical to the burn manager as weather variables such as, precipitation, relative humidity, fuel moisture, surface wind speed, wind direction, Smoke Dispersion Index (SDI),

transport winds, mixing height, KBDI, fog potential, ozone forecast, and PM 2.5 levels.

UXO does not present a problem in the implementation of IWFMP. Areas with UXO are designated dud areas and off limits to fire suppression activities. These areas are treated as no plow, indirect attack zones. Fires occurring in these areas may be back set along the permanent firebreak, trail, or road and allowed to burn out. Occasionally UXO is found in an area that is not a designated dud area. Should this occur, NRB and personnel contact Range Division. EOD is notified and the UXO is removed or detonated in place.

As discussed previously military missions can and do restrict the opportunity to conduct prescribed fire operations. Most military missions are not compatible with prescribed burning due to the fixed nature of the training such as bivouacs, encampments, fixed fighting positions, command posts, staging areas, etc.

As discussed above the implementation of the IWFMP affects the military mission in a positive way. Prescribed burning improves visibility and accessibility for military training promoting a realistic training environment. Prescribed burning will reduce fuel loads and fire intensity thus providing a safer environment for military training. Lower fuel loads will make fire suppression more manageable for troops and NRB personnel. Fire suppression protects troops, supplies, and equipment from fire.

7. Military Training Restrictions

The major causes of Wildland fires on the installation are incendiary training aids such as flares, blanks, simulators, pyrotechnics, and smoke grenades. There are 59 live fire ranges located across the installation. The use of tracers on live fire ranges is another major cause of fires.

Wildfires occur in direct correlation with the fire danger rating and the intensity and type of military training. The fire danger rating is computed from weather conditions, such as humidity, wind speed, and rainfall. The fire danger rating consists of five classes with class 5 being extreme fire weather (**Exhibit 3**).

(Exhibit 3) Fire Danger Rating

Spread Index	Class	Behavior Pattern
0-5 - Low	1	Fire will spread slowly and tend to die.
6-9 - Moderate	2	Fire will spread in grass and leaves until extinguished.

10-19 - High	3	Fire burns briskly and spreads rapidly. Short distance spotting may occur. Young conifer stands are at risk to fire damage.
20-39 - Very High	4	Fire spreads rapidly and tends to crown in young conifer stands. Long distance spotting is common. Intense convection activity may develop. Torching occurs in older timber.
40 - Extreme	5	Fire burns very briskly and above spreads very rapidly. Where heavy vegetation occurs, fires may be unmanageable. Long distance spotting is common. Fire behavior is unpredictable and crown fires in older timber are common.

Range Division notifies units of the fire danger rating. Units will report all forest fires or range fires to Range Division. Range Division will notify the NRB. Units will appoint a non-commissioned officer as the unit fire marshal daily while in the field or on the range to ensure all personnel have been indoctrinated concerning the safe use of incendiary devices and to supervise the immediate suppression of fires. Units will attempt to suppress fires until NRB personnel arrive at the scene. Units will assist NRB personnel as needed.

When a fire danger rating four (very high fire danger) is reached, the use of tracers and incendiary training aids such as flares, simulators, pyrotechnics, smoke grenades, firecrackers, and open fires will cease effective that day. Blanks may be used. Exceptions to policy must be requested through Range Division. Exceptions may be granted to that training which is most critical to unit mission. Range Division will notify NRB of exceptions to policy.

When a fire danger rating five (extreme fire danger) is reached, the use of all incendiary type ammunition will cease effective that day. Blanks may be used. Exceptions to policy must be requested through Range Division. Exceptions may be granted to that training which is most critical to unit mission. Range Division will consult with NRB prior to granting an exception to policy (USAIC Regulation 210-4).

“The destructive force of a class 5 Wildland fire”



Monitoring and Evaluation Requirements

1. Monitoring Requirement: Refer to **Prescribed Fire Management**.

2. Evaluation Requirement:

The NRB Chief, Operations Section forester, prescribed burn bosses, and Wildland fire incident commanders will ensure that the safety of all personnel involved in fire-related activities is upheld to the highest degree IAW the INRMP, IWFMP, safety SOPs, risk assessments and the National Fire Protection Association (NFPA) 1977 – *Standard on Protective Clothing and Equipment for Wildland Fire Fighting*. Personnel will be equipped with proper PPE clothing.

The Operations Section forester, team leader and lead fire technician will ensure that fire- related activities, including trail and firebreak maintenance, are implemented in compliance with prescribed burn plans, smoke management

plans, BMPs for water quality, air quality guidelines and restrictions (ozone, PM 2.5, burn bans), burn permits, and NEPA compliance in general.

The NRB Chief, Operations Section forester / team leader, and lead fire technician will ensure that all fire-related activities are in compliance with the following:

- 1) DoD Instruction 6055.6, 10 Oct 00, *DoD Fire and Emergency Service Program*.
- 2) Army Regulations 200-2 and 200-3.
- 3) Army Memorandum (04 September 2002), *Army Wildland Fire Policy Guidance*.
- 4) Installation INRMP, IWFMP, ICRMP, fire and emergency services plan.
- 5) Review and update of the 1995 Federal Wildland Fire Management Policy, Jan 01.
- 6) NWCG Wildland Fire Qualifications Subsystem Guide,

1. PMS 310-1/NFES 1414.

- 7) State and local laws and ordinances for burning and air quality.
- 8) Biological Opinions.

The NRB Chief, Operations Section forester, team leader, and lead fire technician will ensure that goals, objectives, and procedures set forth in the INRMP, Biological Opinions, IWFMP are met (Section I. Goals and Objectives and Section II Wildland Fire, a. Suppression and Prevention).

3. Public Relations

Smoke management and water quality will most likely be the NRB's biggest forest management concerns throughout the next decade. Prescribed burning is by far the most useful forest management tool, so the development and implementation of a good public relations strategy to address smoke management will play an important role in preserving the ability to burn.

Ozone and particulate matter are air quality concerns from an Environmental Protection Division legal standpoint, but smoke obstructing driver visibility on

highways and roads and smoke affecting the health of the local public may even be of greater concern. Not much can be done as far as public relations from a legal standpoint, but there are many ideas to minimize complaints resulting from the adverse affects of residual smoke on the general public.

Educating the public as to the safety benefits as well as ecological benefits that are gained by prescribed burning is the most effective public relations strategy. Also, soliciting and considering input from those persons potentially affected by the smoke could foster good public relations. Addressing wildfire smoke is also a major public relation concern. Most complaints are due to wildfires, which are mainly started by military training activities. Since military training is Fort Rucker's primary mission, wildfires will continue to be an ongoing situation NRB, and the fire department will have to deal with. Wildfire occurrence is unpredictable. Therefore, unlike smoke from prescribed burning which can be predicted and managed, the smoke associated with wildfires is uncontrollable and unexpected by the public. However, prescribed burning on a regular basis (3-4 year fire return interval) reduces fuel loads, which in turn minimizes the potential smoke problems and safety problems when wildfires do occur. Also, through good fire detection the capability to respond to and suppress wildfires in a timely manner can minimize potential smoke problems.

There are several ways to educate the public on prescribed burning: (1) media news outreach such as local television and newspaper coverage concerning the benefits of prescribed burning, (2) flyers distributed to potentially impacted residents describing the benefits of prescribed burning and the specifics with respect to what residents can expect and what precautions they can take during the installation's prescribed burning operations, (3) local school presentations can provide information that can be carried home with each child to share the lessons learned with their families, (4) presentations at installation and local group gatherings, such as the Environmental Quality Control Council (EQCC), the Commanding General's Fish and Wildlife Advisory meetings, housing area town hall meetings, and other interested groups can be affective, (5) developing outdoor classrooms for the institution of environmental programs such as Project WILD, Project Learning Tree, and Project WET, and (6) even one-on-one informal sessions with interested groups or inviting persons to witness a prescribed burn could be very helpful.

The same outreach opportunities described above are available and should be used as educational opportunities. Reaching the potentially impacted source up front is usually the key to minimizing a negative response by the public to the activity. It is necessary to get those potentially affected involved early and make them feel recognized in their concerns and also a beneficiary from the natural resource management activity. Again presentations at Fort Rucker Schools and

spots on local television are the primary methods of public outreach. On-site field trips for local interested parties, similar to the wildlife schools and forestry field trips that are already given, may also be a good public relations tool. An on-site field trip to a prescribed burn-in-progress could be an exciting and educational opportunity (INRMP, September 2001).

4. Wildland and Community / Urban Interface

1. Prescribed burning is the most important and the most cost effective tool for managing and improving forested ecosystems. The trend to the exclusion of fire over the last fifty years played a key role in the reduction of biodiversity in our forested ecosystems. In the past, fire served to eliminate shrubby competition, return nutrients to the soil, and aid in some seed germination. These fire-maintained ecosystems supply significant browse for wildlife thereby enhancing biodiversity. Present settlement patterns make wildfires highly undesirable. Prescribed burning provides a mechanism for the reduction of fire fuel loads in forested areas, reducing the likelihood wildfires will occur.

Because of the potential impact of prescribed burning on helicopter training, coordination must be accomplished between the Forestry Section and Airfield Air Space Management and Range Operations. The Fire Department must be informed, on a daily basis, of prescribed burning activities prior to commencing a burn, the location of the burn area, and when securing from a burn area.

These parameters do not apply to burning in conjunction with chemical and mechanical site preparation. Prescribed burning is carried on as a range fire control activity when necessary and is coordinated through the Range Control Officer. Normal burning is on a three-four year rotation.

Prescribed burning is a scheduled and approved forest management activity budgeted for and funded by the Forestry Reimbursable Account. With the exception of a small number of growing season burns and site preparation burns, the prescribed burning program at Fort Rucker is predominately dormant season burning which begins around the first of December and continues through April. Some of the March and April burns are technically growing season burns. An increase in growing season burns is anticipated during the next five years to promote stand conversion to longleaf pine and to improve gopher tortoise habitat. Due to weather and military training constraints there are typically 20 to 24 acceptable burn days within each year.

This integrated plan will coordinate plans and actions between the Forestry Section and the Fire Department and Emergency Services. The prescribed

burning program will be an integral and essential part of this plan as an aggressive prescribed burning program is the most important and effective tool in minimizing wildfire potential.

Wildfire Suppression: Fires that occur at the Wildland / urban interface are fought aggressively because of the imminent threat to life and property. NRB personnel work closely with the Fort Rucker Fire Department and AFC in suppressing fires that occur adjacent to the installation boundary. Although fire trespasses that burn off the installation on to private land are rare, they do occur. When a fire burns across the installation boundary on to private land, NRB personnel assist state and local firefighters in suppressing the fire. Good fire detection, through the manning of fire towers on and off the installation, is critical in spotting a fire near the installation boundary so fire suppression crews can respond promptly containing the fire before it crosses the installation boundary.

5. Fire Reviews

If the fire is caused by the use of incendiary devices on a fire danger class 4 or 5 day Range Division is notified. A range technician is dispatched to the fire scene to investigate the situation and remind the unit of their responsibilities on fire class 4 and 5 days. Normally exceptions are not granted for field training on fire class 4 and 5 days.

6. Funding Requirements

Forestry funds are generated from sale of forest products. Forestry Funds are centrally controlled, and Fort Rucker is limited to recovering its approved expenses for forest management. The remainder of the money generated by the Fort Rucker forestry program is split 60:40 between U.S. Treasury and the counties.

These funds are commonly called P7 funds. The account is called the Forest Reserve Account. Funds must be used only for items directly related to management of the forest ecosystem. Such items include timber management, reforestation, timber stand improvement, inventories, fire protection, construction and maintenance of timber area access roads, purchase of forestry equipment, disease and insect control, planning (including compliance with laws), marking, inspections, sales preparations, personnel training, and sales. Army Regulation AR 200-1 and DFAS- IN Regulation 37-1 Chapter 25 outline collection and expenditure systems.

7. Personnel Training and Certification Standards and Records

Natural Resources Branch personnel that perform Natural Resources duties to include timber management, Wildland fire management, and support activities are listed in **Table 3**.

Table 3. Natural Resources Branch Personnel

Position	Name
Chief, Natural Resources Branch	Doug Watkins
Lead Forester	James Jennings
Lead Forester Timber Mgt	Brent Waters
Forest Technician	Ricky Graham
Forest Technician-Fire	Kenneth Ward
Forest Technician	Daniel Maledy
Forest Technician	Troy Dunn
Natural Resource Technician	Roger Yarbrough
Fish and Wildlife Administrator	Danny Spillers
Wildlife	Vacant
Wildlife	J. B. Bruner
GIS	Brian Mooney
Wildlife	Kerwin Gullledge

All NRB personnel, excluding the branch chief, are involved in Wildland fire management activities. In addition, NRB personnel perform Wildland fire management duties such as prescribed burning and fire suppression. All personnel involved in Wildland fire management activities, including prescribed burning and firefighting, receive formal training. The following coursework is required:

- 1) Wildland Firefighters Course S-130 / S-190 - (prescribed burners and crew leaders)
- 2) CPR and First Aid-(mandatory for all personnel)
- 3) Alabama Forestry Commission Prescribed Burn Manager Certification Program
- 4) Wilderness and Remote First Aid

Training records will be maintained by the Operations Section team leader. The team leader will ensure that training records are current and up-to-date. Training update requirements and any new training will be scheduled by the team leader. The NRB chief and team leader will ensure that new fire management technology is integrated into the work force and that personnel are properly trained.

WILDLAND FIRE

1. Suppression and Prevention

The IWFMP wildfire suppression goal is equivalent to the INRMP wildfire suppression goal which is to prevent, detect, and suppress wildfires occurring on woodlands and ranges while managing sustainability and ecological integrity of the natural resources.

The following wildfire suppression procedures will be followed, evaluated, and monitored in order to achieve the IWFMP wildfire suppression objectives:

a. Routine Procedures:

- 1) Inspect fire suppression equipment on a daily basis and address defects as soon as possible.
- 2) Operation of heavy fire suppression equipment may be conducted only by certified/licensed technicians or operators.
- 3) The fire crew is the primary fire crew during any regular duty hours.

b. Fire Response Procedures:

- 1) If possible and manpower is available, respond to a wildfire with no less than two persons outfitted with appropriate suppression equipment.
- 2) Contact the Fort Rucker Fire Department for assistance with wildfire suppression in all areas.
- 3) Alert motorists of possible smoke presence in cantonment areas by posting warning signs with flashing lights along roads.
- 4) Natural Resource Branch technician is the fire incident boss.
- 5) Identify hazardous conditions and sites (gullies, steep slopes, wet and boggy areas) by conducting thorough reconnaissance of wildfires before suppression.
- 6) Let wildfires burn (i.e., no suppression but treat as a prescribed burn) if fire weather conditions are within the required parameters, wildfires are contained by appropriate boundaries (scraped roads, creeks, wet drains, already established fire breaks), and they do not jeopardize fire intolerant ecologically unique areas (unless it is a low intensity fire causing minimal damage), civilian or military assets on and off post (equipment, buildings, and structures), military and civilian personnel

- (hunters and contractors), and smoke-sensitive areas (roads, highways, housing areas, hospitals, Army Airfields, etc.) .
- 7) “Let Burn” decisions are to be made only by personnel with knowledge of fire weather conditions, fire behavior, boundaries suitable for containment, location of environmentally sensitive areas, civilian/military assets, civilian/military personnel, smoke-sensitive areas, and stands with marked timber.
 - 8) Let wildfires in DUD areas burn, while monitoring perimeter for a potential spot over.
 - 9) Contain wildfires in DUD areas by scraping existing roads or re-plowing firebreaks that surround them.
 - 10) Contact Explosive Ordnance Disposal (EOD) if unexploded ordnance is found on or off training ranges and outside DUD areas while suppressing a fire.
 - 11) Extinguish fuels that may potentially spot over control lines and minimize smoke hazards along the fire perimeter by extinguishing smoldering fuels such as snags, stumps and cat-faces.
 - 12) Contact the local Fire Departments and/or Alabama Forestry Commission if a wildfire burns across the Installation boundary onto private land. Assist city, county, and state firefighters in fire suppression on such fires.
 - 13) Document all wildfires on GIS map, and master fire map and wildfire summary database.
 - 14) Notify Directorate of Public Safety and Environmental Management Division Chief of property damaged by wildfires.

Currently, NRB personnel suppress fires occurring in TAs, cantonment area woodlands, and ranges following prescribed burns. Fire department personnel are the primary firefighters / responders. NRB personnel may be requested during and after duty hours because they have the class A or B commercial driver's license required to operate equipment transport trucks. The transport truck and tractor unit is the single most important piece of firefighting equipment in the suppression of Wildland fires. The pumper trucks serve as back up units due to their limited access. Pumper trucks are used primarily to suppress fires occurring in the cantonment areas, near roads and trails, or on ranges. Military aircraft such as helicopters are not used to accomplish fire management activities including prescribed burning and fire suppression.

The installation fire department suppresses structural fires, accessible fires in cantonment area woodlands, and on ranges. If a fire is inaccessible the fire department will contact the NRB. The NRB will assist the fire department in suppressing any fire they cannot access that requires a crawler tractor.

Fires occurring off the installation but adjacent to the boundary are suppressed jointly in cooperation with the local Fire Department or AFC.

Range Division addresses fire prevention in TAs and on ranges (USAIC Reg. 210-4) at the weekly Range Division safety briefings. Fire prevention is elevated at these meetings when the fire danger rating reaches a class four. Units are informed that the use of incendiary devices and tracers must cease until further notice, although exceptions may be granted by Range Operations. The fire danger class is also announced regularly over Range Division's radio frequency.

c. Equipment

The NRB is equipped with two transport trucks, crawler tractors with front mounted 6-way blades, three 250 gallons 4 x 4 pumper trucks, three ATVs with burn units and various hand tools (backpack pumps, fire rakes, chainsaws, etc.) to suppress fires.

Continued operation requires three dozers, one farm tractor, and two 250 gallon 4x4 brush truck be replaced due to age and high maintenance costs.

d. Detection Procedures

The following fire detection procedures will be followed, evaluated, and monitored in order to achieve the IWFMP wildfire suppression objectives:

- 1) Obtain the Alabama Forestry Commission fire danger rating for Fort Rucker from <http://www.forestry.alabama.gov>. The fire danger rating will determine the level of fire detection and suppression readiness needed.
- 2) Maintain communication with Range Operations and Alabama Forestry Commission during fire detection activities.

e. Dispatch Procedures

Fires may be reported to the NRB personnel, AFC, Range Operations, Military / DOD police, and the Fort Rucker Fire Department.

f. Communications Plan

Fires may be reported by phone to the NRB, Range Operations, Fire Department, or Military Police frequencies. When a range fire occurs NRB personnel coordinate range access with Range Division. Both ingress and egress from a range are coordinated when responding to a range fire. Cell phones are another means of communication used to coordinate firefighting activities.

g. Extended Attack Procedures

Unless fires are located in a dud area or the "Let Burn" policy is in effect installation fires do not burn beyond one burning period. This is the result of the two to three year fire return interval. Due to the low fuel loads fires are more manageable and suppressed in a timely manner while they are still small in size. Early fire detection, timely dispatch, and the rapid response of fire suppression personnel are the keys to keeping fires small without extended suppression times beyond one burning period. Dud areas are restricted and off limits to fire suppression activities unless NRB firefighters are escorted by Explosive Ordinance Disposal Detachment personnel.

h. Rehabilitation Needs and / or Procedures

Rehabilitation procedures will be incident specific depending on the location, slope, soils, and forest type. Sensitive areas (plants, gopher tortoises, and archeological sites), SMZs, and gullies are treated with caution when firebreaks are installed. Firebreaks are only utilized in these areas in emergency situations. BMPs are used on all firebreaks installed on sloping terrain. Firebreaks installed in SMZs and active gullies may require seeding or planting on sloping terrain after BMPs are installed.

i. Records, Reports, and Monitoring

Burned areas will be monitored in accordance with The Nature Conservancy's monitoring protocol (**Prescribed Fire Management, e. Monitoring**). Fires are recorded in a data base file by fiscal year. An access data base report is prepared summarizing the fires by fiscal year. The fires are also mapped on a 1:25,000 scale Range Division Training Area map. Because the installation is not a participant in the NWCG, Wildland fire reports are not submitted to the National Fire Incident Reporting System (NFIRS) through the Emergency Reporting System (ERS).

PRESCRIBED FIRE MANAGEMENT

1. Prescribed Fires

The IWFMP prescribed burning goal is equivalent to the INRMP prescribed burning goal which is to use prescribed fire as part of an adaptive management approach that focuses on the ecological integrity of the landscape as its primary end state. The following prescribed burning policies and procedures will be followed, evaluated, and monitored in order to achieve the IWFMP prescribed burning objectives:

2. Prescribed Burning Training:

- a. Natural Resources Branch personnel who perform prescribed burns must complete an inter-agency prescribed burning course before conducting prescribed burning.
- b. Natural Resources Branch personnel who conduct fire suppression activities must complete S130/S190 "Basic Wild land Firefighting Course."
- c. Personnel who direct prescribed burns (burn boss/crew leaders) must complete the Alabama Forestry Commission Prescribed Burn Manager Certification Program. It is recommended that personnel who direct fires also attend Rx 300 "Rx Burn Boss" and Rx 410 "Smoke Management".

3. Procedural Documents:

- a. Follow the procedures and policies as stated in the Fort Rucker Prescribed Burning Standard Operating Procedure (PBSOP).
- b. Follow smoke management guidelines (Mobley, 1990, 1996) for the Smoke Dispersion Index (SDI) and prescribed weather parameters for wind direction, humidity, surface wind speed, mixing height, and transport wind speed before conducting a prescribed burn.

4. Pre-Burn Reconnaissance:

- a. Conduct pre-burn reconnaissance for asset identification and protection, such as buildings, utilities, equipment, railroads, and private property adjacent to the Installation boundary.
- b. Conduct pre-burn reconnaissance for hazard identification and elimination (snags and green trees with cankers next to roads, buildings, power lines, and railroads).

- c. Conduct pre-burn reconnaissance on day of burn to ensure troops, hunters, and contractors are not in the area.

5. Coordination with Natural Resource Personnel and Army:

- a. Initial coordination between Natural Resources Branch regarding proposed burns should take place no less than two months prior to the beginning of the burn season. (Note, some training and cantonment areas are burned starting after Thanksgiving.)
- b. Review planned burn activities with forestry and wildlife sections to avoid possible management conflicts or to further identify needed burn activities.
- c. Schedule training compartments for prescribed burning with Range Control as early as possible in order to avoid reduction in training. Weather, NRB staffing and training area usage are the major factors contributing to scheduling.
- d. Co-locate with military units that plan to use training compartments scheduled for burning, so training and burn activity conflicts are avoided.

6. Firebreaks:

- a. Construct firebreaks to protect human life; urban / private property (especially private property along boundary and smoke sensitive areas such as hospitals, cantonment areas, highways and airfields); military resources; training exercises; marked timber; and timber harvest operations.
- b. Install firebreaks using a six-way blade rather than a fire plow so that the operator can minimize the depth of soil disturbance and apply best management practices (BMP).
- c. Use existing natural fire breaks such as creeks, wet drains, gullies, and ditches in addition to cleared trails and roads. If new firebreaks are needed, avoid placing them in sensitive areas, ecotones, wetlands, or other riparian areas susceptible to soil erosion.

7. Soil Conservation:

- a. Coordinate with the Integrated Training Area Manager (ITAM) and/or SEMP Liaison before burning areas where land rehabilitation and/or research projects are being conducted so that erosion control structures, equipment, and research sites can be protected.

- b. Obtain updated information on the location of soil erosion control structures and projects as well as projected dates projects will be complete, from the soil conservationist before the beginning of the burn season.
- c. Minimize the intensity of prescribed fires in Streamside Management Zones (intermittent and ephemeral drains included) to maintain groundcover and avoid soil erosion. Set upslope low intensity backing fires.

8. Fire Ecology:

If possible, avoid burning Unique Ecological Areas known to be fire intolerant or when burn conditions are not within prescribed parameters. Set fires downwind or upslope from these areas to minimize fire intensity.

9. Threatened and Endangered Species /Species of Conservation Concern:

Obtain updated information on locations (GIS maps) and status of threatened and endangered species and other species of conservation concern (e.g., relict trillium, woody golden rod, sweet pitcher plant, bald eagle, gopher tortoise, gopher frog), and necessary timing (season) of burns from the threatened and endangered species biologist before the beginning of the burn season.

10. Game Management:

Obtain updated information on the location of wildlife openings to be burned or protected (e.g. saw tooth oak protection), and specific month these areas should be secured (disked) from the conservation branch chief or game and sport fish management biologist.

11. Geographic Information System:

- a. Continuously update the GIS burn database so that timber and wildlife management personnel can use burn information for ArcGIS overlays.
- b. Maintain data storage (to include geo-spatial data layers) in a format that is compatible with the needs of all appropriate users on the installation. For example, maps showing training compartments burned during the growing season.

12. Educational Program:

Initiate an educational program to increase the public's awareness of the benefits of prescribed fire. Such a program can include field trips for schools, articles in local newspapers, and television coverage.

13. Let Burn Policy:

In accordance with the USFWS Biological Opinion for habitat management wildfires will be allowed to burn whenever feasible and safe. This "Let Burn" policy will apply to wildfires that meet specific criteria. Wildfires will be allowed to burn if none of the following are in jeopardy: sensitive areas (plants), UEAs, buildings and structures, equipment, railroads, training sites, research sites, recreation sites, troops, hunters, installation boundary, or smoke sensitive areas. Fires will not be allowed to burn if there are air quality concerns or burn bans. Smoke sensitive areas include highways, roads, cantonment areas, populated areas, creek or railroad crossings on roads, hospitals, schools, airports, housing areas, barracks, army heliports, stage fields, etc. Delayed mortality can be directly correlated to the KBDI. Therefore, caution must be exercised when the KBDI reaches 500. The "Let Burn" policy will allow wildfires to naturally determine the characteristics of the historical pine-hardwood ecotones. A good rule of thumb to use for letting fires burn is to use the same fire weather parameters and conditions that would apply to a prescribed burn in the same area.

14. Regulatory Requirements:

In 1995 the Alabama legislature passed the Alabama Prescribed Burning Act. The primary purpose of this law is to reduce liability associated with prescribed burning. Although it is recommended to conduct a safe prescribed burn, in that, a certified burner is in charge of the burn, a written prescription is prepared and witnessed / notarized, a burning permit is obtained, and the burn is implemented pursuant to state laws and rules applicable to prescribed burning. As recommended by the Alabama Prescribed Burning Act all of NRB's fire managers and burn bosses, as well as, several prescribed burners from NRB are Alabama Certified Prescribed Burn Managers. The Alabama Prescribed Burning Act also requires that a burning permit be obtained from the AFC prior to conducting any burn.

Alabama has a reciprocity agreement with Georgia, Florida, and Mississippi concerning prescribed burn certification. If you are certified in one state you can be certified in the other states by providing proof of certification and a processing fee.

In accordance with the AFC's "Guidelines for Issuing County Burning Authorization" the U. S. Government military installations are NOT required to obtain a burning permit. They will be urged, however, to make their intent to burn known to the appropriate AFC office. The NRB lead forest technician, Operations Section team leader, or designated burn boss notifies the AFC of all prescribed burning, including the location, size, and ignition times of each burn. All phone calls, including the POC and time of call, are documented on the "Coordination List" – Prescribed Burning.

Any city or county ordinances with more restrictive requirements for outdoor burning take precedence over the AFC's state permitting law. Burn bans, due to drought or poor air quality, issued by the state, county, or city will be strictly complied with.

15. Constraints

Constraints on prescribed burning may be due to the following: 1) military training, 2) unhealthy ozone levels, 3) unhealthy PM 2.5 levels 4) burn bans 5) weather conditions outside the preferred parameters, 6) special events, 7) testing, 8) research projects, 9) timber harvesting, 10) timber marking, 11) recreation areas, and 12) smoke problems in general.

The number one constraint on prescribed burning is **military training**. Prescribed burning is the only forest management practice that is not compatible with military training, i.e., they cannot occur at the same time in the same place. Co-location may occur if there are no troops, bivouac sites, vehicles, or equipment in the training area. Military training that may constrain prescribed burning includes, ground training, aerial training, range firing, and company to brigade level exercises.

Ground training includes movement to contact training. This type of training may be conducted by any unit although it is primarily conducted by the SERE in the training areas 38, G, and 16. These areas may be scheduled for weeks at a time. This type of training precludes prescribed burning activities because soldiers maneuver through the woods on foot from one objective to the next. Another type of ground training is land navigation. This training occurs in the training areas 13, 14 and 34. This training also precludes prescribed burning because soldiers maneuver through the woods from one land navigation point to the next. Co-location of prescribed burning in these areas is highly unlikely. Another type of ground training includes bivouac sites and encampments. Generally, this training is fixed with minimal movement, e.g., medical units.

Because this training involves minimal movement co-location with prescribed burning may be possible.

Aerial training includes high/low altitude helicopters occur throughout the installation. Stage fields and airfields also impacts prescribed burning in the training areas located on the installation. The smoke produced from prescribed burning operations in these training areas causes reduced visibility on the runway.

Ozone level is a constraint on prescribed burning when it reaches the unhealthy level. The ozone monitoring season starts on 1 May and ends on 31 October. When the ozone AQI (Air Quality Index) forecast exceeds 100 the air quality is considered unhealthy. When this occurs prescribed burning near Fort Rucker and the installation cantonment areas is suspended. This would preclude prescribed burning on that portion of the installation. In addition, Wildland fires would have to be suppressed and the “let burn” policy would be suspended.

Weather conditions are a constraint on prescribed burning when outside the preferred parameters for burning. There may be too much precipitation resulting in high fuel moisture and humidity making prescribed burning impractical. Under these conditions the moisture of extinction will not allow ignition or combustion to take place. On the other hand conditions may be too dry to burn. When the KBDI reaches 500, understory burning is limited. Site preparation burning may be conducted in non-stocked areas, regeneration cuts, other openings, or treated southern pine beetle areas. Other weather conditions such as the surface wind, wind direction, transport wind, mixing height, SDI, and fog potential may be outside the preferred parameters listed on the “Prescribed Burn Checklist”. These parameters, with the exception of fog potential, are listed on the “Burn Plan Form”. If this is the case, the burn is considered a “No Go” for the selected TA. On the other hand, these same weather conditions may be within parameters for another TA on the installation. It is critical that NRB personnel schedule TAs that are compatible with all wind directions, i.e., east, west, north, and south. This will provide prescribed burners with an option to burn a scheduled TA on any suitable burn day regardless of wind direction. Wind direction is the most important weather related condition that determines where burning will occur on the installation.

Timber harvesting constrains prescribed burning because it is incompatible with prescribed burning and cannot occur in the same place at the same time. Timber harvesting operations may occupy a TA from 12 to 18 months, making the area inaccessible for burning.

Timber marking constrains prescribed burning because it cannot be accomplished in the same place at the same time. In addition, after the timber is marked the TA is inaccessible to prescribed burning until the timber has been harvested. This process may take two years to complete.

Smoke problems are a constraint to prescribed burning because smoke is the common source of complaints. In the event that complaints become too numerous the Command Group may be compelled to suspend prescribed burning until the smoke settles and air quality improves. For this reason smoke management is critical. The prescribed burn program cannot afford to sacrifice any suitable burn days during the burn season while trying to implement the burning of 10,000 acres annually.

16. Site Specific Burn Plans

Site specific burn plans will be implemented on the installation in order to accomplish the following objectives: (1) reduce levels of hazardous fuels; (2) prepare sites identified for reforestation for seeding and planting; (3) improve and maintain listed (threatened and endangered) species habitat; (4) improve other native species habitat, especially forage for game species; (5) manage understory hardwoods; (6) control disease; (7) improve access; (8) enhance appearance and recreational opportunities; and (9) provide a safe training environment.

Prescribed burning addresses **fuels management** needs by reducing hazardous fuel accumulations in pine and pine / hardwood stands. Forest fuels accumulate rapidly in pine stands of the Coastal Plains and Piedmont areas of the South. Over a four to five year period, a heavy rough can build up that poses a serious and potentially destructive threat to all forest resources from wildfire. A fire return interval, rotation, or cycle of two to three years is usually adequate to fire proof pine stands and reduce this threat.

Prescribed burning addresses **reforestation needs**. Fire exposes adequate mineral soil and controls plant competition until seedlings become established. Burning consumes vegetation that has been treated mechanically or chemically. Burning also improves visibility, which increases the efficiency and safety of tree planting.

Prescribed burning addresses the **management needs of listed species**. Many species, such as gopher tortoises, pitcher plants, and RCWs, are typically associated with the fire-dependent longleaf pine (*Pinus palustris*) / wiregrass

(*Aristida stricta*) ecosystem or the pine / bluestem (*Andropogon* spp.) ecosystem. Prescribed burning on a regular basis enhances and maintains the habitat preferred by these species.

Prescribed burning addresses **game management needs** for deer, turkey, quail, and dove. Burning increases the yield and quality of herbage, legumes, and browse from hardwood sprouts and creates openings for feeding, travel, and dusting.

Prescribed burning **manages understory hardwoods** by controlling undesirable hardwood species that will eventually encroach into the mid-story and compete with pines. Hardwood stands also act as natural firebreaks on the landscape.

Prescribed burning **controls diseases** such as brownspot disease, which is a fungal infection that weakens and eventually kills longleaf pine seedlings. A correlation also exists between prescribed burning and decreased incidence of *Fomes annosus* root rot.

Prescribed burning **improves accessibility** and appearance for timber sales. Burning off the underbrush before the sale of forest products improves the efficiency of timber marking and harvesting. Removing the underbrush also makes paint marks more visible to harvesting crews. Improved visibility and accessibility often increase stumpage value of forest products.

Prescribed burning **improves aesthetics and recreational opportunities**. Burning maintains open park-like stands, favors plant community diversity, and increases numbers and visibility of flowering annuals and biennials. These conditions are aesthetically pleasing to hikers, hunters, bird watchers, and the general public. Burning also increases hunting opportunities by maintaining the habitat preferred by game species. Hunters and hikers alike benefit from easier travel and increased visibility. Burning reduces fuel accumulations, thereby reducing the risk of a campfire escaping and becoming a dangerous conflagration.

Prescribed burning on a regular basis provides a **safer training environment**. By reducing fuel accumulations, burning makes the use of incendiary training devices safer. Wildfires burn with less intensity and spread more slowly, making them easier to control. Additionally, burning reduces the frequency of range fires by removing fuel from ranges. This results in less downtime on ranges because of fires. Burning also improves access and visibility for training exercises. Depending on the time of year, burning can be used to establish appropriate

stand conditions in which to conduct various types of training. Growing season burning also reduces the tick population.

The site specific burn plan consists of a Burn Plan Form that lists the **preferred weather parameters** to follow before conducting a prescribed burn. It is essential to follow these parameters in order to meet the aforesaid management objectives, as well as, smoke management objectives. The preferred weather parameters as they appear on the Burn Plan Form are as follows:

Surface Wind Speed (SFC) Wind/Direction	6-18 miles per hour
Air Temperature	40-70°F Winter, 60-85°F Spring, 75-95°F Summer
Relative Humidity	20-60 percent
Fuel Moisture	1 hour equals 6.5-15 percent
Days Since Rain	1-10 days
Transport Wind	Greater than 9 miles per hour
Mixing Height	Greater than 1,650 feet

The **number of personnel** required to execute a prescribed burn may vary from two to twelve based on the task size. The task size depends on the location (training or cantonment area), size of burn area, the number of resources to protect (buildings and structures, utilities, railroads, training sites, etc.).

The current work force consists of personnel from Natural Resource Branch. Personnel that participate in prescribed burning from the NRB include the team leader forester, one lead fire technician, two forest technicians, and five URS employees.

Equipment available for prescribed burning includes two transport truck-crawler tractor units, three 250 gallon 4 x 4 pumper trucks, three ATVs with burn units, and five 4 x 4 pick-up trucks. The pumper trucks and pick-up trucks are fire ready with drip torches, fire rakes, shovels, backpack pumps, 5 gallon water containers, chainsaw, chainsaw PPE, smoke signs and lights.

The **burn area map** is a GIS map created using ArcMap 10. This map delineates the burn unit, training areas, longleaf plantations, roads and trails,

wetlands, creeks, streams, resources (buildings and structures, utilities, railroads, training sites, etc.), hazards, threatened and endangered species, wildlife areas (mainly sawtooth oak sites), firebreaks, and firing lines / ignition pattern.

Prescribed burning helps achieve many INRMP resource goals and objectives, but it nevertheless pollutes the air. Prescribed burners have an obligation to minimize adverse environmental effects. If this obligation is disregarded prescribed burners can be held liable for damages from accidents or problems resulting from their actions. For this reason a smoke management plan is critical in eliminating smoke related problems or accidents. A **smoke management plan** is prepared for each burn unit prior to implementing the burn. The smoke management plan consists of the smoke management screening form and the smoke screening map.

The objective of the smoke management plan is to manage the production and dispersion of smoke from prescribed burns in order to prevent adverse impacts on areas sensitive to smoke such as highways, airports, cities, hospitals and some farms. The smoke management screening process will give the prescribed burner an idea of how far the smoke produced from a specific burn will travel and cause a potential problem. The screening process is based on the Smoke Dispersion Index (SDI), the size of the burn area (< 300 or > 300 acres), and the firing technique used (backing or heading). The smoke screening process consists of the following: 1) plotting the direction and distance of the smoke plume / impact based on the SDI and wind direction, 2) identifying SSAs within 5-10 chains of the burn area perimeter, identifying SSAs within the downwind impact area, and identifying SSAs within the down-drainage impact area, 3) determining the fuel type and age of the rough (depending on the fuel type smoke impact distances could be increased or decreased), and 4) minimizing risk, e.g., choosing a different wind direction that will cause the smoke to miss SSAs occurring in the smoke impact area or postponing the burn until a better SDI is forecasted that will decrease the smoke impact distance and miss the SSA.

Safety is of utmost concern when implementing a site specific prescribed burn. The work of a prescribed burner is not far removed from that of a firefighter. Therefore, similar demands require similar safety precautions. Of all the problems that can occur while executing a prescribed burn personal injury can be the most devastating and the most preventable. Burn bosses who feel they do not have adequate time to worry about every aspect of the prescribed burn need to delegate the safety aspect to a responsible subordinate. Safety must not be overlooked in the pre-burn round table meetings. Burn bosses must ensure that personnel executing a prescribed burn are properly equipped and expected to

use the required PPE. Safety is everyone's responsibility, not just the burn bosses'.

Another aspect of safety during the execution of a prescribed burn is communication. Personnel executing a prescribed burn must be properly equipped with a hand-held radio and back-up battery; and / or a vehicle with a remote mounted radio. Personnel must maintain radio contact with the burn boss throughout the prescribed burn, including mop up of the burn perimeter.

Vehicle safety is also critical during the execution of a prescribed burn. All personnel involved in executing a prescribed burn will follow the vehicle safety procedures.

Prescribed burning safety is addressed annually during a safety meeting prior to the onset of the prescribed burning season. During this safety meeting the NRB Chief, Operations Section team leader, or lead fire technician discusses the prescribed burning process.

The prescribed burning and wildfire suppression composite risk assessment is required reading. This is an annual requirement per the installation safety office. The NRB safety officer will circulate the risk assessments for all activities throughout both branches annually.

In addition, firefighters and prescribed burners are exposed to the following hazards: smoke, carbon monoxide, heat stress, tripping or falling, stinging insects, ticks, poisonous snakes, and poisonous plants. Burn bosses or incident commanders will ensure that firefighters and prescribed burners receive prompt medical attention when exposed to these hazards. The implementation team leader and lead fire technician will ensure that all vehicles are properly equipped with the necessary first aid items, including first aid kits, eyewash bottles, and sting kill swabs, and snake bite kits.

Pre-burn authorization / notification is required on the day the prescribed burn is to be implemented. Pre-burn authorization / notification includes, but is not limited to, contacting the following organizations: Range Division Public Affairs Office, AFC, and Airfield space. After notification has been completed with the appropriate organizations, a copy of the notification checklist is given to the NRB Chief.

Coordination procedures on the day a burn unit / training area is to be prescribed burned are discussed above. In addition to coordinating prescribed burning on the day a prescribed burn is to be implemented, coordination among NRB personnel occurs prior to the start of the prescribed burning season. Two months prior to the start of the burn season the NRB planning section begins the coordination process for the upcoming fiscal year's prescribed burns. NRB personnel will brief the annual prescribe burning plan with the Wildland Fire Program Manager. The NRB planning section circulates the prescribed burn plans throughout the NRB for comments / input.

- a. Timber Management - the overall stand management (restoration/maintenance) objectives related to ecological integrity and the location of timber harvesting/marketing areas.
- b. Soil Conservation - location of watershed restoration projects and the approximate month these areas will be stabilized (must plan and schedule these projects around burning schedule).
- c. Fish and Game Management - specific game species needs, location of sawtooth oak and other wildlife plots where fire must be excluded, and specific month these areas will be secured by disking.
- d. Reforestation – the location of longleaf plantations that require dormant season burns.

17. Alternative plans when a wind shift occurs

During a prescribed burn may be necessary depending on the location of the burn unit with respect to man-made resources, housing areas, city limits, airports, highways, or other smoke sensitive areas. Generally, wind shifts are not a problem because they are considered in the planning process prior to burning by viewing the hourly forecast. The hourly forecast provides information on wind speed and direction over a 48 hour period. This tool is utilized when planning all prescribed burning.

Wind shifts occur when a cold front passes through. They can turn a backing fire into a heading fire during a prescribed burn. This is problematic in that wind gusts may exceed 30 MPH causing the head fire to burn too intensely with a rapid Rate of Spread (ROS). In this event control efforts will be difficult and hazardous. The only safe option may be to let the unit burn out and secure the perimeter of the burn unit by patrolling the perimeter looking for a spot over. It will be necessary to locate a spot over quickly because a spot over will spread rapidly under these conditions. When a cold front is forecasted the AFC forecast will include the wind shift that accompanies it. The forecast will include the wind speed and what direction the wind will shift to. The forecast will also predict what burn period the wind shift will occur. Generally, wind shifts can be forecasted and the implementation team leader and lead fire technician can plan for them

accordingly. It may be possible to complete the prescribed burn prior to the arrival of the cold front. If not, postponing the burn to another day may be the reasonable and prudent thing to do. It is the safe and sound option. Therefore, AccuWeather.com, Weather.com, and the AFC can forecast surface wind shifts making it possible for prescribed burn managers to plan for them accordingly and take the necessary precautions. Local wind shifts, on the other hand, are not forecasted. These wind shifts may be caused by solar heating, convection columns, the microclimate, or the terrain. Generally, the duration of these wind shifts is transitory and temporary in nature. In any event, they should be monitored when burning near smoke sensitive areas. In addition, when prescribed burns are executed early in the day, e.g., 0930-1000 hours (due to forecasted low humidity and high surface wind speed), winds may be variable because forecasted prevailing surface winds may not occur until later in the morning or early afternoon (peak fire weather). Prescribed burn bosses need to be aware of this when planning burns near smoke sensitive areas such as highways and Airfields.

Planning for analysis of burn success and identification of lessons learned is included under Evaluations of the Burn Plan Form. The First Evaluation on page two of the Burn Plan Form discusses post-burn stand conditions (crown scorch), erosion potential, management objectives, fire behavior, smoke problems, adverse impacts, and public relations. Further analysis of burn success with respect to INRMP goals, objectives, and DFCs will be accomplished by the TNC forest ecologist's monitoring protocol.

The **Prescribed Burn Plan** is a document that provides the Prescribed Burn Boss with all the information needed to implement the project. Prescribed burn projects are to be implemented in compliance with the written plan. The burn plan includes information related to the burn unit (physical characteristics, threatened and endangered species, wildlife areas, and burn location), personnel, preferred weather parameters, resources to protect, and hazards, location of firebreaks, KBDI, SDI, ozone forecast, burn objectives, and evaluations. The success of a prescribed burn depends on a calculated approach / plan to the project. The plan serves as a checklist to ensure that every aspect of the burn has been considered. The plan is justification to conduct the prescribed burn. The written plan may also serve to satisfy a court of law that the prescribed burn was conducted in a professional manner. The burn plan would not be complete without a burn map of the burn unit identifying the burn unit, roads and trails, creeks, streams, drainages, firebreaks, T and E species, longleaf plantations, natural and man-made resources (utilities, training sites, buildings, railroads, etc.), and firing lines / ignition pattern.

18. Monitoring

Post-burn monitoring information dictates further management actions that may be required as a result of the burn. For example, trees that show cambium damage, insect or beetle attack, and mortality will be salvaged. This information will be provided to the Operations Section team leader. Also, if the burn was conducted on a marginal day and the objective for hardwood control was not met, the area may be rescheduled in two years rather than three years. If the cover type in the burn area is predominantly grasses, lespedezas, and perennial plants, dormant season or maintenance burning should be considered in the future. In addition, erosion may be a problem if the burn removed the duff layer and exposed mineral soil on steep slopes or above ephemeral drains. These areas should be considered for establishing a temporary vegetative cover with fast growing seedlings.

After each burn, Natural Resources Branch personnel have conducted an initial evaluation of burn results within 24 hours of the prescribed burn. This information is documented on the prescribed burn plan form. Fire technicians document general fire behavior (ROS, fire intensity, torching out, crowning, spotting, fire whirls, and flame length), the amount and extent of crown scorch, any adverse smoke problems, current and future erosion potential, whether or not burn objectives were met, and any actions taken during the burn or required after the burn due to smoke problems, fire escapes, or mop up activities.

NRB forest technicians conduct traditional forestry activities such as timber inventory and cruises during other parts of the year and during those times regularly conduct surveys of burn compartments to determine fire effectiveness. These surveys are informal and qualitative but are useful for locating hardwood control problems, erosion problems, and trees damaged by fire and consequently vulnerable to insect or beetle attacks. This information feeds-back to Natural Resources by (1) directing when and where salvage timber operations should be conducted, (2) determining areas that should be burned on a two year rotation rather than every three years (in the case of hardwood control issues), (3) likewise determining which units have favorable fuels composition such as grasses, legumes, and other perennial herbaceous plants and can be managed with dormant season or maintenance fire, and (4) determining which areas may be susceptible to erosion and should be considered for establishing a temporary vegetative cover with fast growing seedlings.

19. Project Planning

The forest planning section prepares prescribed burn folders for each burn unit scheduled to be prescribed burned on the 3 to 4 year fire return interval. The planning team leader and planning forest technician prepare approximately 50 burn folders annually. Burn folders include the following: burn plan form, burn unit map, prescribe burn checklist, coordination checklist, field fire weather form,

smoke management screening form, and smoke screening map. The burn folders require 3 to 4 months to complete. Two months prior to the start of the burn season (1 October), the forest planning section begins the coordination process for the upcoming fiscal year's prescribed burns by circulating the burn folders within the NRB for review, comments, concerns, and issues.

Timber management technicians will provide information on a bumper longleaf pine seed crop and the timing of a seed bed preparation burn. This information will help prioritize the timing of prescribed burning with respect to winter, spring, and summer. For example, if a bumper seed crop is expected, a summer burn prior to seed fall in October would be conducted. This removes the litter layer and exposes the mineral soil, facilitating germination of longleaf pine seeds.

In order to prioritize burning, the following information will be required during the coordination process:

- a. Timber Management - the overall stand management (restoration / maintenance) objectives related to ecological integrity and the location of timber harvesting / marking areas.
- b. Soil Conservation - location of watershed restoration projects and the approximate month these areas will be stabilized (must plan and schedule these projects around burning schedule).
- c. Fish and Game Management - specific game species needs, location of sawtooth oak and other wildlife plots where fire must be excluded, and specific month these areas will be secured by disking.

The NRB Chief and / or the Operations Section team leader reviews and approves all prescribed burn plans to insure consistency with the IWFMP, INRMP, and applicable state and local laws / regulations.

A prescribed burning Standard Operating Procedure (SOP) has been developed for prescribed burning (**Appendix A**). The SOP were developed to ensure that prescribed burning is accomplished safely, efficiently, and in accordance with IWFMP and INRMP procedures and policies focusing on the ecological integrity of the landscape as its primary end state. It is important that all personnel involved in fire-related management activities review these SOPs annually prior to the start of the prescribed burning season.

The installation of permanent firebreaks on the installation boundary and around impact areas will be in compliance with the Alabama's BMPs for forestry. BMPs will also be followed when installing firebreaks for prescribed burning and fire

suppression. When installing firebreaks roads, trails, creeks, drainages, and railroads will be used as firebreaks whenever possible to minimize additional site disturbance. Firebreaks will not be installed in sensitive areas such as archeological sites, threatened and endangered plant sites, and certain UEAs. Firebreaks must not be installed within a specific distance of RCW cavity trees and gopher tortoise burrows. Firebreaks will not be installed in wetlands with crawler tractors. Hand lines or wet / foam lines will be the normal course of action when installing firebreaks in wetland areas. Reference **Section I. Wildland Fire Management, m. Natural and Cultural Resource Considerations** for specific guidance on sensitive areas, threatened and endangered species, and BMP practices concerning firebreaks.

20. Training Requirements

All prescribed burners and burn bosses / crew leaders receive formal training and/or certification in prescribed burning and Wildland fire suppression. The following training, certification, and licenses may be required:

- a. Wildland Firefighters Course S-130 / S-190 - (mandatory for prescribed burners and burn bosses)
- b. Inter-Agency Prescribed Burning Short Course Which Includes the S-390 Fire Behavior Independent Study Course - (mandatory for prescribed burners and burn bosses)
- c. Alabama Forestry Commission Prescribed Burn Manager Certification Program - (mandatory for burn bosses)
- d. CPR and First Aid – (mandatory for all personnel)

NRB personnel who may be candidates for the Prescribed Burn Manager Certification Program must have been in charge of five prescribed burns and have two years work experience in a forestry related field, or, have completed a university sponsored prescribed burning course prior to enrolling in the Prescribed Burn Manager Certification Program.

21. Use of Firebreaks

The size of a specific burn area is dictated by existing man-made and natural firebreaks. New firebreaks will not be plowed specifically to limit burn area size or to protect hardwood drainages and scrub oak communities as this would require plowing many miles of firebreaks. It would be logistically impossible to plow this many firebreaks and comply with best management practices (BMP). In addition, the potential for erosion would be substantial. Another point to consider when contemplating the use of firebreaks is damage to the ecotones where threatened and endangered species, such as pitcher plants and relict trillium, may occur. Therefore, the benefits of reducing burn area size, or

excluding a hardwood drain or scrub oak community, are more than offset by the soil disturbance and damage to the ecotones, as well as the costs incurred by plowing firebreaks and correcting the subsequent soil erosion.

Construction of new firebreaks is required for fire suppression and prescribed burning activities when there are no artificial or natural firebreaks to take advantage of. Firebreaks may be required during fire suppression to protect threatened and endangered species or unique ecological areas. When firebreaks are required, erosion control practices are used in accordance with Alabama's BMPS for forestry. Reference **Wildland Fire Management, Natural and Cultural Resource Considerations** for specific guidance on installing new firebreaks in the proximity of sensitive areas and threatened and endangered species. This section also discusses the BMP practices to comply with when installing new firebreaks. BMPs will also be applied to existing permanent firebreaks.

22. Contingencies for an Escaped Burn

A prescribed burn is considered escaped when it is burning outside the perimeter of the burn unit that the prescribed burn plan was written for. An escaped burn may be caused by the following: a spot over from a burning ember, a spot over from a burning snag, a spot over from a snag falling across the firebreak, a spot over from the fire burning across fuel (pine straw or grass) in the firebreak, crossing a drain designated as a firebreak, igniting the wrong side of the firebreak, and arson. Escaped burns will be located when prescribed burn crews patrol the perimeter of the burn unit in accordance with the Prescribed Burning SOP and the Burn Plan Form. Patrolling of the perimeter on foot with backpack pumps and fire rakes and pumper trucks should be conducted throughout the burn, including the mop up phase. Patrolling the perimeter of the burn unit for a spot over is critical. A spot over may occur on the downwind side of the burn unit creating a head fire that may be difficult to control depending on the ROS, type of fuel, and fuel load in the adjacent burn unit. This could jeopardize the safety of troops, equipment, buildings and structures. Escaped burns must be handled with the same sense of urgency as a wildfire. In addition, the mop up phase of the prescribed burn process is crucial in ensuring that the fire remains contained.

Escaped burns are suppressed in-house with those NRB personnel participating in the prescribed burn. The installation has not had a prescribed burn escape and burn off post requiring outside fire suppression assistance. However, this has not been the case with wildfires which have burned off the installation and required assistance from the local Fire Department or AFC.

Escaped prescribed burns are not reviewed / investigated unless buildings (e.g., training classrooms, latrines, and storage areas) or structures (railroad trestles),

vehicles, or threatened and endangered plants are destroyed in the fire. Reviews may consist of the following: preparing memorandums, statements, formal letters (USFWS), and Reports of Survey.

23. Computer Fire Models

Currently, the NRB is not using any fire management computer programs or models such as BEHAVE.

Appendix A.

FORT RUCKER PRESCRIBED BURNING STANDARD OPERATING PROCEDURE

PURPOSE: The purpose of this Standard Operating Procedure (SOP) is to establish procedural guidance / policy for the application of prescribed fire during the dormant and growing season.

IMPORTANCE: All Natural Resources Branch (NRB) personnel involved in prescribed burning will adhere to this SOP to ensure the following occurs: the safety of prescribed burners, troops, general public, vehicles / equipment, and natural and man-made resources, management objectives are achieved, and high standards of quality are maintained. This SOP will be revised by the team leader of the implementation section of NRB, as needed, to reflect changes in policies, procedures, regulations, or technology. Revisions in the SOP will be coordinated with personnel in the NRB and the Wildland Fire Program Manager.

GENERAL INSTRUCTION

1. Prior to the Burn Season:

- a. Six to seven months before burning, the planning section will provide the forest technicians that directs trail / firebreak maintenance with a list of training areas and cantonment areas scheduled for burning in the following fiscal year. This will allow sufficient time to complete trail/firebreak maintenance work (about 50 miles) on burn units, training area boundaries, installation boundaries, and impact areas before the start of burn season. The majority of this work is accomplished with motor graders, although crawler tractors are used to install best management practices (BMP).
- b. Four months before the start of the burn season, the planning section prepares a burn plan folder for each burn unit. Two months prior to the start of burn season these folders are coordinated with other program specialists within the NRB for their input or concerns with respect to threatened and endangered species, stand management objectives, timber marking, timber harvesting, soil restoration projects, and game management areas. This process identifies areas that require fire exclusion. It also serves as a reminder for NRB personnel to protect game areas (sawtooth oak sites) by disking around them. Areas requiring fire exclusion must be protected before the start of burn season on the Monday following Thanksgiving.
- c. Four to six weeks before the burn season, the lead fire technician begins scheduling training areas for burning from the prioritized list. Scheduling is coordinated with Range Control Division, and training areas are entered into the Range Facility Management Support System (RFMSS) scheduling system.
- d. On the burn plan form and orthophoto, identify and document the assets/resources within the burn area that must be protected (such

as utility poles and boxes, latrines, bleachers, buildings, and railroad trestles). The burn boss must coordinate the location of these assets with burn crews to ensure their protection before conducting the burn. Protect these assets by raking pine straw, leaves, and grass to a distance of three feet. Remove dead branches and limbs that produce radiant heat. Ignite the raked fuel, allowing it to burn away from the assets. Extinguish flare ups or hot spots with a backpack pump or pumper truck. Ensure the fire has burned a sufficient distance away from the assets before leaving the area. Look for ladder fuels (vines) near buildings or other assets and avoid igniting them because they have a tendency to emit burning or smoldering embers that may fall on top of the building and ignite it. If ladder fuels catch fire, suppress them with a backpack pump or pumper truck. When burning around assets, always use a fire rake, backpack pump, or pumper truck. If logging debris or other flammable material is adjacent to the asset, it will be necessary to either remove it with a dozer or saturate with water from the pumper truck, in order to eliminate radiant heat that may cause the asset to ignite. If accessible, a pumper truck should be used to apply water to the asset (buildings, railroad trestles, utility poles and boxes, etc.) before lighting the fire around it.

2. On the Burn Day, Before Leaving Office:

- a. The designated burn boss will ensure that the burn plan, smoke management plan, and all other burn forms are completed and the SOP is followed. The burn boss will bring the burn plan folder, aerial photographs, and a 1:50,000 map. The burn boss will appoint crew members to ensure that trucks are properly prepared and equipped. The burn boss and crew members will be familiar with the equipment list.
- b. Notify individuals, offices or agencies on the Coordination List – **Appendix C** Prescribed Burning of intentions to burn and burn locations. Get final concurrence from Range Control on those areas previously scheduled for burning in RFMSS and on the Range Control maps (Scale 1:25,000). Fax the call list to the Chief, EMD.

Ensure that the NRB Chief and Installation Forester are aware of the burn locations. Coordinate the fire weather forecast and burn plan parameters with the Burn Boss. Exceptions to burning outside the plan parameters must be granted by the NRB Chief.

Box 2. Prescribed Burning Equipment Checklist

Item	Quantity
First aid kit	1
Fire extinguisher	1
Drip torches	2
Chain saw	1
Chain saw PPE	1
Chain saw wedge kit and files	1
Chain saw fuel can	1
Back pack pump or bladder bag	3
Fire flaps	1
Fire rakes	2
Shovel	1
Smoke caution signs	2
Lights for smoke signs, if necessary	1
Batteries for lights	4

Crew members will travel two to a vehicle. Each burner will ensure that they have the following equipment:

Ignition source	1
Fire rake	1
Drip torch (filled with fuel)	1
Leather safety boots	1
Nomex clothing	1
Leather gloves	1
Water Cooler (1/2-1Gal.)	1
Hard hat w/ shroud	1
Safety goggles	1

3. At the Burn Location:

- a. The burn boss will make the final decision on whether to burn and whether any adjustments are necessary to the burn plan. Set a test fire to observe fire behavior, smoke dispersion, and plume trajectory.

- b. Refer to orthophotos or aerial photographs to ensure burning is in the designated location. Communicate and work as a team to safely and effectively execute the burn plan. Follow the procedures in **Box 3** throughout the burn to ensure that no vehicles are lost to fire:

Box 3. Vehicle Safety

1. Leave ignition key in a designated location, out of sight, but familiar to other crew members.
2. Park vehicle only within areas that are noncombustible (e.g., bare soil, pavement, burned out area).
3. Roll up windows.
4. Do not spill burning fuel in the truck bed.
5. Do not fill drip torches in truck bed.
6. Keep truck bed free of trash, litter, and fuel spills.
7. Do not park vehicles near burning snags.
8. Do not park vehicles near ladder fuels, such as vines.
9. Extinguish torch wick prior to placing in truck.
10. Close torch breather valve.
11. Put torch in rack or torch bracket.
12. Ensure fuel cans are secured in rack in truck bed.
13. Ensure fire extinguisher is accessible and operable.

- c. Secure the baseline and then the flanks. Use the AFC-forecasted winds and field observations to decide which side of the perimeter will become the baseline as the burn progresses. Backfire the baseline and then ignite the flanks. Due to the high temperatures in the summer season, burning should begin as soon as the dew and fog burn off and the fuel reaches an ignitable state (15 percent fuel moisture or less than 60 percent humidity).
- d. When using drains as firebreaks between burn units a crew member must make a final inspection of the drain perimeter to ensure the fire did not cross over into another burn unit or compartment. Igniting the stand uphill from the ecotones, before peak fire weather, should prevent the fire from crossing the drainage.
- e. If smoke may be a problem, extinguish the wood that is generating smoke with water or cover it with dirt. Use a dozer or a pumper truck. If there is an abundance of smoldering logs/snags on the burn unit perimeter—adjacent to roads, power lines, or the boundary—extinguish them ASAP after the fire passes. If

necessary, rake around them to keep from igniting. If smoke will not be a problem, let the wood burn. If necessary, smoke-warning signs will be posted on highways and paved roads. Two signs will be posted in each direction. If smoke will be a problem at night, lights should be placed on the signs to warn motorists. It may be necessary to leave the signs out for several days if residual smoke from 1,000 hour and 10,000 hour timelag fuels is a problem.

- f. Hazards such as burning snags and green trees that are within 1-1½ tree lengths of firebreaks, roads, highways, reservation boundaries, power lines, or assets must be suppressed by one or a combination of the following methods:
- g. Fell the snag/tree with a chainsaw and suppress it with water or dirt. Before felling the snag/tree, it will be necessary to put the lower portion of the bole out with a pumper truck (if possible). This will allow the sawyer a safer working area to make the cut.
- h. Push the snag or tree down with a dozer and suppress it with water or dirt.
- i. Suppress the snag/tree with a pumper truck if it is accessible and within pumper's range. Before leaving the burn unit, the burn boss will inspect the burn perimeter to ensure the fire is contained and all hazards suppressed/eliminated. Hazards will be checked the following morning to ensure that they are still out. This post-burn inspection is especially important for hollow trees that may still be burning inside. Hollow trees may burn for several days before falling. If hazards are still burning the following day, coordinate any additional mop-up action with the burn boss.

4. Following the Burn:

- a. Complete the initial burn evaluation on the BURN PLAN FORM (for prescriptions, evaluations, and records of fire).
- b. Enter the burn data in the prescribed burn database and update the ArcGIS prescribed burning map.

APPENDIX B.

The Prescribed Burning Process on Day of the Burn Revised 06 February 2014

Pre-burn Meeting:

1. The burn boss designates the approximate time of ignition based on the hourly forecast for humidity. RH should be <55% and >20%.
2. Burn bosses identify and assign firing lines.
3. Burn bosses identify man-made objects (RR trestles, buildings, utility poles, etc.) and assign crew members to protect them. Document this on page 1 of the burn plan form. When you have been assigned a task **YOU** are responsible. Use a fire rake, backpack pump, or pumper truck.
4. Burn bosses identify hazards (snags and green trees next to roads, power lines, and buildings) and assign crew members to take appropriate action and document this on page 1 of the burn plan form. When you have been assigned a task **YOU** are responsible. Use a fire rake, backpack pump, chain saw, or pumper truck.
5. Burn bosses assign trucks and equipment (ATV's) to crew members. Ensure trucks are properly fueled, equipped, and ready IAW with the prescribed burn SOP check list. Crew members assigned to vehicles complete the following: fuel trucks, check fuel in pumper engine, check oil in pumper engine, start pumper engine and open water hose nozzle to ensure working properly, top off water tank on pumper truck, check hose reel and hose, check fire rakes, check backpack pumps, check signs, check lights, and check chain saw.
6. Burn bosses identify the location of smoke signs / lights as shown on the smoke screening maps and assign crew members to post signs at designated locations in SSAs. Use sand bags on signs placed on roads, especially highways. Use lights on main roads and highways.

7. Burn bosses check crews to ensure personnel are properly equipped with required PPE IAW with burn SOP and risk assessments. Make sure you have your PPE on hand daily.
8. Burn bosses assign personnel to perform pre-burn reconnaissance of the burn area prior to ignition. Look for hunter's vehicles, troops, researchers, contractors, etc.
9. Ask questions if you are confused or don't understand what the burn boss has assigned you to do (such as where to go, what to do, when to do it, how to do it, etc.). In any event, don't override or disregard the burn bosses instructions. These instructions have been given to you based on many years of on-the-job **EXPERIENCE** (not reading books or watching television). Ask questions if you disagree, or, have what you think may be a better idea based on your burning **EXPERIENCE**.

During the Burn:

1. Set lines according to the burn boss's instructions. Ignition lines may be set at the same time on some burns, but most burns will utilize a firing sequence.
2. Make sure man-made objects such as, buildings, utility poles and boxes, railroad trestles and ties, latrines, etc. have been secured per the burn boss's instructions.
3. If a snag and / or green tree on the perimeter ignites you are responsible for suppressing it. Notify the burn boss of the problem and the location, so he can check it out and / or give you help. It is unlikely that you will be able to put out a snag or green tree that has been burning for an hour or more with a backpack pump. You will need to fell it with a chain saw. The best method is to prevent it from igniting in the first place by raking around it, sawing it down, or wetting it down and then lighting your fire. It is a lot easier to prevent it from catching fire than dealing with it after it catches fire.
4. Should a spot over occur suppress it and notify the burn boss so he can check it and make sure it's out.
5. Wear your PPE while burning and / or operating the ATV's.
6. Park trucks, equipment, trailers, and ATV's on mineral soil, opposite the firebreak, or in a blackened area. If it is necessary, blacken an

area and then drive your truck into the black after you cool it down w/ water.

After the Burn:

1. Mop up the burn perimeter per the burn boss's instructions. Don't assume somebody else is going to do it for you or it won't get done.
2. Check snags and / or green trees you suppressed during the burn and check for new ones that may have ignited and suppress them.
3. Whatever you do don't leave a burning snag and / or green tree burning on the perimeter assuming it will be alright, i.e., don't assume it will go out at night, fall the other way, or won't reach the road or power line. Notify your burn boss and let him make the final decision on what to do. Ask for help if you must leave your burn early and you know there is still mop-up work to be done.
4. The burn boss will make the final inspection of the burn perimeter to ensure the fire is contained and there are no snags and /or green trees burning near the perimeter, although you may also be assigned these duties during the burn. Don't be surprised if you are called back for additional mop-up action, especially on stumps and snags emitting large quantities of smoke in SSAs. If necessary, make arrangements with your family to inform them you will be late for dinner.
5. After burning put drip torches in the truck racks or torch holders. Close the breather valves.
6. Check with the burn boss before you leave your burn and ask if anything else needs to be done to secure the perimeter and address potential smoke problems.
7. When you return top off the pumper truck water tank in case the fire crew needs it that night for additional mop-up or gets called on a wildfire.
8. Retrieve smoke signs per the burn boss's instructions on day of the burn if there is no residual smoke, or, the following a.m. if residual smoke is present from snags, stumps, and log decks.
9. The following a.m., per the burn boss, check the burn perimeter including snags and green trees that caught fire during the burn. Make sure the fire is still contained and snags and green trees are completely out. Contact the burn boss if you have a problem. Contact the burn boss if everything is okay. Attempt to handle problems on your own, because burn bosses will be pre-occupied with setting up

and coordinating the burning for that day, as well as, completing burn plan forms and smoke screening forms.

10. Burn bosses complete page 2 of the burn plan form after the burn is completed.

APENDIX C.

PRESCRIBED BURNING- Coordination List

DATE _____ BURN UNIT _____

		TIME	PERSON
		<u>NOTIFIED</u>	<u>NOTIFIED</u>
CALL RANGE OPERATIONS	255-4978	_____	_____
CALL FIRE DEPT	255-0248/0279	_____	_____
CALL SHAW WORK ORDER in/out	255-9041/9042	_____	_____
_____ STATION ONE (if needed)	255-2217/3487	_____	_____
CALL AIRFIELD AIRSPACE	255-9244/9764/2680	_____	_____
CALL SERE TRAINING MAJ Johnson	255-9866	_____	_____
MAJ. Nichols Falcetto - XO HQ	255-9875	_____	_____
CAPT. Kevin Haeberle - EVASION WEST	255-4254	_____	_____
CAPT. Sean Gilbert - FIELD NORTH	255-4093	_____	_____
	SOUTH 255-5005	_____	_____
CAPT. Gaines –OPS	255-0415	_____	_____
Scott Brodner CIV – Course Chief	255-0414	_____	_____
EMAIL DCFA	255-2100	_____	_____
EMAIL PAO OFFICE	255-2252/1239	_____	_____

CALL AL. FORESTRY COMMISSION 1-800-922-7688 _____

EMAIL USACE office (Ernie Marlar) 797-1100(or) 255-2407 _____

EMAIL MWR (John Clancy) 255-4305 _____

EMAIL Provost Marshall 255-2511 _____

EMAIL ASP (Lincoln Borunda) 255-4224 _____

EMAIL Alabama DOT (334) 334-670-2420 _____

EMAIL City of Ozark (office of the mayor) _____
(334) 774-3300 mayor@ozarkalabama.us

EMAIL City of Enterprise (office of the mayor) _____
(334) 348-2602 kduke@cityofenterprise.net

EMAIL City of Daleville (office of the mayor) _____
(334) 598-4442



“Adaptive Ecosystem Management Sustains Training Lands and the Military Mission”.



Appendix 4

SESCP (Soil Erosion and Sediment Control Plan)

The Fort Rucker Installation is composed of lands within both Dale and Coffee Counties. The Dale and Coffee County line almost centers the (AGRC) Aerial Gunnery Range Complex extending from TA17 on the south to TA8 on the north; therefore, placing more than half of the Western AGRC into Coffee County and a remainder of the installation is in Dale County. Both Alabama counties have published Soil Surveys; however, the Dale County Soil Survey was published in 1956 and does contain a different soil legend than the Coffee County survey.

Both Soil Surveys contain soil classifications that have been determined by the (NRCS) Natural Resources Conservation Service as being (HEL) Highly Erodible Land. HEL land classification identifies those lands that must not exceed precise soil loss tolerances if they are to remain productive lands. The HEL lands are identified through utilizing established NRCS components as slope length, soil erodability factors, geographic rainfall accumulations and various ground covers. Those lands having been determined as HEL, should remain in permanent forest or grassland cover or have adequate BMP's (Best Management Practices), crop rotations and conservation practices installed on them in order to remain below the Soil Loss Tolerance Limits or "T" values. If these HEL lands are not properly maintained at or below their assigned "T" level or tolerance limits, the productivity of that particular land base will rapidly diminish as the topsoil is depleted from sheet, rill and gully erosion.

The following HEL soil classifications are identified from both Dale and Coffee Counties as published in the released Soil Surveys

Coffee County HEL

Cowarts 5-10%
Dothan 2-8%
Luverne 5-25%
Lucy 5-25%
Orangeburg 1-15%
Troup 1-20%
Shady Grove 5-20%
Red Bay 5-8%

Dale County HEL

Americus 8-17%
Boswell 2-17%
Bowie 2-12%
Carnegie 2-5%
Cuthbert 8-30%
Eustis 1-30%
Lakeland 5-30%
Magnolia 2-12%
Norfolk 2-12%
Rains 5-20%
Plummer 5-20%
Red Bay 5-12%
Ruston 5-20%
Shubuta 2-12%
Angie 2-12%
Tifton 5-8%

All Installation lands identified as HEL are maintained as permanent forest, wildlife lands or training lands. Construction projects on these HEL sites are always discouraged and strict adherence to BMP's and Alabama Stormwater Permitting requirements are closely monitored. In those particular areas that may be inaccessible because of UXO (Unexploded Ordinance), the Natural Resources Branch has developed and completed a Sediment Control Plan to reduce turbidity and capture sediment from the surface waters.

The following will apply to the installations soil resources:

1. Keep soil erosion from water within tolerance limits as defined in soil surveys prepared by the U.S. Department of Agriculture (USDA), NRCS or as required by FGS or host nation authorities.
2. Keep soil sediment, as a pollutant, in wetlands and waterways within compliance limits.
3. Minimize the impact of land uses on soil erosion and sedimentation when and where possible, to include:
 - a. Locating physically intensive land disturbing activities on the least erodible soils.
 - b. Using climatic/seasonal changes in soil erosion as a factor in scheduling intensive mission operations and real property management activities.
 - c. Identifying and rehabilitating land disturbed by operations and real property management activities.

Appendix 5 Management Guidelines for the Gopher Tortoise on Army installations



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
SOUTHEAST REGION
1593 HARDEE AVENUE SW
FORT MCPHERSON, GEORGIA 30330-1057

IMSE-PWD-E

11 MAR 08

MEMORANDUM FOR

Garrison Commander, U.S. Army Garrison Benning, 6751 Constitution Loop, Suite 550, Fort Benning, GA 31905-5000

Garrison Commander, U.S. Army Garrison Gordon, Building 33720, Fort Gordon, GA 30905-5040

Garrison Commander, U.S. Army Garrison Stewart, 42 Wayne Place, Fort Stewart, GA 31314-5048

Garrison Commander, U.S. Army Garrison Rucker, 453 Novosel Street, Building 114, Fort Rucker, AL 36362-5105

SUBJECT: Management Guidelines for the Gopher Tortoise (GT) on Army Installations

1. Reference Army Regulation (AR) 200-1, Environmental Protection and Enhancement, dated 29 May 2007, paragraph 4-3.
2. Subject guidelines (enclosed) are distributed for implementation on all Installation Management Command-Southeast (IMCOM-SE) installations where Gopher Tortoises are present. The guidelines are meant to ensure there is standard management across IMCOM-SE installations, and to demonstrate pro-active concern for this Species at Risk (SAR) on Army installations throughout its range. The ultimate goal is to prevent restrictions on Army training were this SAR to end up listed as "endangered" under the Endangered Species Act.
3. These guidelines will be incorporated into the installation Endangered Species Management Components (ESMCs) of the Integrated Natural Resources Management Plan to meet (and supplement if required) installation specific Gopher Tortoise conservation needs and unique military mission requirements.
4. Periodically, installations will report GT and GT habitat conditions, GT cooperative conservation plans, and efforts with Federal and state agencies, private organizations, and individual landowners in support of GT recovery efforts that benefit our installations. Regional studies and research proposals on individual installations (best management practices, research results, lessons learned, etc.) will be conducted by or coordinated through the IMCOM-SE, as appropriate. Installation condition assessments are coordinated with the U.S. Fish and Wildlife Service (USFWS) Region 4 Office, and the Regional RCW/Longleaf Pine Recovery Coordinator (Section III, paragraph C and G of enclosure) as an IMCOM-SE function.

IMSE-PWD-E

SUBJECT: Management Guidelines for the Gopher Tortoise (GT) on Army Installations

5. The POCs for this action are Mr. Casey Newton, (404) 464-4090, casey.h.newton@us.army.mil, and/or Mr. Frank Lands, (404) 464-1645, frank.w.lands@us.army.mil.

Encl

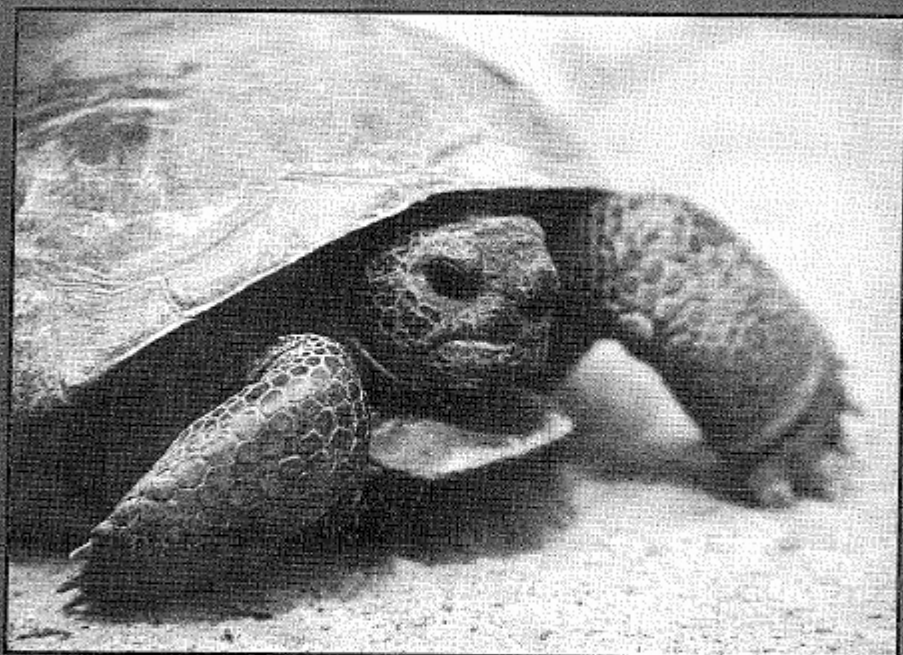

DAVIS D. TINDOLL, JR.
Director

CF:

Commander, U.S. Army Environmental Command (IMAE-CO), 5196 Hoadley Road, Aberdeen
Proving Ground, MD 21010-5401

HQDA (DAIM-ED), ODEP, 600 Army Pentagon, Washington DC 20310-0600

MANAGEMENT GUIDELINES FOR
THE GOPHER TORTOISE
ON ARMY INSTALLATIONS



February 14, 2008

I. General

A. Purpose

These guidelines establish baseline management standards for Army installations to support the conservation of the Gopher Tortoise (*Gopherus polyphemus*) and its habitat. Each installation's Integrated Natural Resources Management Plan (INRMP) may supplement these guidelines with measures tailored to meet installation-specific Gopher Tortoise conservation requirements and unique military mission needs.

B. Background

A 15 September 2006 Army policy memorandum, *Army Species at Risk Policy and Implementing Guidance*, specifically identifies the Gopher Tortoise as a priority Army Species at Risk. This policy encourages proactive management efforts for Species at Risk and their habitat, before federal protection under the Endangered Species Act is necessitated, and further encourages installations to capitalize on partnerships and agreements when managing for such species. Chapter 4 of AR 200-1 encourages installations to participate in regional/habitat-wide species conservation efforts with other federal and state agencies and provides authority for managing Army-designated Species at Risk and their habitats.

The Gopher Tortoise is Federally listed as threatened in parts of Louisiana, Mississippi, and southwest Alabama. In January 2006 the U.S. Fish and Wildlife Service was petitioned to list the Gopher Tortoise throughout the species' range in Florida, Alabama, Georgia, and South Carolina. If the eastern population becomes imperiled to the extent that Federal listing is warranted, listing will represent a regulatory and management challenge to military testing, training, silviculture, infrastructure development, and other land management activities at Forts Rucker, Benning, Stewart, and Gordon.



The Army will be a signator to the Candidate Conservation Agreement (CCA) for the Gopher Tortoise, which is in draft form as of February 2008. The guidelines provide management guidance to conserve the Gopher Tortoise and its habitat on those Army installations in the eastern portion of the species' range. The guidelines will incorporate and promote the local and landscape level conservation efforts described in the CCA, in accordance with the Army's mission. These guidelines will be incorporated as an appendix to the final CCA.

C. Applicability

The guidelines are developed specifically for those Army installations within the eastern, or non-listed range of the Gopher Tortoise: Fort Rucker (Alabama), Fort Benning (Alabama and Georgia), Fort Gordon (Georgia), and Fort Stewart (Georgia).

D. Revision

These guidelines will be reviewed every 5 years and revised as necessary to incorporate the latest and best scientific data available. The Army will establish a Gopher Tortoise Management Team (GTMT) that will meet annually, or as needed to review ongoing management actions, implementation of these guidelines and the revision of these guidelines. The GTMT will consist

of installation personnel and their higher headquarters organizations as identified in these guidelines.

E. Goal

The Army's goal is to implement these guidelines which will allow the Army to accomplish military readiness missions while concurrently ensuring the conservation of the Gopher Tortoise and to assist in the prevention of the need to list the Gopher Tortoise as an endangered or threatened species in its eastern range. The inclusion of Gopher Tortoise guidelines as a component to the INRMP should significantly contribute to the landscape-scale conservation of some of the largest existing Gopher Tortoise populations and habitats.

II. Army Policies Applicable to Gopher Tortoise Management

A. Conservation

Implementation of Gopher Tortoise management strategies in accordance with these guidelines supports the Army's commitment and responsibility under the CCA to adopt a long-term approach to Gopher Tortoise conservation and habitat management consistent with the military mission.

B. Ecosystem Management

Conservation of the Gopher Tortoise and other species is part of a broader goal to conserve biological diversity on Army lands consistent with the Army's mission. Biological diversity and the long-term survival of individual species, such as the Gopher Tortoise, ultimately depend upon the health of the sustaining ecosystem. Therefore, installation-specific Gopher Tortoise management strategies should promote ecosystem integrity. Maintenance of ecosystem integrity and health also benefit the Army by preserving and restoring training lands for long-term use.

C. Education and Outreach

Soldiers and other personnel involved in "on the ground" activities frequently lack awareness of the presence and biology of Gopher Tortoises, their high conservation priority as a Species at Risk, and/or their vulnerability to certain training and land management practices. Although no training activities are restricted by these guidelines, soldiers and other personnel (including contractors) involved in field activities will receive training or literature on how to minimize impacts whenever practical while still accomplishing mission goals. Outreach and education materials will include Gopher Tortoise and Gopher Tortoise burrow identification, the relevance of Gopher Tortoise conservation to the Army mission, and information on how certain activities (e.g., heavy wheeled and tracked vehicle operation and mechanical digging) may directly harm Gopher Tortoises, damage burrows and nests, affect the ability of Gopher Tortoises to forage or nest, and have potential for significant habitat damage. Education and outreach materials may be developed in collaboration with the Gopher Tortoise Council (GTC) and Partners in Amphibian and Reptile Conservation (PARC).

D. Cooperation with the Gopher Tortoise Team

The Army will work closely and cooperatively with the Gopher Tortoise Team (GTT). The GTT is a group created to administer and periodically review the Candidate Conservation Agreement, and will consist of one or more designated representatives from the Army and each party to the CCA. Installations should routinely communicate with the Army's GTT representative(s) to ensure that proposed actions are consistent with CCA guidance.

E. Staffing and Funding

Garrison commanders are responsible for ensuring that adequate professional personnel and funds are provided for the conservation measures described in these guidelines. Gopher Tortoise conservation projects are important components of the Army Environmental Conservation program element of Base Support. Installations will program for funds to implement Gopher Tortoise conservation projects and develop methods to ensure all activities that have the potential to affect Gopher Tortoises are coordinated with all required elements of the installation staff.

F. Conservation on Adjacent Lands

Gopher Tortoise habitat components may be located entirely on installation lands. There may be instances, however, where a portion of a local Gopher Tortoise population is located on installation land, while another portion is located on adjacent non-Army land. Installations need to work with adjacent landowners through education and outreach, cooperative management efforts and/or information/data sharing, and/or help preclude the need to list the species. If needed to support mission sustainability on an installation, the Army Compatible Use Buffers (ACUB) program could incorporate the conservation of Gopher Tortoises through site selection and land management stipulations.

G. Regional Conservation

The interests of the Army and the Gopher Tortoise are best served by encouraging conservation measures in areas off the installation. A significant portion of Gopher Tortoise populations and habitat occur on private lands; therefore, engaging private landowners in the conservation of Gopher Tortoises is essential for the conservation of the species and in avoiding its potential listing under the ESA. In accordance with the landscape level conservation efforts identified in the CCA (Section 10.1.1), installations will identify and collaborate with landowners (private and public) on conservation/management efforts needed to sustain or minimize impacts to Gopher Tortoise habitat. Installations are also encouraged to develop and/or participate in cooperative Gopher Tortoise conservation plans, solutions, and efforts with other federal, state, and private organizations and landowners in the region. Examples of such programs include, but are not limited to, ACUB, regional prescribed fire councils, and regional translocation cooperation.

III. Guidelines for Installation Gopher Tortoise Management Strategies

Installations are to manage Gopher Tortoise populations according to the following guidelines.

A. Gopher Tortoise Management Strategy Development Process

Preparation of installation Gopher Tortoise management strategies requires a systematic, step-by-step approach. Gopher Tortoise populations, Gopher Tortoise habitat (current and potential), and training and other mission requirements (present and future) are to be identified. Analysis of these factors and their interrelated impacts are needed as a first step in the development of a management strategy. Installations are to use the following or a similar methodology in conducting this analysis:

1. Identify installation and tenant unit mission requirements. Overlay these requirements on the Gopher Tortoise distribution scheme. This is in direct support of a CCA Section 10.1.1 commitment - identify areas of potential agency mission - Gopher Tortoise habitat conflict. This is the first proactive step in identifying potential conflicts and developing

possible Gopher Tortoise avoidance, minimization or mitigation measures.

2. Develop a Global Information System (GIS) for the Gopher Tortoise population and its habitat on the installation. Based on current use, soils, and vegetation, designate non-fragmented¹ areas of occupied as well as potentially suitable habitat as Gopher Tortoise Habitat Management Units (HMUs). This supports CCA Section 10.1.1 commitments to identify suitable or potentially suitable habitat for and areas occupied by the gopher tortoise, 1st & 2nd bullets.
3. Determine current Gopher Tortoise population levels and demographics by conducting line transect distance burrow surveys using GIS land cover data and DISTANCE 5.0 software available on the web at <http://www.ruwpa.st-and.ac.uk/distance/> as described in the Gopher Tortoise Survey Handbook developed by the Jones Ecological Research Center. After an initial baseline survey is conducted, surveys using consistent and systematic re-sampling should be repeated every 2-5 years to monitor long term population trends.
4. Identify any isolated Gopher Tortoise burrows that are outside areas that realistically can be managed as HMUs. These may include residential lawns, roadsides or transmission line rights of way in areas where prescribed burning or mowing of adjacent habitat is not feasible, etc.
5. Identify HMUs that could support Gopher Tortoise translocation by serving as recipient sites. These must meet the criteria of III.F.2 and III.F. 3 below.
6. Identify HMUs with Gopher Tortoise densities and foreseeable conflict with present and projected mission activities that will adversely and permanently degrade/ fragment/ destroy occupied gopher tortoise habitat. In concert with Section 10.1.2 of the CCA, installations will consider translocating Gopher Tortoises from these HMUs to those identified in III.A.5 above.
7. Analyze the information developed above using the guidance contained in these guidelines.
8. In support of CCA Section 10.1.1, 6th bullet, and where permitted by law, assist in the identification of important Gopher Tortoise populations, habitats, cooperators, and partnership opportunities outside the installation boundaries.

B. Gopher Tortoise Population Goals

Installations will strive to establish no-net loss in the number of gopher tortoises identified as the baseline population of the installation. Efforts will be made to increase population numbers and available habitat, but at least maintaining baseline conditions will help to stabilize the species and prevent further decline. If current population levels cannot be maintained due to mission activities, installations will ensure that adequate habitat is available to replenish or enhance gopher tortoise numbers. Populations can be augmented on installations through translocation

¹ Non-gated paved roads or unpaved roads with significant traffic or high cut road banks that would interfere with Gopher Tortoise movement constitute fragmentation, and will divide otherwise contiguous HMUs.

of individuals from offsite locations. Any such translocation efforts must meet the criteria of III.F.2 and III.F. 3 below.

C. Habitat Management

Maintaining habitat conditions preferred by Gopher Tortoises and that meet military mission needs requires a commitment by resource managers to plan and initiate certain vegetation management practices.

1. Silviculture

Current silvicultural standards for Red-cockaded Woodpecker (RCW) management on installations is consistent with requirements for Gopher Tortoise habitat. Where RCW management is not an issue, forest management and timber harvest will be evaluated for compatibility with Gopher Tortoise habitat needs. Installations will use pine and hardwood timber harvest and various forms of mechanical and chemical vegetation control, as necessary, to achieve specific habitat and vegetation objectives or to enhance degraded habitat. In general, silvicultural practices in HMUs will employ ecosystem management including maintaining canopy closure at 60% or less, reducing midstory encroachment, and maintaining native grasses and forbs through prescribed burning, minimizing soil disturbance, and implementing appropriate timber management to promote adequate light at ground level. Roller-chopping and other intensive heavy equipment use in areas with high burrow concentrations will be avoided, unless there is no other alternative to reducing saw palmetto (*Serenoa repens*) or other shrub cover.

2. Prescribed Burning

Current prescribed burning standards for RCW management on installations is consistent with Gopher Tortoise habitat management. Frequent burning reduces shrub and hardwood encroachment, and stimulates growth of Gopher Tortoise forage plants such as grasses, forbs, and legumes. The physical result of fire on tree and shrub species is to reduce canopy cover. Heat stress caused by prescribed burning will trim the lower limbs of pine and hardwood trees and induce mortality among young, stressed, and diseased trees. This allows greater sunlight penetration to reach ground level which promotes establishment of understory species used by the tortoise as forage and is also important for proper egg incubation in gopher tortoises. Burning during the early growing season (April – June) causes even more pronounced vegetative responses when compared to burning conducted during the period of plant dormancy. These early growing season burns stimulate flowering in many warm season grasses, increase species composition among understory plants, and result in higher understory biomass production. For Gopher Tortoise HMUs that do not fall under RCW management, prescribed burning will be conducted at a frequency of one to five years, but preferably at least every three years. Burning should normally be conducted in the growing season, but winter burns may be appropriate to reduce high fuel loads.

3. Invasive Exotics

Invasive exotic plants can displace Gopher Tortoises, reduce native plant species composition, and interfere with the application of management practices such as prescribed burning. Infestations of such invasive plants in Gopher Tortoise HMUs will be identified and controlled through proper herbicide treatments or other acceptable means, as needed.

4. Predation

Predator populations, such as raccoons and crows, can be artificially high in some habitats because of anthropogenic factors. If Gopher Tortoise hatchling survival is greatly affected by induced predation pressure, installations will implement measures to control applicable predator populations. To assist with hatchling survival under such circumstance, installations will consider a head-start program where juveniles are protected until large enough to minimize the predation risk and then released back in the area where they were captured.

5. Corridors

Corridor(s) are to be maintained or, if necessary, established to allow movement of Gopher Tortoises among HMUs so they can fulfill essential life requirements (i.e., breeding) and sustain genetic and population viability. Care should be taken to prevent these corridors from becoming roads. Where corridors cannot be maintained in support of mission requirements and result in isolated populations or sub-populations of Gopher Tortoises that are not viable, installations will consider translocation of the tortoises to acceptable recipient sites on or off the installation.

D. Population Monitoring

Installations should conduct monitoring programs to scientifically determine demographic trends and to measure success.

1. Burrow Surveys

As stated in III.A.3 above, surveys for and monitoring of tortoise burrows in Gopher Tortoise HMUs will be conducted by qualified biologists at intervals of 2-5 years. Surveys in previously unoccupied areas are needed only if the installation biologist determines that improved habitat conditions have increased the likelihood of Gopher Tortoise occurrence.

2. Project Surveys

To identify Gopher Tortoises that may need to be avoided or possibly relocated prior to certain actions, the installation will conduct burrow surveys prior to timber harvesting operations, construction, or other significant land-disturbing activities, excluding prescribed fire. These surveys will be conducted within a year prior to project initiation by natural resources personnel or contractors trained and experienced in Gopher Tortoise biology. Burrows found prior to project activities should be marked with conspicuous caution flagging tied to adjacent shrubs or other vegetation. Avoidance, minimization, and/or mitigation measures will be implemented in areas where such activities will impact gopher tortoises, as necessary or as needed.

E. Burrow Marking

Installations may permanently mark or tag Gopher Tortoise burrows for monitoring and/or burrow protection. If permanently marking burrows, installations should use inconspicuous numbered metal tags on short wire stakes. Installations should also consider conspicuous tall stakes placed beside particularly vulnerable burrows to help vehicle operators avoid them. Where many burrows are near where tracked or wheeled vehicles are prone to disturbing them, appropriate signage may be deemed necessary, with language such as "Be Aware—Please Avoid Gopher Tortoise Burrows."

F. Translocation

Translocating Gopher Tortoises from populations threatened by habitat destruction to restore severely depleted populations on secure lands is an important management tool. Installation plans will provide for translocation to augment low density populations, where appropriate.

1. Installations will identify potential recipient translocation sites for Gopher Tortoises being displaced by development or other activities elsewhere on the installation and/or nearby private lands.
2. Recipient sites must have no (or limited) foreseeable conflict with present and projected mission activities.
3. In areas determined acceptable to receive Gopher Tortoises, habitat inspection and improvement work must be completed before translocation is attempted to ensure that translocation is successful. Potential recipient sites must have suitable habitat in good condition that is presently deemed to be either lacking or under-stocked with tortoises and will not be readily repopulated without human intervention. The reason(s) for deficient tortoise populations should be recognized or suspected (and no longer exist) before tortoises are stocked onto these lands. Reasons for low densities might include a past history of human harvest, disease die-offs, or unsuitable habitat (e.g., dense pine plantation, fire-suppressed habitat) that has been restored to favorable conditions for tortoises.
4. Any translocations will be undertaken in close coordination with the GTT.

G. Data Records, Reporting, and Coordination

1. Installations will record and retain permanently all survey, inspection and monitoring data for Gopher Tortoise populations and habitats for trend analysis.
2. Installation biologists and foresters will maintain close coordination and, at a minimum, will conduct an internal Gopher Tortoise installation progress review once a year.
3. Installation Management Command-Southeast (IMCOM-SE) will serve as integrator and facilitator for Gopher Tortoise management on Forts Rucker, Benning, Gordon, and Stewart.
4. IMCOM-SE will coordinate annual reporting to the GTT. IMCOM-SE will provide Gopher Tortoise oversight. IMCOM-SE will ensure that data collected will be evaluated for trend analysis.
5. Installations annually will report results of any Gopher Tortoise inventory and monitoring activity to IMCOM-SE. IMCOM-SE will provide data to the GTT in accordance with the CAA requirements. These data will include measures of population status and actions taken to improve habitat.
6. Gopher Tortoise maps will be developed using survey data to accurately depict the location of Gopher Tortoise colonies, burrows, and HMUs. Maps will be updated at least every 5 years. Maps used internally will be tailored to the users, e.g. trainers,

foresters, etc. and will be widely distributed for use by those conducting land use activities on the installation, including military training, forest management, construction projects, and range maintenance.

TRAINING ACTIVITY WHERE TORTOISE BURROWS OCCUR

MANEUVER AND BIVOUAC	Potential Adverse Impacts
Hasty defense, light infantry, hands and hand tool digging only, no deeper than 2 feet	NO
Hasty defense, mechanized infantry/armor	YES
Deliberate defense, light infantry	NO
Deliberate Defense, mechanized infantry/armor	YES
Establish command post, light infantry	NO
Establish command post, mechanized infantry/armor	YES
Assembly area operations, light infantry/ mechanized infantry/armor	YES
Establish CS/CSS sites	YES
Establish signal sites	YES
Foot transit thru the colony	NO
Wheeled vehicle transit through the colony	YES
Armored vehicle transit through the colony	YES
Cutting natural camouflage	NO
Establish camouflage netting	NO
Vehicle maintenance	YES
WEAPONS FIRING	
7.62mm and below blank firing	NO
.50 cal blank firing	NO
Artillery firing point/position	NO
MLRS firing position	NO
All others	NO
NOISE	
Generators	NO
Artillery/hand grenade simulators	NO
Hoffman type devices	NO
PYROTECHNICS/SMOKE	
CS/riot agents	NO
Smoke, haze operations only, generators or pots, fog oil and/or graphite flakes (3)	NO
Smoke grenades	NO
Incendiary devices to include trip flares	NO
Star colonies/parachute flares	NO
YES HC smoke of any type	NO
DIGGING ALLOWED	
Tank ditches	YES
Deliberate individual fighting positions	YES
Crew-served weapons fighting positions	YES
Vehicle fighting positions	YES
Other survivability/force protection positions	YES
Vehicle survivability positions	YES

Appendix 6: Descriptions of Habitats

Steep, Forested, Ravine Slopes (Hardwood-dominated)

Slopes which are steep (greater than 45 degrees), forested, and dominated by mature hardwood trees provide habitat which is likely to support some of the less-frequently encountered plants and animals in southeastern Alabama. This is especially true of slopes that face northward and eastward and which have been minimally disturbed. Examples of this habitat can be found along several watercourses on Fort Rucker, for example, the steep slopes immediately south of Steep Head Creek. This forest type is of particular biogeographical significance within the East Gulf Coastal Plain, however it is being subjected to heavy clear-cutting on private lands in the Red Hills of southern Alabama.

Dominant large trees include American beech, white oak, diamondleaf (laurel) oak, southern magnolia, yellow poplar, water oak, and hickory. Spruce and loblolly pine are present, but their occurrences are relatively scattered and infrequent. Smaller trees include dogwood, sweet bay, hornbeam, sweetleaf, ironwood, and pyramid magnolia. Bigleaf magnolia also occurs infrequently. The shrub understory includes red buckeye, mountain laurel, sweet shrub, oak-leaf hydrangea, and Florida anise at lower slopes. Herbs include a wide variety of wildflowers and ferns, such as wild ginger, bloodroot, violets, trilliums, partridge berry, and Christmas fern. In areas with increased light penetration, greenbrier, Japanese honeysuckle, and poison ivy may grow profusely.

A variety of vertebrate fauna may utilize steep, forested, ravine slopes as habitat. The most common amphibians in this habitat type are salamanders, especially the southeastern slimy salamander, two-lined salamander, red salamander, and dusky salamander. The gray treefrog is also a frequent inhabitant. Common reptiles in this habitat include lizards such as the five-lined skink, ground skink, and green anole, as well as snakes such as the timber (canebrake) rattlesnake, copperhead, gray rat snake, and ringneck snake.

Common, nongame birds which breed in this type of habitat are the red-eyed vireo, Kentucky warbler, hooded warbler, wood thrush, brown thrasher, yellow-billed cuckoo, Carolina wren, Carolina chickadee, tufted titmouse, blue jay, chuck-will's widow, screech owl, and several woodpeckers. A wide variety of passerine birds also use this habitat type for over-wintering or during migration. The wild turkey is an important game species that utilizes this habitat, especially during winter.

Common small mammals include the cotton mouse, golden mouse, eastern chipmunk, southern flying squirrel, eastern gray squirrel, and several shrews. The armadillo, opossum, and gray fox also are frequent inhabitants. This habitat is valuable for white-tailed deer, an important game species at Fort Rucker.

Xeric Forest - Clay Hill

Xeric forests - clay hill type is uncommon on the reservation, and is usually interspersed as small inclusions within mixed pine-hardwood forest on mesic sites, most often on tops of ridges and hills where a sandy surface layer is absent, and soil is extremely dry

clay or clay-loam. Boundaries between this habitat and adjoining types are usually imprecise with broad ecotones between them.

Dominant trees in this type of forest are blackjack oak, longleaf pine, and, to a lesser extent, shortleaf pine. Loblolly pine may occur, but it is not as well adapted to this habitat as it is to other xeric habitat types. Other common tree species are post oak, southern red oak, persimmon, sourwood, white oak, dogwood, and sand hickory. Shrubs include members of the blueberry-huckleberry complex. Hornbeam may occur commonly on some sites. Grasses and herbs are neither particularly abundant nor diverse, with goat's rue and blazing star being the most typical.

Fauna supported by the xeric forest-clay hill habitat type is less diverse than that of the xeric sandhill forest, a condition that may be influenced by the greater difficulty of burrowing in clay soils. Fox squirrels thrive in fairly open stands. Flying squirrels and tree-cavity nesting birds, such as screech owls, may be common where mature hardwoods with cavities or dead pine trees are present. A variety of insectivorous birds feed on forest insects, but no one or two species are particularly characteristic of this forest type. The primary value of this forest type probably lies in the mast produced, which is important as winter food for a variety of wildlife.

Young Pine Plantations

Even-aged pine plantations, many less than 10 years old, are frequently encountered on Fort Rucker. Most of these plantations are 25 acres or less. Loblolly pine has been planted on most sites with heavy soils and mesic conditions. Younger stands planted on lighter, more xeric soils consist of longleaf pine.

The youngest of these plantations are comparable to an old field habitat until trees become taller and the canopy closes. Thus, they provide favorable habitat for species preferring open, shrubby areas with abundant ground cover, such as the cottontail rabbit and northern bobwhite quail. Sprouting hardwoods and forbs provide browse and grazing for white-tailed deer. Blackberry, wild plum, and numerous grasses and forbs provide food for a variety of birds. Some of these plants, along with grasshoppers and other insects, are important foods for wild turkey. In this type of regenerating habitat, populations of small rodents often increase greatly within the first 2-4 years, providing prey for mammals such as the coyote, fox, and bobcat, as well as raptors, such as the red-tailed hawk, barn owl, and American kestrel.

From three to five years of age, plantations with substantial floral diversity in the form of mixed forbs, hardwood sprouts, blackberry, and other shrubs may be used by wild turkeys for nesting. Once the pines and, if present, hardwood sprouts reach four to seven feet in height, usage by many ground-dwelling birds and mammals declines, and others such as the yellow-breasted chat, northern cardinal, white-eyed vireo, prairie warbler, and indigo bunting may be found in relative abundance. . Forest and forest-edge dwellers, such as the summer tanager, yellow-billed cuckoo, red-eyed vireo, blue gray gnatcatcher, chuck-will's widow, and brown thrasher feed and sometimes nest in these habitats where they come into contact with forests consisting of larger trees.

Snakes found most commonly on these plantations include the black racer, eastern garter snake, and gray rat snake. Lizards most likely to be found are the green anole,

eastern fence lizard, and ground skink. The box turtle, and in places where soil conditions are suitable, the gopher tortoise, are the only turtles likely to be found in this type of habitat, which is well away from water. Amphibians generally are scarce in young pine plantations, except in cases where plantations are adjacent to or include wetlands. However, even well away from wetlands, southern toads and southeastern slimy salamanders are occasionally encountered, and on rainy nights, juvenile frogs of several other species may be encountered dispersing from breeding sites.

As is the case with other age classes of even-aged pine plantations, the ecological value of these habitats tend to vary with size, shape, tree spacing, and floral diversity. Large, regularly shaped plantations with low floral diversity are less desirable from an ecological standpoint than small, irregularly shaped ones with high floral diversity. Stands with closely spaced trees and closed canopies also tend to have lower floral and faunal diversity than those with good light penetration.

Agricultural Lands and Old Fields

Fort Rucker includes substantial cleared acreage that is devoted to grain, legumes, or grass, including fallow fields. This land is allowed to undergo natural succession for up to four years before being cleared again. Early successional woody invaders of abandoned fields in the area are determined by species of seed trees in the immediate vicinity and upon their dispersal capability. In most cases, loblolly pine and/or sweetgum are the dominant primary species. Oaks (particularly water oak), dogwood, and yellow poplar are common in marginal areas adjacent to forests containing mature trees. Sassafras and persimmon are also common primary woody succession species. Blackberries are common around some field edges. Among the most conspicuous, persistent, herbaceous primary species found at the interiors of abandoned fields are broomsedge and goldenrod.

These clearings can have substantial ecological value for their ability to enhance the carrying capacity many of the region's wildlife species. Game species that utilize these habitats include cottontail rabbit, northern bobwhite, white-tailed deer, wild turkey, and mourning dove. Nongame species preferring to feed and or nest in one or more of these habitats include numerous passerine birds, such as the eastern bluebird, eastern meadowlark, yellow-breasted chat, chipping sparrow, field sparrow, purple martin, common ground dove, and loggerhead shrike. Inhabitants of brushy areas include the northern mockingbird, gray catbird, dark-eyed junco (winter), and rufous-sided towhee. In addition, a wide variety of forest-dwelling birds spend much time in ecotones between fields and forests. Several raptors, including the American kestrel, red-tailed hawk, and northern harrier, use old fields as their primary hunting areas for prey such as insects and small rodents.

Reptiles which frequent old fields and field-forest ecotones include the eastern fence lizard, six line racerunner, glass lizard, eastern hognose snake, black racer, corn snake, eastern diamondback rattlesnake, Florida pine snake, and eastern coachwhip. Common small mammals in these habitats include the hispid cotton rat and oldfield mouse.

Eroded Sites, Waste Areas, and Quarries

Several badly eroded sites, waste areas, and quarry habitats occur on Fort Rucker. Most are less than five acres and are of ecological importance only to breeding populations of insects, small rodents, and the animals that feed on them, such as snakes and lizards. Active quarries have little or no ecological value unless they accumulate water and are left undisturbed for several months during the rainy season.

Some badly eroded, sparsely vegetated areas provide good habitat for lizards, such as the six-lined racerunner. Bare, high, vertical sides of road-cuts and vertical faces of some quarries might provide for nesting burrows of belted kingfishers or northern rough-winged swallows.

Developed Areas

Residential lawns, especially those with trees and shrubs, provide habitat for a number of native animals. The mockingbird, northern cardinal, rufous-sided towhee, Carolina wren, blue jay, brown thrasher, American robin, and ruby-throated hummingbird are among native birds that are well adapted to living in residential areas during the breeding season. Winter residents may include a variety of bird species, depending on the nature and amount of cover available and on whether bird feeding is practiced. Among mammals, the gray squirrel, eastern chipmunk, southern flying squirrel, eastern mole, cotton mouse, and opossum are frequent permanent residents or visitors to residential areas, especially if these areas are bordered by forested habitats.

Golf courses and similarly vegetated habitats are used frequently by a number of breeding birds, including the American robin, blue jay, orchard oriole, northern mockingbird, and brown-headed cowbird. If individual large trees and sufficient food are present, the gray squirrel may also utilize this habitat. The eastern bluebird and other cavity-nesting species, such as the purple martin may use these habitats if provided with nesting boxes.

When these habitats include permanent pools or ponds, watercourses, or depressions that contain rainwater for periods of four weeks or longer during the year, these habitats can be used by several species of toads and frogs such as the southern toad, squirrel tree frog, green tree frog, gray tree frog, upland chorus frog, narrowmouth toad, bronze frog, and bullfrog.

Undersides of bridges and overpasses are primary breeding sites for the barn swallow and the eastern phoebe. The Carolina wren also occasionally uses these structures for nesting. Small rodents and snakes of several species may take shelter in habitat provided by these structures as well.

Floodplain Forests

Floodplain forests occur along larger streams on Fort Rucker, such as Claybank and Steep Head Creeks. Fallen leaves and other organic matter in these forests are frequently washed away during flooding, and the soil is alluvial in origin. Deciduous hardwood species dominate with ash, tupelo gum, red maple, and river birch commonly present. Coniferous trees common in this type of forest include spruce pine and bald cypress, which usually is found at the edge of water. Characteristic shrubs and herbs

include palmetto, sebastiana, mountain laurel, atamasco lily, spindle lily, and partridge berry.

Depressions are often present in floodplain forests, and when filled with water, they provide important breeding habitats for amphibians, including frogs, toads, and salamanders. Floodplain forests also provide habitat for many other wildlife species. Mammalian inhabitants of these floodplain forests include the white-tailed deer, swamp rabbit, cotton mouse, southeastern shrew, southern flying squirrel, opossum, gray fox, and raccoon. Avian inhabitants which breed in this type of habitat include the white-eyed vireo, ruby-throated hummingbird, northern cardinal, summer tanager, prothonotary warbler, hooded warbler, Carolina wren, Carolina chickadee, tufted titmouse, and green-backed heron. Wild turkey utilize this habitat throughout the year, and numerous passerine birds use it for over wintering or during migration.

Bay Swamps

Bay swamps are thick, evergreen forests that occur near smaller streams that lack steep slopes and deep channels. The soil is wet, deep, has a high organic content, and is black in color. Roots of many trees are at or near the surface and are often covered with mosses and lichens. The dominant tree is sweet bay, with tupelo gum and yellow-poplar interspersed. Common shrubs and vines include white titi, sweet pepper bush, gallberry, and Jackson brier. Florida anise dominates some areas near drier slopes. Characteristic herbs of this habitat include golden club, green arum, and rein-orchid. Fauna in bay swamps include numerous amphibians; several reptiles; mammals such as the cotton mouse, southeastern shrew, and raccoon; and birds such as the white-eyed vireo, hooded warbler, Carolina wren, and northern cardinal.

Seeps, Bogs, and Wet Meadows

Seeps occur on moist clay, siltstone, or claystone at the base of steep bluffs or along creeks with deep channels. These seeps have little soil and areas where plants can attach. Water is constantly dripping over the surface except during extremely dry conditions, and these areas are subject to scouring by water after heavy rains. Most are located in the deep shade of hardwoods.

Bogs and wet meadows occur mostly on gentle slopes that remain wet for most of the year but seldom have standing water. The soil is sand or sand-over-clay hardpan. If such areas are periodically burned, they are dominated by various grasses and sedges. However, most bogs and wet meadows on Fort Rucker are in succession toward a habitat more likely to support woody vegetation.

Characteristic plant species in these habitats include white titi, wax myrtle, gallberry, yellow poplar, alder, and blueberries. Various grasses, sedges, and rushes are common, as well as yellow-eyed grass, meadow beauty, ludwigia, St. Johnswort, pipewort, sundew, lobelia, narrow-leafed sunflower, and clubmosses. Sphagnum moss also is often abundant in these habitats. Principal wildlife inhabitants of these habitats are amphibians, predominantly salamanders and frogs. Several snake species and raccoons may prey upon these amphibians.

Borrow Pits

Borrow pits occur in otherwise upland areas where soil has been removed to a depth that allows water to stand for varying periods of time resulting in wetland habitats. Similarly, roadside ditches and other depressions may hold water for extended periods. Flora in such isolated habitats often is scant and composed of a few wetland species and other species from surrounding upland areas. These habitats often experience extremes from wet to dry and often are in full sun and on nutrient-poor soils. Common species on such sites are various sedges and rushes, yellow-eyed grass, and ludwigia. These habitats may be of particular importance to amphibians requiring breeding sites free from fish predation.

Intermittent Streams

Intermittent streams are those which only flow during relatively wet periods. During dry periods, these streams may retain isolated pools of standing water that support aquatic organisms, such as amphibians, crustaceans, and insects. Vegetation supported by these streams is typically very limited. When vegetation is present, they may contain plants similar to those found in seeps, such as mosses and liverworts.

Oxbow Ponds

Oxbow ponds occur along Claybank and Steep Head Creeks where stream channels have changed due to silt deposition in bends. This deposition results in portions of former stream beds being cut off from channels to form ponds. Oxbow ponds either have permanent water or fill intermittently with rainwater or creek overflow. They usually are lacking in vegetation with exception of dayflowers and cardinal flowers growing on the drying mud and silt. Surrounding vegetation is characteristic of that growing along the main channel of the associated stream. The principal animal inhabitants of oxbow ponds are amphibians.

Beaver Ponds

Beaver ponds occur on several small streams, which have been dammed by beavers. These ponds vary in size and depth, but are usually small and shallow. Shoreline vegetation varies with location, but typically consists of species characteristic of floodplain forests and bay swamps. Beavers modify this environment not only by their impoundments but also by their selective harvesting of shoreline vegetation for use as food and construction materials. Such areas often support abundant floating, rooted-floating, and emergent aquatic vegetation. Common species include fragrant water lily, water shield, bladderwort, duck potato, green arum, golden club, yellow-eyed grass, and pondweed. Common shore plants include various sedges and rushes, panic grass, ludwigia, meadow beauty, and sphagnum moss. Common woody shrub species include wax myrtle, white titi, and willow. After beavers abandon an area and the dam is destroyed, these habitats slowly revert to their previous vegetational composition.

A wide variety of other wildlife species may utilize beaver ponds. Most species found in floodplain forests utilize the margins of beaver ponds, and the ponds themselves provide important habitat for species such as the wood duck, green-backed heron, and river otter as well as numerous species of reptiles, amphibians, and minnows.

Permanent Streams

Several permanent streams occur on Fort Rucker, with Claybank Creek being the largest. Due to shifting substrates and the scouring action of sand and water, larger streams lack vegetation in their channels. However, these streams are associated with oxbow ponds, seeps, beaver ponds, and floodplain habitats, as described above. Smaller streams are often vegetated with arum, golden club, yellow-eyed grass, duck potato, and alder. Some very small streams are almost filled with sphagnum moss. Animal inhabitants of these streams and their banks include invertebrates such as crayfish; amphibians such as salamanders and frogs; snakes such as the cottonmouth, eastern garter snake, and brown and midland water snakes; mammals such as the beaver, river otter, and raccoon; and birds such as the green-backed heron, great blue heron, and belted kingfisher.

Man-made Lakes

Man-made lakes have been formed on Fort Rucker by damming several small streams and Claybank Creek. Most of these lakes have a few floating, floating-leaved, or emergent plants. Common aquatic plants are bladderwort, ludwigia, yellow-eyed grass, green arum, duck potato, and various grasses, sedges, and rushes. Lake Tholocco, is the largest of these at 640 acres. Man-made lakes provide habitat for a variety of aquatic wildlife, including fish, amphibians, reptiles, mammals, and birds. Fish species found in lakes on the reservation include channel catfish and yellow bullhead, spotted and largemouth bass, and numerous species of minnows and sunfish. Amphibians include the bullfrog, bronze frog, and southern cricket frog. Reptiles include the common snapping turtle, common musk turtle, pond slider, brown and midland water snakes, and the American alligator. Mammals most likely to utilize man-made lakes are the beaver and the raccoon. Birds which commonly use these lakes include the pied-billed grebe, great blue heron, green-backed heron, great egret, cattle egret, wood duck, mallard duck, American black duck, green-winged teal, and ring-necked duck. These birds utilize this habitat primarily while over-wintering and during migration.

Appendix 7 List of Potential Threatened and Endangered Species to Occur on Fort Rucker

Specie	Status
Birds	
Wood Stork (<i>Mycteria Americana</i>)	Threatened
Clams	
Choctaw Bean (<i>Villosa choctawensis</i>)	Endangered
Fuzzy Pigtoe (<i>Pleurobema strodeanum</i>)	Threatened
Southern Kidneyshell (<i>Ptychobranhus jonesi</i>)	Endangered
Tapered Pigtoe (<i>Fusconaia burkei</i>)	Threatened
Fishes	
Atlantic Sturgeon (gulf Subspecies) (<i>Acipenser oxyrinchus</i>)	Threatened
Reptiles	
Eastern Indigo Snake (<i>Drymarchon corais couperi</i>)	Threatened
Gopher Tortoise (<i>Gopherus Polyphemus</i>)	Candidate

APPENDIX 8: Scientific Names of Flora on Fort Rucker

Common Name	Scientific Name
Alder	<i>Alnus serrulata</i>
anise, Florida	<i>Illicium floridanum</i>
arum, green	<i>Peltandra virginica</i>
Ash	<i>Fraxinus</i> spp.
azalea, piedmont	<i>Rhododendron canescens</i>
beech, American	<i>Fagus grandifolia</i>
Beggartick	<i>Desmodium</i> spp.
birch, river	<i>Betula nigra</i>
Blackberry	<i>Rubus</i> spp.
Bladderwort	<i>Utricularia</i> spp.
blazing star	<i>Liatris</i> spp.
Bloodroot	<i>Sanguinaria canadensis</i>
Blueberry	<i>Vaccinium</i> spp.
blueberry-huckleberry complex	<i>Vaccinium</i> spp.
broom sedge	<i>Andropogon virginicus</i>
buckeye, red	<i>Aesculus pavia</i>
cardinal flower	<i>Lobelia cardinalis</i>
cherry, wild (blackcherry)	<i>Prunus serotina</i>
clubmoss	<i>Lycopodium</i> spp.
cypress, bald	<i>Taxodium distichum</i>
dayflowers	<i>Commelina</i> spp.
devilwood	<i>Osmanthus americana</i>
dogwood, flowering	<i>Cornus florida</i>
duck-potato	<i>Sagittaria</i> spp.
eastern red-cedar	<i>Juniperus virginiana</i>
fern, cinnamon	<i>Osmunda cinnamomea</i>
fern, southern maidenhair	<i>Adiantum cappillus-veneris</i>
fringe tree	<i>Chionanthus virginicus</i>
gallberry	<i>Ilex glabra</i>
ginger, wild	<i>Aristolochiaceae</i> spp.

⁹ For a complete list of flora confirmed on Fort Rucker, see Mount and Diamond (1992).

Common Name	Scientific Name
goat's rue	<i>Tephrosia virginiana</i>
golden club	<i>Orontium aquaticum</i>
goldenrod	<i>Solidago</i> spp.
grass, panic	<i>Panicum</i> spp.
grasses	<i>Poaceae</i> spp.
greenbrier	<i>Smilax</i> spp.
gum, black	<i>Nyssa sylvatica</i>
gum, tupelo	<i>Nyssa aquatica</i>
hawthorn	<i>Crataegus</i> spp.
Hercules' club	<i>Aralia spinosa</i>
hickory	<i>Carya</i> spp.
hickory, sand	<i>Carya pallida</i>
holly, American	<i>Illex opaca</i>
honeysuckle, Japanese	<i>Lonicera japonica</i>
hornbeam	<i>Ostrya virginiana</i>
hydrangea, oak-leaf	<i>Hydrangea quercifolia</i>
indigo, wild	<i>Baptisia</i> spp.
ironwood	<i>Carpinus caroliniana</i>
jackson-brier	<i>Smilax</i> spp.
jessamine, yellow	<i>Gelsemium sempervirens</i>
laurel, mountain	<i>Kalmia latifolia</i>
legumes	<i>Fabaceae</i> spp.
lily, Atamasco	<i>Zephyranthes atamasco</i>
lily, spider	<i>Hymenocallis occidentalis</i>
lobelia	<i>Lobelia</i> spp.
ludwigia	<i>Ludwigia</i> spp.
magnolia, bigleaf	<i>Magnolia macrophylla</i>
magnolia, pyramid	<i>Magnolia pyramidata</i>
magnolia, southern	<i>Magnolia grandiflora</i>
maple	<i>Acer</i> spp.
maple, red	<i>Acer rubrum</i>
meadow beauty	<i>Rhexia</i> spp.
milkweed	<i>Asclepias</i> spp.
oak, black	<i>Quercus velutina</i>
oak, blackjack	<i>Quercus marilandica</i>
oak, bluejack	<i>Quercus incana</i>
oak, diamond-leaf	<i>Quercus laurifolia</i>

oak, dwarf (or sand) post	<i>Quercus margaretta</i>
oak, post	<i>Quercus stellata</i>
oak, sand laurel	<i>Quercus hemisphaerica</i>
oak, southern red	<i>Quercus falcata</i>
oak, turkey	<i>Quercus laevis</i>
oak, water	<i>Quercus nigra</i>
oak, white	<i>Quercus alba</i>
oak, willow	<i>Quercus phellos</i>
orchid, rein	<i>Platanthera clavellata</i>
palm, needle	<i>Rhapidophyllum hustrix</i>
palmetto	<i>Sabal minor</i>
partridge berry	<i>Mitchella repens</i>
pepperbrush, sweet	<i>Clethra alnifolia</i>
persimmon	<i>Diospyros virginiana</i>
pine, loblolly	<i>Pinus taeda</i>
pine, shortleaf	<i>Pinus echinata</i>
pine spruce	<i>Pinus glabra</i>
pineweed	<i>Hypericum gentianoides</i>
plum, wild	<i>Prunus americana</i>
poison-ivy	<i>Rhus radicans</i>
poison-oak	<i>Rhus toxicodendron</i>
prickly pear	<i>Opuntia humifusa</i>
sassafras	<i>Sassafras albidum</i>
sensitive brier	<i>Schrankia microphylla</i>
sesban, purple	<i>Sesbania punicea</i>
silverbell	<i>Halesia</i> spp.
sourwood	<i>Oxydendron arboreum</i>
sphagnum moss	<i>Sphagnum</i> spp.
St. John's wort	<i>Hypericum</i> spp.
sundew	<i>Drosera</i> spp.
sunflower, narrow-leaved	<i>Helianthus angustifolius</i>
sweet bay	<i>Magnolia virginiana</i>
sweet shrub	<i>Calycanthus floridus</i>
sweetgum	<i>Liquidambar styraciflua</i>
sweetleaf	<i>Symplocos tinctoria</i>
switchcane	<i>Arundinaria gigantea</i>
titi, white	<i>Cyrilla racemiflora</i>
treadsoftly	<i>Cnidoscolus stimulosus</i>

trillium	<i>Trillium</i> spp.
violets	<i>Viola</i> spp.
water shield	<i>Brasenia schreberi</i>
water-lily, fragrant	<i>Nymphaea odorata</i>
wax myrtle	<i>Myrica cerifera</i>
willow	<i>Salix</i> spp.
yaupon	<i>Ilex vomitoria</i>
yellow-eyed-grass	<i>Xris</i> spp.
yellow-poplar	<i>Liriodendron tulipifera</i>

APPENDIX 9: Fauna on Fort Rucker, Alabama

Mammals	
armadillo, nine-banded	<i>Dasypus novemcinctus</i>
bat, evening	<i>Nycticeius humeralis</i>
bat, red	<i>Lasiurus borealis</i>
bat, Seminole	<i>Lasiurus seminolus</i>
beaver	<i>Castor canadensis</i>
bobcat	<i>Felis rufus</i>
chipmunk, eastern	<i>Tamias striatus</i>
cottontail, eastern	<i>Sylvilagus floridanus</i>
coyote	<i>Canis latrans</i>
deer, white-tailed	<i>Odocoileus virginianus</i>
dog	<i>Canis familiaris</i>
fox, gray	<i>Urocyon cinereoargenteus</i>
fox, red	<i>Vulpes vulpes</i>
house cat	<i>Felis catus</i>
mink	<i>Mustela vison</i>
mole, eastern	<i>Scalopus aquaticus</i>
mouse, cotton	<i>Peromyscus gossypinus</i>
mouse, golden	<i>Ochrotomys nuttali</i>
mouse, house	<i>Mus musculus</i>
mouse, oldfield	<i>Peromyscus polionotus</i>
opossum, Virginia	<i>Didelphis marsupialis</i>
otter, river	<i>Lutra canadensis</i>
pocket gopher, southeastern	<i>Geomys pinetis</i>
rabbit, swamp	<i>Sylvilagus aquaticus</i>
raccoon	<i>Procyon lotor</i>
rat, hispid cotton	<i>Sigmodon hispidus</i>
shrew, least	<i>Cryptotis parum</i>
shrew, short-tailed	<i>Blarina carolinensis</i>
shrew, southeastern	<i>Sorex longirostris</i>
skunk, striped	<i>Mephitis mephitis</i>
squirrel, fox	<i>Sciurus niger</i>

¹⁰ Adapted from Mount and Diamond, 1992.

squirrel, gray	<i>Sciurus carolinensis</i>
squirrel, southern flying	<i>Glaucomys volans</i>
vole, pine	<i>Pytymys pinetorum</i>
weasel, long-tailed	<i>Mustela frenata</i>
<hr/>	
Birds	
<hr/>	
anhinga	<i>Anhinga anhinga</i>
blackbird, red-winged	<i>Agelaius phoeniceus</i>
bluebird, eastern	<i>Sialia sialis</i>
bobwhite, northern	<i>Colinus virginianus</i>
bufflehead	<i>Bucephala albeola</i>
bunting, indigo	<i>Passerina cyanea</i>
cardinal, northern	<i>Cardinalis cardinalis</i>
catbird, gray	<i>Dumetella carolinensis</i>
chat, yellow-breasted	<i>Icteria virens</i>
chickadee, Carolina	<i>Parus carolinensis</i>
chuck-will's widow	<i>Caprimulgus carolinensis</i>
coot, American	<i>Fulica americana</i>
cormorant, double-crested	<i>Phalacrocorax auritus</i>
cowbird, brown-headed	<i>Molothrus ater</i>
crow, American	<i>Corvus brachyrhynchos</i>
crow, fish	<i>Corvus ossifragus</i>
creeper, brown	<i>Certhia americana</i>
cuckoo, yellow-billed	<i>Coccyzus americanus</i>
dove, common ground	<i>Columbina passerina</i>
dove, mourning	<i>Zenaida macroura</i>
duck, American black	<i>Anas rubripes</i>
duck, mallard	<i>Anas platyrhynchos</i>
duck, ring-necked	<i>Aythya collaris</i>
duck, ruddy	<i>Oxyura jamaicensis</i>
duck, wood	<i>Aix sponsa</i>
eagle, bald	<i>Haliaeetus leucocephalus</i>
egret, cattle	<i>Bubulcus ibis</i>
egret, great	<i>Casmerodius albus</i>
flicker, northern	<i>Colaptes auratus</i>
flycatcher, great crested	<i>Myiarchus crinitus</i>
goldfinch, American	<i>Carduelis tristis</i>
goose, Canada	<i>Branta canadensis</i>
gnatcatcher, blue-gray	<i>Podilymbus podiceps</i>
<hr/>	

grackle, common	<i>Quiscalus guiscula</i>
grebe, pied-billed	<i>Podilymbus podiceps</i>
grosbeak, blue	<i>Guiraca caerulea</i>
ground-dove, common	<i>Columbina passerina</i>
gull, herring	<i>Larus argentatus</i>
gull, ring-billed	<i>Larus delawarensis</i>
harrier, northern	<i>Circus cyaneus</i>
hawk, broad-winged	<i>Buteo platypterus</i>
hawk, Cooper's	<i>Accipiter cooperii</i>
hawk, red-shouldered	<i>Buteo lineatus</i>
hawk, red-tailed	<i>Buteo jamaicensis</i>
hawk, sharp-shinned	<i>Accipiter striatus</i>
heron, great blue	<i>Ardea herodias</i>
heron, green-backed	<i>Butorides striatus</i>
heron, little blue	<i>Egretta caerulea</i>
heron, yellow-crowned night	<i>Nyctocorax violaceus</i>
hummingbird, ruby-throated	<i>Archilochus colubris</i>
jay, blue	<i>Cyanocitta cristata</i>
junco, dark-eyed	<i>Junco hyemalis</i>
kestrel, American	<i>Falco sparverius</i>
killdeer	<i>Charadrius vociferus</i>
kingbird, eastern	<i>Tyrannus tyrannus</i>
kingfisher, belted	<i>Ceryle alcyon</i>
kinglet, ruby-crowned	<i>Regulus calendula</i>
mallard	<i>Anas platyrhynchos</i>
martin, purple	<i>Progne subis</i>
meadowlark, eastern	<i>Sturnella magna</i>
mockingbird, northern	<i>Mimus polyglottos</i>
nighthawk, common	<i>Chordeiles minor</i>
nuthatch, brown-headed	<i>Sitta pusilla</i>
nuthatch, white-breasted	<i>Sitta carolinensis</i>
oriole, orchard	<i>Icterus spurius</i>
osprey	<i>Pandion haliaetus</i>
owl, barn	<i>Tyto alba</i>
owl, barred	<i>Strix varia</i>
owl, eastern screech	<i>Otus asio</i>
owl, great horned	<i>Bubo virginianus</i>
parula, northern	<i>Parula americana</i>

phoebe, eastern	<i>Sayornis phoebe</i>
robin, American	<i>Turdus migratorius</i>
sapsucker, yellow-bellied	<i>Sphyrapicus varius</i>
shrike, loggerhead	<i>Lanius ludovicianus</i>
sparrow, field	<i>Spizella pusilla</i>
sparrow, house	<i>Sparrow domesticus</i>
sparrow, swamp	<i>Melospiza georgiana</i>
sparrow, vesper	<i>Poocetes gramineus</i>
sparrow, white-throated	<i>Zonotrichia albicollis</i>
starling, European	<i>Sturnus vulgaris</i>
swallow, bank	<i>Ripara riparia</i>
swallow, barn	<i>Hirundo rustica</i>
swallow, northern rough-winged	<i>Stelgidopterix serripennis</i>
swift, chimney	<i>Chaetura pelagica</i>
tanager, summer	<i>Piranga rubra</i>
teal, green-winged	<i>Anas crecca</i>
tern, Forster's	<i>Sterna forsteri</i>
thrasher, brown	<i>Toxostoma rufum</i>
thrush, hermit	<i>Catharus guttatus</i>
thrush, wood	<i>Hylocichla mustelina</i>
titmouse, tufted	<i>Parus bicolor</i>
towhee, rufous-sided	<i>Pipilo erythrophthalmus</i>
turkey, wild	<i>Meleagris gallopavo</i>
vireo, red-eyed	<i>Vireo olivaceous</i>
vireo, white-eyed	<i>Vireo griseus</i>
vulture, black	<i>Coragyps atratus</i>
vulture, turkey	<i>Cathartes aura</i>
warbler, black-and-white	<i>Mniotilta varia</i>
warbler, hooded	<i>Wilsonia citrina</i>
warbler, Kentucky	<i>Oporornis formosus</i>
warbler, magnolia	<i>Dendroica magnolia</i>
warbler, palm	<i>Dendroica palmarum</i>
warbler, pine	<i>Dendroica pinus</i>
warbler, prothonotary	<i>Prothonotaria citrea</i>
warbler, yellow	<i>Dendroica petechia</i>
warbler, yellow-rumped	<i>Dendroica coronata</i>
waxwing, cedar	<i>Bombycilla cedorum</i>
woodcock American	<i>Scolopax minor</i>

woodpecker, downy	<i>Picoides pubescens</i>
woodpecker, hairy	<i>Picoides villosus</i>
woodpecker, pileated	<i>Dryocopus pileatus</i>
woodpecker, red-bellied	<i>Melanerpes carolinus</i>
woodpecker, red-headed	<i>Melanerpes erythrocephalus</i>
wood-pewee	<i>Contopus virens</i>
wren, Carolina	<i>Thryothorus ludovicianus</i>
yellowthroat, common	<i>Geothlypis trichas</i>

Reptiles

alligator, American	<i>Alligator mississippiensis</i>
anole, green	<i>Anolis carolinensis</i>
coachwhip, eastern	<i>Masticophis flagellum flagellum</i>
cooter, river	<i>Pseudemys concinna</i> spp.
copperhead, southern	<i>Agkistrodon contortrix contortrix</i>
cottonmouth	<i>Agkistrodon piscivorous</i>
kingsnake, scarlet	<i>Lampropeltis triangulum elapsoides</i>
lizard, eastern fence	<i>Sceloporus undulatus</i>
lizard, eastern glass	<i>Ophisaurus ventralis</i>
lizard, southern fence	<i>Sceloporus undulatus undulatus</i>
racer, southern black	<i>Coluber constrictor priapus</i>
racerunner, six-lined	<i>Cnemidophorus sexlineatus</i>
rattlesnake, eastern diamondback	<i>Crotalus adamanteus</i>
rattlesnake, timber (canebrake)	<i>Crotalus horridus</i>
skink, broadheaded	<i>Eumeces laticeps</i>
skink, five-lined	<i>Eumeces fasciatus</i>
skink, ground	<i>Scincella lateralis</i>
slider, pond	<i>Chrysemys scripta</i>
snake, brown water	<i>Nerodia taxispilota</i>
snake, corn	<i>Elaphe guttata</i>
snake, eastern coral	<i>Micrurus fulvius fulvius</i>
snake, eastern garter	<i>Thamnophis sirtalis</i>
snake, eastern hognose	<i>Heterodon platyrhinos</i>
snake, Florida pine	<i>Pituophis melanoleucus mugitus</i>
snake, gray rat	<i>Elaphe obsoleta spiloides</i>
snake, midland water	<i>Nerodia sipedon pleuralis</i>
snake, rainbow	<i>Farancia erytrogramma erytrogramma</i>
snake, ringneck	<i>Diadophis punctatus</i>
snake, rough green	<i>Opheodrys aestivus</i>

snake, rough earth	<i>Virgina striatula</i>
snake, southern ringneck	<i>Diadophis punctatus punctatus</i>
snake, southeastern crowned	<i>Tantilla coronata</i>
snake, scarlet	<i>Cemophora coccinea</i>
tortoise, gopher	<i>Gopherus polyphemus</i>
turtle, common musk	<i>Sternotherus odoratus</i>
turtle, common snapping	<i>Chelydra serpentina</i>
turtle, eastern box	<i>Terrapene carolina carolina</i>
turtle, eastern mud	<i>Kinosternon subrubrum subrubrum</i>
<hr/> Amphibians <hr/>	
bullfrog	<i>Rana catesbeiana</i>
frog, bronze	<i>Rana clamitans</i>
frog, ornate chorus	<i>Pseudacris ornata</i>
frog, southern cricket	<i>Acris gryllus gryllus</i>
frog, southern leopard	<i>Rana utricularia</i>
frog, upland chorus	<i>Pseudacris triseriata feriarum</i>
peeper, northern spring	<i>Pseudacris (Hyla) crucifer crucifer</i>
peeper, spring	<i>Pseudacris crucifer</i>
salamander, red	<i>Pseudotriton ruber</i> spp.
salamander, spotted	<i>Ambystoma maculatum</i>
salamander, spotted dusky	<i>Desmognathus fuscus conanti</i>
salamander, southeastern slimy	<i>Plethodon grobmani</i>
salamander, southern two-lined	<i>Eurycea cirrigera</i>
salamander, blue ridge two-lined	<i>Eurycea wilderae</i>
salamander, three-lined	<i>Eurycea longicauda guttolineata</i>
toad, American	<i>Bufo americanus</i>
toad, eastern narrowmouth	<i>Gastrophryne carolinensis</i>
toad, oak	<i>Bufo quercicus</i>
toad, southern	<i>Bufo terrestris</i>
treefrog, barking	<i>Hyla gratiosa</i>
treefrog, bird-voiced	<i>Hyla avivoca</i>
treefrog, green	<i>Hyla cinerea</i>
treefrog, gray (common or Cope's)	<i>Hyla versicolor</i> or <i>Hyla chrysoscelis</i>
treefrog, pine woods	<i>Hyla femoralis</i>
treefrog, squirrel	<i>Hyla squirella</i>
waterdog, costal	<i>Necturus beryi</i>
<hr/> Fish <hr/>	
bass, largemouth	<i>Micropterus salmoides</i>

bass, spotted
bass, white
bluegill
bownfin
bullhead, yellow
catfish, channel
chub, clear
chub, speckled
chubsucker, lake
crappie, black
darter, blackbanded
darter, bluntnose
darter, choctawhatchee
darter, gulf
eel, American
madtom, speckled
minnow, silverjaw
mosquitofish
perch, pirate
pickerel, grass or redfin
pickerel, chain
redhorse, blacktail
shad, gizzard
shiner, blacktail
shiner, blacktip
shiner, golden
shiner, longnose
shiner, weed
sucker, spotted
sunfish, green
sunfish, longear
sunfish, redear
sunfish, spotted
topminnow, blackspotted
warmouth

Micropterus punctulatus
Morone chrysops
Lepomis macrochirus
Amia calva
Ameiurus natalis
Ictalurus punctatus
Hybopsis winchelli
Extrarius aestivalis
Erimyzon succeta
Pomoxis nigromaculatus
Percina nigrofasciata
Etheostoma chlorosomum
Etheostoma davisoni
Etheostoma swaini
Anquilla rostrata
Noturus leptacanthus
Ericymba buccata
Gambusia affinis
Aphredoderus sayanus
Esox americanus
Esox niger
Moxostoma poecilurum
Dorosoma cepedianum
Cyprinella venusta
Lythrurus atrapiculus
Notemigonus chrysoleucas
Notropis longirostris
Notropis texanus
Mirytrema melanops
Lepomis cyanellus
Lepomis megalotis
Lepomis microlophus
Lepomis punctatus
Fundulus olivaceus
Lepomis gulosus

Appendix 10

BURN PLAN FORM

Area: _____ Dates: _____ Prescribed Fire: _____ Site prep: Overstory _____ ClrCut _____
Burn Unit Acres: _____ Burn Area Acres: _____ Previous Burn Date: _____

Location (Roads, Creeks, Training Sites): _____

BURN PLAN: FOR PRESCRIPTIONS, EVALUATION, AND RECORDS

Pre-Burn Reconnaissance Completed (Soldiers, Hunters, Assets, Etc.)? Yes: _____ No: _____

IGNITION TIME _____

IGNITION COMPLETE TIME _____

BURN OUT TIME _____

Burn Boss (BB)/Burn Crew: _____

Burn Objective: _____

Firebreaks Plowed? Yes: _____ No: _____ If Yes, Identify on photo

ASSETS PRESENT (Power Poles, Utility Boxes, Buildings, Railroads, Latrines, Etc.)? Yes: _____ No: _____

If Yes, Description: _____

PERSONNEL Assigned to Protect Assets: _____

Date Protected: _____

HAZARDS (Near Roads, Utility Lines, Railroads, Buildings, Reservation Boundary)? Yes: _____ No: _____

If Yes, Description (Snags, Green Trees, Number of Each and Location in Burn Unit): _____

PERSONNEL Assigned to Hazards: _____

Action Taken to Eliminate Hazards (felled w/saw or dozer, raked around, suppressed with water or dozer):

PROBLEMS: _____

STAND CONDITION:**Overstory** (Forest Type Code: LOB/HWD___ LOB/PLAN___ LONGLEAF/PLAN___ MIXED/HWD___)

DBH 0-2"___ 2-6"___ 6-10"___ 10+"___; BA: <50___ >50___)

Longleaf Pine Plantations Yes:___ No:___ If Yes, number of acres___

Loblolly Pine Plantations Yes:___ No:___ If Yes, number of acres___

Clearcut Yes:___ No:___

Midstory (Species: scrub oak___ sweetgum___ upland hardwood (red/white oak, hickory)___ other hardwood___)**Condition Class** (___ 1 ___ 2 ___ 3)**Fuel Model** (___ 1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ 7 ___ 8 ___ 9 ___ 10 ___ 11 ___ 12 ___ 13)**Fuels** (Rough: 1yr___ 2yr___ 3yr___ >3yr___; herbicide___)**Topography** (Slope: 0-5%___ 5-10%___ 10-15%___)**FIRE WEATHER:**PreferredForecasted / Actual

SFC Wind / Direction

6-18 MPH

_____/____

Air Temperature:

(40°-70° Winter, 60°-85° Spring, 75°-95° Summer)

_____/____

Relative Humidity

20-60%

_____/____

Mixing Height

> 1650 ft.

_____/____

Transport Wind

> 9 MPH

_____/____

Fuel Moisture

1 hr. (6-9%)

_____/____

Days Since Rain

1 – 10 Days

_____/____

Amount of Rain

_____/____

Smoke Dispersion Index (SDI):

40-100

_____/____

Drought Index (KBDI):

DORMANT___<300

_____/____

GROWING___<450

_____/____

SITE PREP___<500

_____/____

Point of Ignition (POI)

>70

In Stand Winds

1-5 mph

Low Visibility Occurrence Risk Index (LVORI)___<6

EVALUATION (During, Post-Burn, and Day After Burn):**Date:**_____**1) Time Burn Perimeter, Assets, and Hazards Checked?****During Burn:**_____ **PATROLLED BY:**_____**Action Taken:**_____**Post Burn:**_____ **PATROLLED BY:**_____***Burn Perimeter, Assets, and Pre-Burn / Post-Burn Hazards Protected and Secured?***

Yes: _____ No: _____ If No, Additional Action Taken: _____

2) Time of final Inspection (Next A.M.): _____ **INSPECTED BY:** _____

Burn Perimeter, Assets, and Pre-Burn / Post-Burn Hazards Still Protected and Secured?

Yes: _____ No: _____ If No, Additional Action Taken: _____

3) Signs Retrieved? Yes: _____ No: _____ N/A _____ If No, Why: _____

4) Stand Condition:

Crown Scorch: 0-25% _____ 25-50% _____ 50-75% _____ 75-100% _____

Hardwood Topkill: 0-25% _____ 25-50% _____ 50-75% _____ 75-100% _____

5) Smoke Problems / Impacts? Yes: _____ No: _____ Location: _____

If Yes, Action Taken: _____

6) Fire Behavior (ROS, Torching Out, Controlled, Intense, Subdued, Plume Trajectory):

Test Fire:

Rate of Spread: 1-2ch/hr _____ 2-4ch/hr _____ 4-6ch/hr _____ 6-8ch/hr _____ 8-10ch/hr _____ >10ch/hr _____

Torching Out _____ Controlled _____ Intense _____ Subdued _____

Plume Trajectory N _____ S _____ E _____ W _____ NE _____ NW _____ SE _____ SW _____

Actual Burn:

Rate of Spread: 1-2ch/hr _____ 2-4ch/hr _____ 4-6ch/hr _____ 6-8ch/hr _____ 8-10ch/hr _____ >10ch/hr _____

Torching Out _____ Controlled _____ Intense _____ Subdued _____

Plume Trajectory N _____ S _____ E _____ W _____ NE _____ NW _____ SE _____ SW _____

7) Were Objectives Met?

Fuel Reduction Yes: _____ No: _____

Hardwood Control Yes: _____ No: _____

Brownsplot Control Yes: _____ No: _____

Site Preparation Yes: _____ No: _____

Other Yes: _____ No: _____

If Yes, Explain: _____

If No, Explain: _____

8) Erosion or Mineral Soil Exposed? Yes: _____ No: _____ (If Yes, Identify on Photo)

Location and GC: _____

9) Remarks, Problems, Adverse Impacts of Public Relations: _____

10) **FORM COMPLETED BY:** _____ **DATE:** _____

SMOKE MANAGEMENT SCREENING FORM

Step I: Direction and Distance of Possible Smoke Impact

- A. Smoke Dispersion Index (SDI): _____ Category: 3___ 4___ 5___ 6___
- B. (1) Burn Type: prescribed burn___ site preparation: overstory___ clearcut___
(2) Fuel Type: rough 1yr___ 2yr___ 3yr___ >3yr___; herbicide___
(3) If Prescribed burn, size of burn area >300 acres? Yes___ No___
If Site preparation, size of burn area >200 acres? Yes___ No___
(4) Firing Technique: backing___ strip-heading___ spotting___ flanking___
(5) Possible Smoke Impact Distance (Miles):
0.25___ 0.5___ 1___ 2___ 3___ 4___ 6___ 8___ 12___
- C. Any smoke sensitive areas (SSA's) within 5 or 10 chains of burn? Yes*___ No___
- D. Any downwind smoke sensitive areas (SSA's)? Yes*___ No___
- E. Any down-drainage smoke sensitive areas (SSA's)? Yes*___ No___

*** If Yes to Step I: C, D, or E identify areas on smoke screen map and go to Step II.**

Step II: Identify and List SSA's (Smoke Sensitive Areas)

- A. List SSA's* within 5 or 10 chains.
- (1) _____
- (2) _____
- (3) _____
- (4) _____
- B. List SSA's* in downwind impact area.
- (1) _____
- (2) _____
- (3) _____
- (4) _____
- C. List SSA's* in down-drainage impact area.
- (1) _____
- (2) _____
- (3) _____
- (4) _____

***If any SSA's listed in Step II: A, B, or C above, continue screening system.**

Step III: Actions Taken or Changes Made to Eliminate, Minimize, and

Mitigate Smoke Problems:

- A. SSA's adjacent to or within 5 or 10 chains? Yes___ No___

If yes, what action was taken or changes made to eliminate, minimize, and mitigate a smoke problem? _____

- B. SSA's in downwind impact area? Yes___ No___

If yes, what action was taken or changes made to eliminate, minimize, and mitigate a smoke problem? _____

- C. SSA's in down-drainage impact area? Yes___ No___

If yes, what action was taken or changes made to eliminate, minimize, and mitigate a smoke problem? _____

Step V: Interpreting Results

Were there any other actions taken or changes made in the prescription to eliminate, minimize, and mitigate a smoke problem? _____

Appendix 11 Wildlife Food Plot Information

Grain sorghum: About 50 acres are planted in 5-10-acre plots during April-May each year. These plots target dove and quail.

Winter green crop mixture: Approximately 200 acres are planted in a mixture of winter wheat or rye, crimson clover, Austrian winter pea, and hairy vetch. This mixture is planted in 28 separate utility rights-of-way, totaling 100 acres. . This mixed planting provides a high quality supplemental feed for deer, turkey, and many small game species during winter.

Bicolor lespedeza: Numerous patches have been planted throughout Fort Rucker. Each patch is 1/8th to 1/4th acres. Bicolor is primarily planted for quail; however, mourning dove and turkey also find the fruit highly desirable. A three-year maintenance cycle has been established. Cutting and fertilizing every third year aids bush growth, seed production, and overall development of bicolor. Fort Rucker realizes that bicolor lespedeza is a non-native species and can become a problem if allowed to spread unchecked. The value of this heavy seed producing legume to bobwhite quail and the fact that plots can be controlled if maintained offset this risk in our opinion.

Chufa: Twenty acres of chufa are planted throughout Fort Rucker. Fields vary from 3/4th to two acres. Chufas are planted as a supplemental food for wild turkey, although deer and other wildlife are known to feed on them.

Browntop millet: One hundred acres of brown millet are planted throughout Fort Rucker. Fields are 1-10 acres. Primarily planted to attract quail and dove, other species are known to benefit from this planting. These fields provide excellent dove hunting during the early portion of the hunting season. Browntop is also added to mixtures planted for erosion control outside of the cantonment area. In this manner, an additional 150-200 acres of wildlife feed are provided.

Kobe lespedeza: Kobe lespedeza is planted annually in strips comprising 15 acres of wildlife openings. This plant is a highly preferred food of bobwhite quail and is also used by rabbits and deer.

Egyptian wheat: This variety of sorghum is planted in 1/8-1/4 acre plots, totaling 50 acres. Bobwhite quail, mourning dove, and various songbirds utilize this food supplement.

Chickasaw plum: Plum tree seedlings are planted within wildlife openings and open areas to create travel corridors and escape cover. Additionally, Chickasaw plum produces a fruit that is widely used by game and non-game birds and other wildlife species.

Lab lab: Lab lab, an annual tropical legume, has shown considerable promise as high quality supplemental forage for deer. This legume has 31% crude protein, available in later summer, an important wildlife stress period. This species has been recommended by Auburn University. Fort Rucker is planting about three 4-acre plots to experiment with this species. This project will continue, depending upon results, during 2001-2005.

DQP: DQP is a perennial legume, which shows promise as deer forage and a seed producer for birds. Fort Rucker is experimenting with DQP, planting about five acres annually in strips.

Austrian winter pea; Austrian winter pea is a vine-like cool-season annual legume. It has a high nutritional value and is very attractive to whitetail deer, providing excellent fall, winter, and early-spring forage. Doves, quail and turkey will also feed on seed. This has been added to the cool season mixture for planting on Fort Rucker.

Chicory: Chicory, a perennial herb, has been proven to provide an excellent late winter early-spring forage for whitetail deer. It begins rapid growth in the spring and is planted as a companion plant for white and ladino clovers.

Iron & Clay Pea: Iron and Clay pea is an annual, vine-like, summer legume. It is planted to provide forage from July to until the first frost and is highly preferred forage of deer and rabbits. Quail, doves, turkeys and a variety of other bird species feed almost exclusively on the seed when available. It is planted as a companion plant for lab lab and is used as a warm season planting.

Sunflower: Sunflowers are an important summer annual. They are planted on Fort Rucker to provide cover and food for a variety of game and non-game birds as well as providing attractive summer forage for whitetail deer.

Dove proso millet: Dove proso millet is an annual panic grass native to central Asia. It is planted on Fort Rucker as a summer wildlife planting. The seeds produced are a choice food for upland game and non-game birds and waterfowl.

Soft mast trees: Soft mast seedlings such as Callaway Crab Apple, Yates Apple, Common Persimmon, and Arkansas Black apple are planted within open areas, wildlife openings, and in larger (> 2 acres) food plots containing both cool and warm season plantings. These trees create travel corridors, escape and screening cover. The masts produced by these trees also provide an abundant and natural food source for a variety of wildlife and bird species.

Hard mast trees; Hardwood seedlings such as ; Gobbler Sawtooth oak, Sawtooth oak are also planted within open areas, wildlife openings and larger food plots. These seedlings when planted with various soft mast species provide a permanent food source as well as creating travel corridors, escape and screening cover for a variety of wildlife and bird species (game and non-game). Fort Rucker realizes that these oaks are non-native and only uses them in upland food plots as travel corridors. The fast growing, speedy mast production characteristics of this tree provide excellent cover as well as a food source that is not matched by native hard mast producers.

The table below indicates seeding rates and planting dates for wildlife feed planted on Fort Rucker. Fertilizer rates vary by site and are based on soil tests.

Wildlife Planting	Seeding Rate (In pounds per acre)	Planting Date
Egyptian wheat	8	April-July
Grain sorghum	20	June-July
Browntop millet	25	May-July
Florida beggar weed	12	April-June
Chufa	40	Mid-June
Alfalfa	25	October 1
Lab lab	10	March 1 - April 1
Bicolor lespedeza	8	1 March-15 April
DQP	8	1 March – 1 April
Winter mixture:		
Winter wheat	40	September-October
Crimson clover	15	September-October
Hairy vetch	15	September-October
Austrian winter pea	25	September-October
Chicory	10	September-November
Summer mixture:		
Iron and clay peas	25	May
Lab lab	15	May
Grain Sorghum	15	May
Upland bird Mixture:		
Mammoth Sunflower	15	May-June
Brown top Millet	15	May-June
Dove Proso	15	May-June
Grain Sorghum	15	May- June

Appendix 12 Replacement Plantings

The following species are used to replace damaged or removed trees and shrubs or groundcover on Fort Rucker:

Shade Trees

Acer rubrum	Red maple
Catalpa bignonioides	Catalpa
Carya illinoensis	Pecan
Celtis occidentalis	Hackberry
Cornus florida	Dogwood
Cryptomeria japonica	Cryptomeria
Diospyros virginiana	Persimmon
Fagus grandifolia	Beech
Gleditsia tricanthos	Honey locust
Ilex opaca	American holly
Lagerstroemia indica	Crepe myrtle
Magnolia grandiflora	Magnolia
Malus spp.	Crabapples
Morus alba	White mulberry
Morus rubra	Black mulberry
Pinus nigra	Austrian black pine
Pinus taeda	Loblolly pine
Platanus occidentalis	Sycamore
Populus deltoides	Cottonwood
Populus nigra	Lombardy poplar
Prunus sargentii	Flowering cherry
Quercus alba	White oak
Quercus borealis	Red oak
Quercus nigra	Water oak
Quercus palustris	Pin oak
Quercus phellos	Willow oak
Quercus virginiana	Live oak
Ulmus americana	American elm

Shrubs

Abelia grandiflora	Glossy abelia
Azalea spp	Azalea
Bogus sempervirens	Boxwood
Calycanthus floridus	Sweet shrub
Camellia japonica	Camellia
Camellia sasangua	Camellia
Cortaderia argentea	Pampas grass
Forsythia fortunei	Forsythia
Gardenia grandiflora	Gardenia
Hydrangea macrophylla	Hydrangea
Ilex cornuta burfordi	Burford holly
Ilex cornuta burfordi nana	Dwarf burford holly
Ilex aquifolia variegated	Variegated English holly
Ilex crenata compacta	Compact japanese holly
Ilex crenata convexa	Convex japanese holly
Ilex crenata fastigiata	Upright japanese holly
Ilex crenata helleri	Holly
Ilex latifolia	Big leaf holly
Ilex vomitoria	Youpon holly
Ilex vomitoria nana	Dwarf youpon
Juniperus conferta litoralis	Shore juniper
Juniperus horizontalis	Blue rug juniper
Lagerstroemia indica	Crepe myrtle
Lonicera spp	Honeysuckle (However, use of <i>L. morrowii</i> [Morrow
honeysuckle], <i>L. japonica</i> [Japanese honeysuckle], and <i>L. x bella</i> [showy fly	
honeysuckle or Bell's honeysuckle] are not allowed)	
Myrica cerifera	Wax myrtle
Prunus laurocerasus	Skip laurel
Pyracantha spp	Pyracantha
Rhododendron spp	Rhododendron
Rosa spp	Rose (however, use of <i>R. bracteata</i> [McCartney
rose], <i>R. laevigata</i> [Cherokee rose], and <i>R. multiflora</i> [multiflora rose] are not allowed)	
Spirea spp	Spirea
Tamarix afrinicola	Tamarix
Viburnun spp	Viburnum

Ground Cover and Vines

<i>Vinca minor</i>	Vinca
<i>Liriope</i> spp	Monkey grass
<i>Wisteria</i> spp	Wisteria (However, use of <i>W. sinensis</i> [Chinese
wisteria] is not allowed)	

FY18 PESTICIDE USE PROPOSAL AS OF: 5 Jan 18

Installation Name: US Army Aviation Center of Excellence and Fort Rucker

IPMC Name/Email:

PMC Reviewer: Dr. William B. Miller, william.b.miller54.civ@mail.mil/210-466-1599

Full Pesticide Trade Name	EPA Registration No.	Active Ingredients
Advion Ant Gel	100-1498	Indoxacarb
Advion Evolution Cockroach Gel Bait/Advion Cockroach Gel Bait	100-1484	Indoxacarb
Advion Fire Ant Bait Insecticide	100-1481	Indoxacarb
Accord XRT Herbicide	62719-517	Glyphosate
Accord XRT II Herbicide	62719-556	Glyphosate
Acelepryn Insecticide	352-731	Chlorantraniliprole
Advance 360A Dual Choice Ant Bait Stations	499-496	Abamectin
Agri Star Butyrac 200 Broadleaf Herbicide	42750-38	2,4-D
Alligare Glyphosate 4 Plus	81927-9	Glyphosate
Alligare Imazapyr 4 SL	81927-24	Imazapyr
Alligare Panoramic 2SL Herbicide	66222-141-81927	Imazapic
Aloft GC SC Insecticide	66330-367	Clothianidin; Bifenthrin
Alpine WSG Water Soluble Granule Insecticide	499-561	Dinotefuran
Altosid XR Extended Residual Briquets	2724-421	Methoprene
Amdro Fire Ant Bait	73342-1	Hydramethylnon
Anvil 10+10 ULV	1021-1688-8329	3-phenoxybenzyl-(1RS, 3RS; 1RS, 3SR)-2,2 dimethyl-3-(2methjylprop-1-enyl) cyclopropane carboxylate
Aqua Neat Aquatic Herbicide	228-365	Glyphosate
Aqua-Kleen	228-378-4581	2,4-D
Arilon Insecticide	100-1501	Indoxacarb
Arsenal Herbicide Applicators Concentrate	241-299	Imazapyr
Arsenal PowerLine Herbicide	241-431	Imazapyr
Avid 0.15EC Miticide/Insecticide	100-896	Abamectin
Award II Fire Ant Bait	100-1452	Abamectin
Banol Turf and Ornamental Fungicide	432-942	Propamocarb hydrochloride
Bayer 26 GT Fungicide	432-888	Iprodione
Bora-Care Termiticide, Insecticide and Fungicide Concentrate	64405-1	Disodium Octoborate Tetrahydrate
Brash Herbicide	1381-202	Dicamba; 2,4-D
Briskway Fungicide	100-1433	Azoxystrobin; Difenconazole
Candor Herbicide	228-565	2,4-D; Triclopyr

Celsius WG Herbicide	432-1507	Thiencarbazone-methyl
Chipco® Choice™ Insecticide	432-896	Fipronil
Chopper Gen2 Herbicide	241-430	Imazapyr
Chopper Herbicide	241-296	Imazapyr
Cleantraxx Herbicide (Dow)	62719-702	Penoxsulam
Cleary 3336 F Turf and Ornamental Systemic Fungicide	1001-69	Thiophanate-Methyl
Clipper Herbicide	59639-161	Flumioxazin
Combat Max Roach Killing Gel	64240-45	Fipronil
Combat Source Kill Max Large	64240-34	Fipronil
Combat Source Kill Max Small	64240-33	Fipronil
Contrac All-Weather Blox	12455-79	Bromadiolone
Contrac Soft Bait	12455-146	Bromadiolone
Cornerstone Herbicide	42750-60-1381	Glyphosate
Cornerstone Plus Herbicide	1381-192	Glyphosate
CRC Wasp & Hornet Killer Plus	55809-3	Tetramethrin; D-Phenothrin
Cutless 0.33G Landscape Growth Regulator	67690-13	Flurprimidol
Cutrine-Plus	8959-10	Triethanolamine; Ethanolamine; Copper
Cy-Kick® Crack & Crevice® Pressurized Residual	499-470	Cyfluthrin
Cy-Kick® CS Controlled Release Cyfluthrin	499-304	Cyfluthrin
Cynoff EC Insecticide	279-3081	Cypermethrin
Daconil Action	100-1364	Chlorothalonil
Daconil Ultrex Turf Care Fungicide	50534-202-100	Chlorothalonil
Daconil Weather Stik Flowable Fungicide	50534-209-100	Chlorothalonil
Dakota Herbicide	83100-38-83979	Clethodim
DeltaDust Insecticide	432-772	Deltamethrin
Demand CS Insecticide	100-1066	Lambda-cyhalothrin
Dimension EC Specialty Herbicide	62719-426	Dithiopyr
DiPel ES Emulsifiable Suspension	73049-17	Bacillus thuringiensis kurstaki
Disarm 480 SC Fungicide	66330-64	Fluoxastrobin
Disarm C Fungicide	66330-379	Fluoxastrobin; Chlorothalonil
Disarm M Fungicide	66330-388	Fluoxastrobin; Myclobutanil
Dismiss Turf Herbicide	279-3295	Sulfentrazone
Distance Fire Ant Bait	1021-1728-59639	2-[1-Methyl-2-(4-Phenoxyphenoxy) ethoxy] pyridine
Drione Insecticide	432-992	Pyrethrins; Piperonyl Butoxide; Silica
Eagle 20EW Specialty Herbicide	62719-463	Myclobutanil
Endurance Herbicide or Barricade 65WG Herbicide	100-834	Proflumicarb
Escort XP	432-1549	Metsulfuron Methyl
EsplAnade 200 SC Herbicide (Bayer)	432-1516	Indaziflam
Extinguis Plus	2724-496	Hydramethylnon & S-Methoprene

Fendona CS Controlled Release Insecticide	499-570	Alpha-Cypermethrin
Finale Herbicide	432-1229	Glufosinate-ammonium
Forestry Garlon XRT Specialty Herbicide	62719-553	Triclopyr-butyl
Gallery 75 DF Herbicide	62719-145	Isoxaben
Garlon 3A Specialty Herbicide	62719-37	Triclopyr
Garlon 4 Specialty Herbicide	62719-40	Triclopyr
Garlon 4 Ultra Specialty Herbicide	62719-527	Triclopyr
Gentrol Complete Aerosol	89459-84	Lambda-Cyhalothrin; (S)-Hydroprene
Gentrol IGR Concentrate	2724-351	Hydroprene
Gentrol Point Source Roach Control Device	2724-469	(S)-Hydroprene
Gly Star Pro	42750-61	Glyphosate
Glyphosate Pro 4 Herbicide	72112-4	Glyphosate
Gordon's Brushmaster Herbicide	2217-774	2,4-D; 2,4-D; Dicamba
Gordon's Amine 400 2,4-D Weed Killer	2217-2	2,4-D
Gordon's Bensumec 4 LF Preemergent Grass & Weed Herbicide	2217-696	Bensulfide
Gourmet Ant Bait Gel	73766-1	Disodium Octaborate Tetrahydrate
Headway Fungicide	100-1216	Azoxystrobin; Propiconazole
Heritage Action Fungicide	100-1550	Azoxystrobin
Heritage Fungicide	100-1093	Azoxystrobin
Indemnify Fungicide	432-1543	Fluopyram
Insignia Fungicide	7969-184	Pyraclostrobin
Journey Herbicide	241-417	Imazapic
Junction Fungicide/Bactericide Dry Flowable	67690-35	Mancozeb
Kerb SC Herbicide	62719-578	Pronamide
Knighthawk Herbicide	60063-26-81943	Prodiamine
Krenite S Brush Control Agent	352-395	Fosamine
Lesco Bandit 0.5G	432-1328	Imidacloprid
Lesco Cross Check Plus Insecticide	279-3206-10404	Bifenthrin
Lesco 18 Plus Turf and Ornamental Fungicide	66330-305-10404	Iprodione
Lesco 4 Flowable Mancozeb Broad Spectrum Fungicide	62719-396-10404	Mancozeb
Lesco Manicure 6FL Turf and Ornamental Fungicide	60063-7-10404	Chlorothalonil
Lesco Momentum FX2 Herbicide	228-447-10404	Triisopropanolamine Salt of 2,4-Dichlorophenoxyacetic Acid
Lesco Pre-M 3.3 EC Turf Herbicide	241-360-10404	Pendimethalin
Lesco Prosecutor Non-Selective Herbicide	524-536-10404	Glyphosate
Lesco RegiMax PGR Plant Growth Regulator	228-635-10404	Trinexapac-ethyl
Lesco Sevin Brand SL Carbaryl Insecticide	432-1227-10404	Carbaryl
Lesco Stonewall 65WDG Herbicide	60063-26-10404	Prodiamine

Lesco Three-Way Ester II Selective Herbicide	228-317-10404	Isoctyl (2-ethylhexyl) Ester of 2-Methyl-4-Chlororphenoxacetic Acid (CAS No. 26544-220-7); Butoxyethanol Ester of 3,5,6-TYrichloro-2-Pyridinyloxyacetic Acid (CAS No. 57213-69-1); 3,6-Dichloro-o-anisic Acid (CAS No. 1918-00-9)
Lesco Three-Way Selective Herbicide	10404-43	Isoctyl (2-ethylhexyl) Ester of 2-Methyl-4-Chlororphenoxacetic Acid (CAS No. 26544-220-7); Butoxyethanol Ester of 3,5,6-TYrichloro-2-Pyridinyloxyacetic Acid (CAS No. 57213-69-1); 3,6-Dichloro-o-anisic Acid (CAS No. 1918-00-9)
Lesco T-Storm Flowable Turf & Ornamental Fungicide	66330-293-10404	Thiophanate-Methyl
Lexicon Instrinsic Brand Fungicide	7969-350	Fluxapyroxad; Pyraclostrobin
Mancozeb DG Turf and Ornamental Fungicide	62719-402-10404	Manganeze; Zinc
Masterline I MaxxPro 2F Insecticide	432-1331-73748	Imidacloprid
Maxforce Complete Brand Granular Insect Bait	432-1255	Hydramethylnon
Maxforce FC Fire Ant Bait	432-1433	Fipronil
Maxforce Fly Spot Bait	432-1455	Imidacloprid
Maxforce Impact Roach Gel Bait	432-1531	Clothianidin
Maxforce FC Magnum Roach Killer Bait Gel	432-1460	Fipronil
Maxforce FC Professional Insect Control Ant Bait Stations	432-1256	Fipronil
Maxforce FC Professional Insect Control Ant Killer Bait Gel	432-1264	Fipronil
Maxforce Roach Killer Bait Gel	432-1254	Hydramethylnon
Maxforce Select Professional Insect Control Roach Killer Bait Gel	432-1259	Fipronil
Medallion SC Fungicide	100-1448	Fludioxonil
Method 240SL Herbicide (Dupont)	352-786	Potassium salt of aminocyclopyrachlor & Potassium salt of 6-amino-5-chloro-2-cyclopropyl-4 pyrimidinecarboxylic acid
Milestone Specialty Herbicide	62719-519	Aminopyralid
Monument 75WG Herbicide	100-1134	2-pyridinesulfonamide,N-[[[(4,6-dimethoxy-2-pyrimidinyl)amino]carbonyl]-3-(2,2,2-trifluoroethoxy)-, monosodium salt, monohydrate; Trifloxysulfuron-sodium
MultiGuard Protect EC	75753-1	Furfural
Niban Granular Bait	64405-2	Orthoboric Acid
Nortica Biological Agent	432-1512	Bacillus thuringiensis
Onslaught Fastcap Spider & Scorpion Insecticide	1021-2574	Esfenvalerate
Optigard Ant Gel Bait	100-1260	Thiamethoxam
OnyxPro Insecticide	279-4269	Bifenthrin
Orthene 97 Soluble Insecticide	5481-8978	Acephate
Oust Extra Herbicide	352-622	Sulfometuron Methyl; Metsulfuron Methyl
Oust XP Herbicide	352-601	Sulfometuron Methyl

Oust XP Herbicide (Bayer)	432-1552	Sulfometuron methyl
Oustar Herbicide	352-603	Hexazinone
Overdrive Herbicide	7969-150	Sodium Diflufenzopyr; Dicamba
Patriot Herbicide	228-391	Metsulfuron Methyl
Pennant Magnum Herbicide	100-950	S-Metolochlor
Phantom Termiticide/Insecticide	241-392	Chlorfenapyr
Plateau Herbicide	241-365	Imazapic
Poast Herbicide	7969-58	Sethoxydim
Polaris AC Herbicide	228-570	Isopropylamine salt of Imazapyr
Polaris Herbicide	228-480	Imazapyr
Precor IGR Concentrate	2724-352	Methoprene
Premise Foam	432-1391	Imidacloprid
Premise Granules	432-1385	Imidacloprid
Premise Pre-Construction Insecticide	432-1331	Imidacloprid
Prenfish Toxicant Liquid Emulsifiable	655-422	Rotenone
Prescription Treatment Brand Alpine Dust Insecticide	499-527	Dinotefuran
Prescription Treatment Brand PT565 + XLO	499-310	Pyrethrins; d-trans Allethrin; Piperonyl Butoxide; n-octyl bicycloheptone dicarboximide
Prescription Treatment Brand Phantom Pressurized Insecticide	7969-285	Chlorfenapyr
Prescription Treatment Brand 388B Advance Ant Gel Bait	499-492	Sodium Tetraborate Decahydrate
Prescription Treatment Brand Tri-Die Pressurized Silica + Pyrethrin Dust Formula 1	499-385	Pyrethrins; Amorphous Silica Dioxide
Prescription Treatment Brand Wasp-Freeze Wasp & Hornet Killer	499-362	d-trans Allethrin; Phenothrin
Prescription Treatment Perma-Dust Pressurized Boric Acid Dust	499-384	Boric Acid
PrimeraOne Prodiamine 65 WDG Herbicide	60063-26	Prodiamine
Primo Maxx	100-937	Trinexapac-ethyl
ProStar 70 WDG Fungicide	432-1477	Flutolanil
Prostar 70 WG Fungicide	432-1223	Flutolanil
Provaunt Insecticide	352-716	Indoxacarb
PT Phantom II Pressurized Insecticide	499-548	Chlorfenapyr
Quali-Pro Bifenthrin Golf & Nursery 7.9F Insecticide	66222-192	Bifenthrin
Quali-Pro Chlorothalonil 720 SFT Fungicide	66222-154-73220	Chlorothalonil
Quali-Pro Chlorothalonil DF Fungicide	66222-149-73220	Chlorothalonil
Quali-Pro Glyphosate Plus Herbicide	66222-176	Glyphosate
Quali-Pro Imidacloprid 75WSB Insecticide	432-1318-73220	Imidacloprid
Quali-Pro MSM Turf Herbicide	66222-146	Metsulfuron Methyl

Quali-Pro Prodiamine 65 WDG Herbicide	66222-89-73220	Prodiamine
Quali-Pro T-NEX 1 AQ for Turf Growth Management	66222-212	Trinexapac-ethyl
Quali-Pro TM 4.5 Turf & Ornamental Fungicide	48234-12-73220	Thiophanate
QuikPro	524-535	Glyphosate
Raid Wasp & Hornet Killer 33	4822-553	Prallethrin; Cypermethrin
Ranger Pro Herbicide	524-517	Glyphosate
Renown Fungicide	100-1315	Chlorothalonil; Azoxystrobin
Revolver Herbicide	432-1266	Foramsulfuron
Reward Landscape and Aquatic Herbicide	100-1091	Diquat Dibromide
Riverdale Manor Selective Herbicide or Mansion Turf Herbicide	228-373	Metsulfuron Methyl
Riverdale Razor Pro Herbicide	228-366	Glyphosate
Rodeo Herbicide or Accord Concentrate Herbicide	62719-324	Glyphosate
Roundup Pro Herbicide	524-475	Glyphosate
Roundup ProMax Herbicide	524-579	Glyphosate
Scotts Bonus S Southern Weed & Feed, 29-1-10, Water Smart Formula	538-18	Atrazine
Scourge Insecticide with SBP-1382/PB Formula II	432-716	Resmethrin
Sedgehammer Turf Herbicide	81880-1-10163	Halosulfuron-Methyl
Segway Fungicide	71512-13-279	Cyazofamid
Select 2 EC Herbicide	59639-3	Clethodim
Sencor 75% Turf Herbicide	432-1469	Metribuzin
Signature Xtra Stressgard	432-1541	Aluminum tris
Simizine 4L Herbicide	19713-60	Simazine
Snake-a-way Snake Repellent	58630-1	Napthalene; Sulfur
Sonar A.S. Aquatic Herbicide	67690-4	Fluridone
Speckoz Pyrocid Flusher	1021-1761-72113	Pyrethrins; Piperonyl Butoxide; MGK 264
Spect(i)cle FLO Pre-emergent Herbicide	432-1518	Indaziflam
Spectracide Bug Stop Flying & Crawling Insect Killer2	9688-111-8845	Deltamethrin; S-Bioallethrin
Spectracide Fire Ant Killer Plus Preventer Bait	9688-217-8845	Indoxacarb
Steri-Fab	397-13	d-cis and trans Phenothrin; isopropyl alcohol; didecyl dimethyl ammonium chloride; n-akyl dimethyl ammonium chloride and dimethyl benzyl ammonium chloride
Streamline Herbicide	352-848	Aminocyclopyrachlor; Metsulfuron methyl
Surrender Brand Pestabs Insecticide	53883-70	Lambda-cyhalothrin

Suspend SC Insecticide	432-763	Deltamethrin
Take Down Soft Bait (Lipha Tech)	7173-304	Bromethalin
Talon-G Rodenticide Bait Pack Mini-Pellets	100-1050	Brodifacoum
Talstar EZ Granular Insecticide	279-3168	Bifenthrin
Talstar P Professional Insecticide	279-3206	Bifenthrin
Talstar PL Granular Insecticide	279-3168	Bifenthrin
Tekko Pro Insect Growth Regulator Concentrate	53883-335	Pyriproxyfen; Novaluron
Tempo SC Ultra Insecticide	432-1363	β-Cyfluthrin
Tempo WP Ultra Insecticide	432-1304	β-Cyfluthrin
Temprid FX Insecticide	432-1544	Imidacloprid
Temprid ReadySpray Insecticide	432-1527	Imidacloprid
Temprid SC Insecticide	432-1483	Imidacloprid; β-Cyfluthrin
Tengard SFR One Shot Termiticide Insecticide	70506-6	Permethrin
Termidor Dry Termiticide	499-546	Fipronil
Termidor 80 WG Termiticide/Insecticide	7969-209	Fipronil
Termidor SC Termiticide/Insecticide	7969-210	Fipronil
Tim-bor Professional Insecticide and Fungicide	64405-8	Disodium Octaborate Tetrahydrate
Topchoice Insecticide	432-1217	Fipronil
Tordon 101 Mixture	62719-5	Picloram; 2,4-D
Transline Specialty Herbicide	62719-259	Clopyrallid
TranXit Herbicide	352-643	Rimsulfuron
Trim-tect	74779-7	Paclobutrazol
Vanquish Herbicide	100-884	Dicamba
Velista Fungicide	100-1534	Penthiopyrad
Velpar DF Herbicide	352-581	Hexazinone
Velpar L Herbicide	352-392	Hexazinone
Velpar ULW Herbicide	352-450	Hexazinone
Vendetta Nitro Cockroach Gel Bait	1021-2796	Clothianidin
Vendetta Plus Cockroach Gel Bait	1021-2593	Penthiopyrad
Vikane Specialty Gas Fumigant	62719-4	Sulfuryl Fluoride
Weedestroy AM-40 Selective Weed Killer	228-145	2,4-D
Weedmaster Herbicide	71368-34	Dicamba; 2,4-D
Whitecap SC Aquatic Herbicide	61842-11	Fluridone
Whitmire PT 565 + XLO	499-290	Pyrethrins
Xzemplar Fungicide	7969-349	Fluxapyroxad
Zenprox EC	2724-804	Etofenprox; Piperonyl Butoxide
Zenprox Xtend Aerosol	89459-12	Etofenprox; Tetramethrin; Pyrethrins; Piperonyl Butoxide; S-Methoprene

APPENDIX 14: Fort Rucker GIS Databases

<u>Feature Dataset</u>	<u>Feature Class</u>
Auditory	Noise Contour Line
	Noise Incident Point
	Noise Zone Area
Boundary	Jurisdiction County Area
	Jurisdiction Municipal Area
	Jurisdiction State Area
Buildings	Structure Existing Area
	Structure Existing Point
Cadastre	DOD Property Management Point
	Installation Area
	Installation Historical Area
	Section Area
Carto	Subsurface Water Flow Direction
	Surface Water Flow Direction
Common	Coordinate Grid Area
	Coordinate Grid Line
	UTM Grid Line
	UTM Grid Point
Communications	Communication Antenna Point
	Speaker Point
Environmental Hazard Building	Lead Paint Hazard Point
Environmental Hazmat Waste	Hazmat Storage Location Point
	Hazwaste Storage Location Point
Environmental Haz Pollution	Air Emissions Source Point
	Surface Water Discharge Point
Environmental Haz Regulated Tank	Solvent Tank Point
Environmental Haz Solid Waste	Landfill Cell Area
Fauna	Species Forage Area
Flora	Flora Fire Area
	Flora Prescribed Burn Area
	Forest Compartment Area
	Land Vegetation Area
	LCTA Point
Geodetic	Timber Harvest Area
	Control Point
	Digital Elevation Model Points
	NGS Control Point
Hydrography	USGS Quad Area
	Flood Zone Area
	Surface Water Body Area
	Surface Water Course Area
	Surface Water Course Centerline

	Watershed Area
	Wetlands Area
Improvement Flood Control	Dam Site
Improvement General	Fence Line
	Gate Point
Improvement Recreation	Athletic Field Area
	Golf Course Area
	Hunting Area
	recreation Trail Centerline
	Swimming Pool Area
Improvement Well	Water Well Point
Land Status	Borrow Pit Area
	Cemetery Area
	Land Repair Area
	Placement Point
Landform	Elevation Contour Line
	Spot Elevation Point
	Survey Traverse Point
Military Air Operations	Military Flight Corridor
	Military Special Use Airspace
	Military Route Line
	Military Route Point
Military Range	Firing Fan Area
	Firing Lane Area
	Firing Point
	Military Live Fire Area
	Military Range Area
	Military Range Site Area
	Military Target Line
	Military Target Point
Military Safety	Ammunition Storage Area
	Dudded Impact Area
	Quantity Distance Arc Area
	Surface Danger Zone
	Safety Marker Point
	Non Dudded Impact Area
	UXO Clearance Area
	UXO Contamination Point
Military Security	Military Restricted Access Area
Military Training	Military Landing Zone Area
	Military Landing Zone Point
	Military Observation Point
	Military Training Sub Area
	Tank Trail Line
	Training Areas
	Training Point

Soil	Soil Map Unit Area
Transportation Air	Air Accident Zone Area
	Airfield Area
	Airfield Imaginary Surface Area
	Airfield Surface Area
	Airfield Surface Edge Line
	Airfield Surface Point
	Airspace Obstruction Navaid Point
	Navigational Aid Point
Transportation Road	Railroad Centerline
Transportation Vehicle	Road Bridge Centerline
	Road Centerline
	Road Edge Line
Utilities Electrical	Electrical Cable Line
	Electrical Generator Point
	Electrical Substation Point
	Electrical Switch Point
	Exterior Lighting Point
Utilities Fuel	Fuel Farm Area
	Fuel Tank Point
Utilities General	Utility Pole Tower Point
Utilities HCS	Heat Cool Pump Point
Utilities Industrial	Industrial Waste Tank Point
Utilities Storm	Storm Water Stilling Basin Point
	Storm Sewer Discharge Point
Utilities Wastewater	Wastewater Line
	Wastewater Discharge Point
Utilities Water	Water Fire Connection Point
	Water Line
	Water Pump Point
	Water Pump Station Site
	Water Tank Point
	Water Treatment Plant Area

Natural Resources GIS Data Layers

Fish and Wildlife

Annual Camera Survey Camera Locations

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- *Fawn Mortality Study Area*
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Turkey Walk-In Sign Locations

Vegetative Communities

NPDS

Perimeter Security Shapefiles*

Pictures

- Fawn Pictures
- Fish Survey Pictures
- Turkey Pictures

Forestry

Prescribed Burn Shapefiles

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- Smoke Plume Angles
- Firelanes
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Ft Rucker Stands

Fort Rucker Regulation 215-1

Hunting, Fishing, Water Safety, & Trapping

Headquarters

U.S. Army Garrison

Fort Rucker, Alabama

1 July 2017

UNCLASSIFIED

SUMMARY of CHANGES

Fort Rucker Regulation 215-1

Major revisions of the Fort Rucker Regulation 215-1, dated 30 August 2016; as depicted on “DRAFT_2017_Fort Rucker Regulation 215-1”

- Makes formatting changes throughout.
- Table of Content, updated information.
- Adds primary mission of this installation referencing training space and resources for military use; public recreational use and enjoyment will have controlled access (Section 1-1a).
- Adds Outdoor Recreation Council responsibilities communicating information, concerns and suggestions for improving hunting and fishing on the installation to garrison command (Section 1-2e).
- Specifies restrictions and use of firearms for recreational hunting in Training Areas (TA) outlining “bow-only areas, shotgun areas, and rifle areas” (Section 3-2 a & b).
- Rearranges SEASONS Section ahead of HUNTING Section (Section II is SEASONS and III is HUNTING).
- Authorizes recreational hog hunting during turkey season (Section II d).
- Expands enforcement restricting hunters and trappers utilizing TA Charlie from parking on Artillery Road (Section 3-7 f).
- Adds as part of the Wildlife Management Program the requirement to document all dispatched hogs/ coyotes using a “kill card” (Section 3-9 f).
- Substitutes title from “Weapons and Ammunition” to “Firearms and Ammunition” (throughout).
- Authorizes for use of rifles in TAs 29 – 32 and TA 40 – 41 (throughout).

- Authorizes small game hunters' use of air guns in gun areas (TA 1-21, TAs 29 – 32, and TAs 40 – 41. Enforces no arms in TA 19E (Section 3-2 a).
- Substitutes “Miscellaneous” to “Additional Hunting Information” paragraph (Section 3-9).
- Specifies restrictions for discharging weapon in vicinity of natural and manmade structures to include roads, airstrips, ponds, stables, homes and buildings ((throughout)).
- Rearranges “FISHING” Section (Section IV).
- Substitutes “Special Regulations Applying to Small Lakes and Ponds” to “Restrictions Applying to Small Lakes and Ponds” (Section 4-3).
- Sections V and VI defines “Recreational Trapping” and “Depredation Trapping.”
- Renames “TRAPPING” to “RECREATIONAL TRAPPING” (Section V).
- Defines “RECREATIONAL TRAPPING” procedures and operations (Section V).
- Substitutes “Miscellaneous” to “Additional Recreational Hunting Information” (Section 5-4).
- Adds and explains Depredation Animal Trapping purpose, procedures and operations (Section VI). –
- Removes all maps, all maps can be gained from Fort Rucker’s MWR website <https://rucker.armymwr.com/us/rucker/programs/hunting-and-fishing>
- Rearranges “Violations” chart and corrective actions (Appendix B).
- Adds “Depredation Trapping in Occupied Areas” procedures for entry, dispatch, reporting (Appendix G).
- Replace “HuntTrac” with iSportsman.

- References to “briefing tape” refers to Range Operations Training Division Automated Briefing System.
- Expansion to Training Area Foxtrot.
- Removes terminology “handicapped” for “individuals with disabilities (IWD).”
- References updates to Fort Rucker Regulation 190-5, Fort Rucker Motor Vehicle Regulation, dated 6 December 2016.
- Separates WATER and OTHER ACTIVITIES into two sections, Section VII Boating and Water Activities and Section VIII Safety.
- Combines TA 15E and TA 15W into one TA as TA 15.

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY GARRISON, FORT RUCKER
FORT RUCKER, ALABAMA 36362-5105

1 July 2017

**FORT RUCKER
HUNTING, FISHING, WATER SAFETY, AND TRAPPING**

Summary. This regulation outlines rules governing hunting, fishing, and other recreational activities at the United States Army Aviation Center of Excellence (USAACE) Fort Rucker, AL.

Applicability. All individuals permitted to hunt, fish, or participate in outdoor recreational activities on the installation will comply with this regulation.

Proponent and Exception Authority. The proponent of this regulation is the Director of Family and Morale, Welfare and Recreation (DFMWR). Only the Garrison Commander (GC), may approve changes to this regulation.

I. General.

1. Purpose and Scope.
2. Responsibilities.
3. Areas, Boundaries and Restrictions.
4. Licenses and Permits.
5. Firearm and Weapon Registration and Transportation.
6. Inspections.
7. Administrative Actions.
8. Restoration of Privileges.
9. Hunter Orange.

II. Seasons.

III. Hunting.

1. Clearance to Enter Training Areas.
2. Firearms and Ammunition.
3. Clearance of Fires.
4. Group Hunts.
5. Quality Deer Management Program
6. Tree Stands.
7. Use of Privately Owned Vehicles.
8. Hunting with Dogs.
9. Additional Hunting Mandates and Restrictions.

IV. Fishing.

1. Seasons.
2. Methods.
3. Special Regulations Applying to Small Lakes and Ponds.
4. Areas, boundaries and access restrictions.

V. Recreational Trapping.

1. General.
2. Responsibilities.
3. Administrative Rules.
4. Clearance/Procedures for trapping in Numbered TAs.
5. Clearance/Procedures for trapping in Lettered TAs.
6. Firearms and Ammunition.
7. Clearance of Fire (when Dispatching).
8. Additional Recreational Trapping Mandates and Restrictions.

VI. Depredation Trapping.

1. General.
2. Responsibilities.
3. Feral Hog Depredation Trapping. (Administrative Rules).
4. Clearance to Enter Non-Occupied (Open) TAs.
5. Clearance to Enter Occupied (Closed) TAs.
6. Firearms and Ammunition.
7. Clearance of Fire (when Dispatching).
8. Coyote Depredation Trapping.
9. Depredation Mandates and Restrictions.

VII. Boating and Water Activities.—

1. General.
2. Boat Operations Specific to Lake Tholocco.
3. Swimming, Beach Rules, and Beach Information.
4. Safety.

VIII. Safety.

1. General.
2. Policies.

IX. Night Hunting (Raccoon and Opossum).

1. General.
2. Administrative Rules.
3. Clearance to Enter Zone / Training Areas.
4. Firearms and Ammunition.
5. Clearance of Fires.
6. Night Hunting Mandates and Restrictions.

- A. Common Regulatory Violations and Possible Penalties.
- B. Coyote/Hog Depredation Trapping in Occupied Training Area.

Section I

GENERAL.

1-1. PURPOSE AND SCOPE.

a. The primary mission of this installation is to provide training space, and other related installation resources, for military use. Land and water resources deemed available for public recreational use and enjoyment will have controlled public access, subject to safety and military requirements, and will not impair the military mission.

b. Fort Rucker Regulation 215-1 pertains to hunting, fishing, watercraft safety, water safety, and trapping recognized by the State of Alabama, and federal laws and regulations. Nothing in this regulation will be interpreted to permit acts contrary to either state or federal statutes. Violation of this regulation may result in punitive actions.

c. Hunting, fishing, trapping regulations and water safety are published for the information and guidance of all concerned, and to prescribe general policies and procedures concerning hunting, fishing, watercraft, water safety, and trapping on Fort Rucker military reservation. This regulation is applicable to all who participate in any activities governed by this regulation

1-2. RESPONSIBILITIES.

a. Directorate of Family and Morale, Welfare, and Recreation (DFMWR). DFMWR is designated as the primary agency responsible for reviewing, coordinating, and publishing this regulation. DFMWR will be responsible for administration of this regulation in accordance with (IAW) Command Directive.

b. Directorate of Public Works (DPW). DPW is the authorized agency for supervision, planning, maintenance, and management of fish and wildlife resources. DPW is responsible for biological data collection. DPW will maintain a record of deer, turkeys, and hogs harvested on the installation and provide the information to the proper authorities to assist in effective wildlife management. DPW is responsible for the policy regarding the harvest of antlerless deer and will be IAW the annually published State Regulation and Installation Command Policy, Quality Deer Management Program. DPW is responsible for developing food plots for wildlife and stocking fish for all installation lakes.

c. Directorate of Public Safety (DPS). DPS is the primary designated law enforcement authority on the Fort Rucker military reservation and will provide Game Law Enforcement (GLE) officers. The GLE officers will closely coordinate with the Fish and Wildlife Section, and DPW, in the execution of the hunting and fishing programs.

d. Chief Training Division, Directorate of Plans, Training, Mobilization, and Security (DPTMS) or his/her designated representative is responsible for the overall training area management and the releasing of training areas for recreational purposes as training or maintenance activities allow as prescribed in Chapter 5 of Fort Rucker Regulation 385-1, Range and Training Area (TA) Regulation, 24 February 2015.

e. Outdoor Recreation Advisory Council. The ODR Council receives comments, suggestions, and concerns from Soldiers and other personnel authorized to hunt and fish on Fort Rucker and represents their interests to improve hunting and fishing on the installation. The ODR Council provides advice on the management of hunting and fishing on Fort Rucker, makes recommendations to improve hunting and fishing to the Garrison Commander; as appropriate.

f. Sportsmen and recreational users are responsible for:

(1) Familiarizing themselves with the provisions of this regulation, and applicable state and federal laws, and abiding by these regulations and laws.

(2) Familiarize themselves with “Fort Rucker special overprint map.” The Fort Rucker special overprint map is used to monitor and manage hunting, fishing, and trapping activities. Available at the Outdoor Recreation Facilities

(3) Before entering a TA, calling Range Operations Training Division’s Automated Briefing System, as known as briefing tape, at 334-255-4086 to obtain information regarding TA status.

(4) Informing a responsible person of their whereabouts (i.e., training areas) and expected time of return. The responsible persons will inform ODR in the event that the hunter/trapper has not returned. They will also notify the Military Police (MP) desk, 334-255-2222.

1-3. AREAS, BOUNDARIES, AND RESTRICTIONS.

a. On 11 September 2001, Fort Rucker implemented 100 percent access control. All roads and trails, with the exception of Daleville, Enterprise, Faulkner, and Ozark Gates are blocked or barricaded. All recreational users must gain access to Fort Rucker through an authorized entry point. Failure to do so could result in loss of recreational privileges.

b. Recreational activities are not allowed within the impact area. The impact area is restricted to authorized personnel only. The impact area is defined as that area bounded by Highway 27 on the south and the paved perimeter road on the north, east, and west, plus portions of TAs 7 and 11.

c. Hunters utilizing TAs adjacent to the impact area (TAs 1 through 11) must be familiar with the restrictions for a duded impact area.

d. TA status can be found by contacting Range Operations Training Division’s Automated Briefing System (briefing tape) at 334-255-4086. After confirming TA’s status, hunters must sign-in via <https://fortrucker.isportsman.net>.

e. Restricted access into these areas. The Training Division, DPTMS, will ensure gates across east and west perimeter roads and Johnston Road are open when hunting or trapping is allowed.

f. Roads with access barriers (e.g., signs, gates, chains, mounds, etc.) are restricted from vehicle traffic. The only exceptions are; vehicles in direct support of training; vehicles used by the Natural Resources Branch, and DPW; vehicles used for area maintenance; and DPS safety and emergency vehicles.

g. The following restrictions apply to recreational hunting:

(1) Bow-only areas. TAs A1, A2, B, C, D, E, F, G, H, I, and 19E.

(2) Shotgun areas. Sportsmen may only use shotguns in the following areas: TA 1- 41, with the exception of 19E.

(3) Rifle areas. Rifles areas, with the exception of 19E, are now TAs 1 – 21, TAs 29 – 32, and TAs 40 – 41.

h. Patrons/Personnel finding any unexploded ordnance (UXO) will immediately report the location to the Training Division, DPTMS, 334-255-4303/4793. Patrons/Personnel will not pick up, move, or otherwise disturb an item suspected of being a UXO. Mark the area and path in such a way that the UXO can be easily located by Range Operations.

1-4. LICENSES AND PERMITS.

a. All patrons/personnel (resident or nonresident) who fish, hunt, or trap on the Fort Rucker military reservation are required to possess the appropriate State of Alabama fishing, hunting, or trapping license. The purchase of a federal duck stamp and State of Alabama duck stamp, in addition to the appropriate state license, is required for hunting water fowl. A federal duck stamp may be purchased at any U.S. Post Office. A State of Alabama duck stamp may be purchased at the Probate Judge's Office at the county courthouse. Residents of the state of Alabama under 16 years of age, or 65 years of age and older are not required to have a state license.

b. DFMWR is the only agency authorized to issue installation hunting, fishing, and trapping permits. All patrons/personnel 16 years of age or older who hunt, fish, or trap on Fort Rucker must have in their possession a valid Fort Rucker hunting, fishing, or trapping permit, as applicable. Permits will be issued only to eligible individuals who possess a valid state license, view the UXO video, pay the appropriate permit fee as prescribed, (for hunters) have proof of completion of a state-certified hunter education course from any of the 50 states, Canada, or Germany.

c. Alabama state residents under 16 years of age, or 65 years of age and older are permitted to hunt, fish, and trap on Fort Rucker at no cost. Individuals meeting the state criteria as totally disabled and possessing a special annual State of Alabama fishing license for totally disabled persons are permitted to fish on Fort Rucker at no cost. Patrons/personnel meeting these criteria will be issued the appropriate Fort Rucker permit. Individuals will contact the ODR Service Center, 334-255-4305 for details on how to obtain a permit.

d. A Sikes Act fee for managing fish and wildlife resources and a Family and Morale, Welfare and Recreation (FMWR) fee for managing recreational aspects of the program will be charged to patrons. The fee is included in the permit prices. The rates will be published annually.

1-5. FIREARM AND WEAPON REGISTRATION AND TRANSPORTATION.

a. IAW Army Regulation 190-11, Physical Security of Arms, Ammunition, and Explosives, 5 September 2013, all firearms, to include black powder (except air guns) brought onto Fort Rucker will be registered with Military Police (MP) Station (Bldg 5001). Registration will be on the Fort Rucker Form 818-E (Registration of Privately Owned Weapons). Do not bring weapon(s) into the MP Station.

b. Properly registered privately owned firearms may be transported as outlined:

(1) The firearm must be transported unloaded in the trunk of the vehicle. The only exception is a vehicle without a trunk. In these circumstances, the firearm must be transported unloaded, either in a locked compartment or cased and in plain view.

(2) The transporting of a loaded firearm in a vehicle is prohibited. A firearm is considered loaded when an unexpended round is in the chamber and/or magazine. Muzzleloaders are considered unloaded when the cap is removed or flash pan is empty. Only credentialed police officers are authorized to transport a loaded firearm on Fort Rucker, and must be in pursuant to performing law enforcement duty.

(3) Transporting privately owned firearms on motorcycles is authorized if the firearm is secured in a separate lockable container from ammunition; e.g., saddlebag or lockable faring container.

(4) Handguns will not be concealed at any time.

(5) Firearm and weapon owners will have in their possession at all times their Alabama State license, Fort Rucker permit, and picture ID card. The Fort Rucker Provost Marshal weapon registration must be in their vehicle or in a gun case as they travel on the installation with firearms.

(6) Weapons will only be loaded in the assigned TA. Hunters will inspect, clear, and case their weapons prior to transporting their weapons. Weapons and ammunition will be transported in separate containers and vehicle compartments.

1-6. INSPECTIONS. Sportsmen and women must carry their state license, post permits, and proof of identification on their persons for examination upon request by Fort Rucker GLE officers, or state game wardens. Creel and game bags will be made available for examination upon request. Sportsmen and women must have their weapon's registration in their vehicle or in a gun case as they travel on the installation with firearms. ODR Card must be properly displayed on car dash.

1-7. ADMINISTRATIVE ACTIONS. DFMWR will implement the provisions of the common regulatory violations and possible penalties by conducting hearings when applicable and taking necessary actions in those cases where a violator is identified (Appendix B). A violator is defined as an individual who is apprehended or issued a summons by Fort Rucker GLE officers, federal game wardens, or state game wardens for violation of this regulation, state or federal laws, or other applicable Army regulations on the Fort Rucker military reservation. Violators will surrender their post hunting, fishing, or trapping permits to the officer making the apprehension, and those privileges will be suspended. Any appeal of a suspension will be made IAW paragraph 1-8 RESTORATION OF PRIVILEGES.

1-8. RESTORATION OF PRIVILEGES. Appeals for restoration of hunting, fishing, boating, and trapping privileges will be submitted in writing to DFMWR through DPS (for comment) within 10 calendar days from the date the penalty was issued. The community recreation officer will make a recommendation to the Director, DFMWR, who will then determine if restoration of privileges is warranted or justified. Grounds for appeal include, but are not limited to, emergency beyond patron's control, citation issued improperly, or patron called back to unscheduled military duty.

1-9. HUNTER ORANGE.

a. During all firearm deer seasons, all persons hunting any wildlife species, turkey, are required to wear an outer garment above the waist with a minimum of 144 square inches of hunter orange or either a full size hunter orange hat or cap. A small logo is permitted on the front of hunter orange caps. The cap must be visible from all angles.

b. It is required that persons bow hunting in bow hunting only areas wear, at a minimum, hunter orange headgear visible from any angle when moving.

c. If utilizing a tree stand, once the hunter is elevated 12 feet or higher, hunter orange may be removed. Hunter orange must be on prior to descending from the elevated tree stand.

d. It is required that persons duck hunting wear hunter orange while going to and from the duck blind. It may be removed while in the duck blind.

Section II

SEASONS.

2-1. Hunting and Fishing on Fort Rucker will be IAW the seasons set forth and governed by the state of Alabama and published in the Alabama State Hunting Regulation. The Fish and Wildlife Section, DPW, has the authority to close, limit, or restrict hunting seasons and bag limits in any hunting area on the installation for wildlife management/biological reasons. Any changes will be published in the official

section of the Weekly Bulletin, posted on the MWR Web site <http://rucker.armymwr.com/us/rucker>, and published in the Army Flier.

2-2. It is the sportsman's responsibility to comply with the hunting and fishing seasons, regulations, and bag limits, for the State of Alabama. Season dates and bag limit are explained annually in the Alabama Hunting and Fishing Digest.

2-3. All public streams, lakes and ponds are open to fishing throughout the year. Areas will be marked off-limits when pond management or activities are being conducted.

2-4. IAW Alabama State regulations, hog hunting is allowed during turkey season.

2-5. During turkey season, hunting will be allowed with shotgun shot sizes 6, 7, 7.5 or 8 in bow-only TAs A1, E, F, and I during weekdays.

2-6. Quail hunting will be allowed in TAs (A1, E, F, and I) following the gun deer season with shotguns, 12-gauge or smaller, using shot size 7.5, 8, or 9.

Section III

HUNTING.

3-1. CLEARANCE TO ENTER TRAINING AREAS.

a. It is mandatory that all hunters call Range Operations Training Division's Automated Briefing System also known as briefing tape at 334-255-4086 to obtain information regarding Training Areas' (TAs) status. After confirming TA's status, hunters must sign-in via <https://fortrucker.isportsman.net>. It is the hunter's responsibility to check TA closures each period posted daily by DPTMS Range Operations at 1100, 1600, and 2000.

b. iSportsman is Fort Rucker's primary method to check into a TA for hunting. This requirement aids in addressing safety concerns by ensuring the number of hunters does not exceed the TA's capacity, and prevents recreational activities from impeding on training activities.

c. Hunters will select an open TA. This selected TA assignment shall be binding. Hunters can only be signed in to one TA at a time. Hunters are allowed to change TAs only by calling the Range Operations briefing tape for TA availability. Once confirmed, hunters will log into iSportsman to change their TAs.

d. If iSportsman is inoperative, the secondary check-in procedure is to call ODR after 0730 at 334-255-4305 (voice mail) notifying them that iSportsman is inoperative. In the event that both the primary and secondary systems fail, hunters may hunt after verifying that the TA is in fact open for hunting by calling the Range Operations briefing tape at 334-255-4086. The last updated briefing will be at 2000. Hunters can **register** for an available TA a day prior between the hours of 2005hrs and 2359hrs. Hunters cannot register for TAs for the following day before Range Operations 2000 update.

e. Hunters and trappers must be out of the hunting areas not later than 1900 standard time, or 2000 daylight savings time (DST). All hunters failing to check out of a hunting area will be automatically removed by the system at 2000 DST.

3-2. FIREARMS AND AMMUNITION.

a. Firearms.

(1) Legal arms and ammunition for hunting on Fort Rucker will be IAW the State hunting regulations. Rifles, pistols using center-fire, mushrooming type ammunition are authorized for hunting in TAs 1 – 21, TAs 29 – 32, and TAs 40 – 41. There are no firearms permitted in TA 19E. Black-powder, muzzle-loading rifles, pistols (.40-caliber or larger), and shotguns (10-gauge or smaller using buckshot or slugs) are authorized for deer hunting in all gun areas (numbered TAs). Small game hunters may use .22-caliber or smaller rimfire firearms or air guns in all gun areas.

(2) Only .22-caliber firearms are permitted to dispatch hogs caught in hog traps in any bow only areas, with the exception of 19E. There are specific bow only areas that you will be allowed to hunt turkey and quail with a firearm.

b. Bow and Arrow. Bow and arrow equipment will be IAW State regulations. During bow deer season, hunters are not allowed to have in their possession a bow and firearm (rifle or gun).

3-3. CLEARANCE BEFORE DISCHARGING FIREARMS.

a. Hunters will ensure the area behind the target is cleared.

b. No discharge of firearms within 50 yards of paved roads, gravel roads or maintained roads.

c. No discharge of firearms within 200 yards of airstrips, recreational areas (to include trails), or buildings – to include stables and housing areas. Weapons and bows will not be fired in the direction of roads, airstrips, recreational areas, or buildings. The only exception is duck hunters who are permitted to hunt over or around lakes, ponds, creeks, rivers to shoot ducks.

d. Indiscriminate shooting is not allowed within the confines of the Fort Rucker military installation. Target practice is only allowed at the Privately Owned Weapon (POW) Range. Range is located across from Range Operations Bldg 24314. Individuals must present a stamped copy of their Fort Rucker Form 818-E and a valid state or federal ID and receive a safety brief, to Range Operations personnel before they are allowed to use the POW Range. Patrons/personnel should contact Range Operations for times of operation at 334-255-4303/4486.

3-4. GROUP HUNTS. A group hunt is defined as a cooperative effort by five or more individuals hunting game on Fort Rucker. Group hunts on Fort Rucker are only allowed for hog hunts and must be approved by the Garrison Commander or his/her delegated authority prior to the hunt. Deer drives, by any number of individuals, are not authorized on Fort Rucker.

3-5. QUALITY DEER MANAGEMENT PROGRAM. Fort Rucker's Quality Deer Management Program entails an annual review of harvest data, fawn recruitment, and other biological data pertaining to the deer population on Fort Rucker by the Environmental and Natural Resources Division within DPW. NRD will make a recommendation to the Garrison Commander for approval about harvest quota, antlerless harvest, and necessary hog and coyote depredation control. An announcement will be made not later than 31 August, prior to the beginning of deer season, detailing the changes to harvest restriction and training area availability for that season.

3-6. TREE STANDS.

a. ODR Tree Stands. DFMWR manages procedures for allocating ODR tree stands. A limited number of tree stands may be erected and maintained by ODR in designated hunting areas. Hunters will not use these areas or tree stands without contacting ODR. Access to the tree stands require registering for specific tree stands at ODR during regular business hours. Tree stands are used on a first-come, first-served basis. A fee will be charged for the use of these tree stands. This does not include privately built tree stands. All hunting regulations and requirements put forth in the main body of this regulation apply to hunting from tree stands is controlled by ODR.

(1) ODR has the overall responsibility for building, maintaining, assigning, and collecting fees for the use of these tree stands.

(2) ODR and Range Operations are responsible for selecting tree stand construction sites.

(3) The hunter will request for an assigned tree stand from ODR. ODR personnel will brief the hunter on any special requirements, and can be contacted at 334-255-4305.

(4) Hunters will register with ODR, **in person**, for the use of tree stands located in TA 11.

(5) Hunters must park in the designated TA assigned to the tree stand.

(6) Hunters can only hunt in the tree stand and area that they are assigned. Should the area be subsequently closed for training, the tree stand fee will be refunded. There will be no refunds for stands not canceled a minimum of 24 hours in advance by the hunter.

(7) Some stands are large enough for one adult and one child. Stands are not designed for and will not be occupied by two adults.

b. Privately Built Tree Stands (Semi-Permeant). Construction of a tree stand in no way implies ownership. Permission must be obtained from ODR as to the location prior to construction. All tree stands constructed by private individuals become community property for authorized hunters. Fort Rucker installation assumes no responsibility for the construction, condition, or maintenance of tree stands constructed by private individuals. Hunters use tree stands at their own risk.

c. Temporary Tree Stands. Temporary tree stands (i.e., ladder stands) will have a placard attached with information denoting the owner's name, the owner's phone number, and the date the stand was emplaced. The placard will be a minimum of 3x5 inches and contained within a waterproof and transparent plastic bag, attached to either the stand or tree in a readily visible location.

d. Restricted Areas. No tree stands will be built or located in the impact area.

e. Safety. Falls from tree stands are common when hunting. Anyone who hunts from an elevated stand is required to use a full-body style safety harness (fall restraint device). Hunters may use tree stands at their own risk.

3-7. USE OF PRIVATELY OWNED VEHICLES.

a. Licensed motor vehicles are limited to operation on paved roads, gravel roads, and maintained dirt roads.

b. Upon entering a TA, hunters and trappers will not block roads, tank trails, etc., when parking their vehicle.

c. Hunters and trappers must display the ODR registration card in plain view on the dashboard of the driver's side of their vehicle. The ODR registration card must be filled out legibly and in its entirety.

d. Motor vehicles will not traverse cross-country through wildlife openings (food plots), through utility line rights-of-way, or around locked gates and cables. Law enforcement, other official agencies, and properly registered hunters individual with disabilities (IWD) are granted permission through proper coordination with ODR.

e. Hunting from a motor vehicle is prohibited; the **ONLY** exception as defined in State of Alabama law allowing the use of motor vehicle hunting by hunters who are individuals with disabilities (IWD). IWD hunters who are interested in obtaining approval to operate off-road vehicles and all-terrain vehicles (ATV) must contact ODR at 334-255-4305 for details, requirements, and forms.

- f. Hunters and trappers in Training Area Charlie will not park automobiles on Artillery Road.
- g. Hunters and trappers will not tamper with or otherwise remove any barricade or gate that prohibits entry into any TA that is closed for training.

3-8. HUNTING WITH DOGS.

a. Vaccination. Dogs brought onto the installation shall be properly immunized for rabies. Upon request by proper authorities, GLE officers, state game wardens, federal game wardens, etc., owners of hunting dogs shall produce rabies vaccination certificates.

b. Training.

(1) Training or conditioning of hunting dogs on Fort Rucker is limited to the area south of Highway 27, and may be done during daylight hours only, with the exception of raccoon hunting.

(2) Personnel will call Range Operations briefing tape at 334-255-4086 to obtain information on TAs that are available for hunting/training dogs.

(3) Dog trainers will ensure dogs remain under close supervision in designated TA and that native game is not molested.

(4) Water training may be done year-round at Engineer Beach on Lake Tholocco, Beaver Pond on Andrews Avenue near the golf course, or Beaver Lake. Dog training and/or pets are not allowed in the recreational areas at Buckhorn Lake, Ech Lake, and Parours Lake.

(5) Hunting dog training is restricted during the critical ground bird (wild turkey, quail, etc.) nesting and brood-raising period of 1 March to 31 July. Only exception is at designated water TAs.

(6) There is no training allowed for deer hunting dogs.

c. Deer and hog hunting with dogs on Fort Rucker are prohibited.

d. Hunting with horses is prohibited.

3-9. ADDITIONAL HUNTING MANDATES AND RESTRICTIONS.

a. Electronic calls are authorized for small game hunting, including hogs. Electronic calls can only be used during daylight hours.

b. The use of explosive noise-producing devices (e.g., fireworks, blank pistols, etc.) is prohibited. Training pistols incapable of firing any ammunition but blanks may be used in training hunting dogs. State regulations apply to the use of other types of noise-producing devices (e.g., game and bird calls, rattling antlers, etc.

c. Cleaning game in housing areas is prohibited. A cleaning shed is located behind the Game Warden Office Bldg 24201. For additional information concerning this facility, contact ODR at 334-255-4305.

d. Collection stations. Field Dressing game in the TA is prohibited. Hunters must utilize the collection stations. All deer and turkeys must be physically taken to the collection stations to be weighed, measured, and logged in (instructions are posted at all collection stations). All hunters must fill out their harvest record, to include newly required confirmation number, before removing the animal/bird from the installation. Failure to do so will result in a 30-day suspension. Collection stations for TAs North of Highway 27 (TAs 1-11) is located across from Range Operations Bldg 24314. Collection stations for TAs

(TAs 12-41) South of Highway 27 are located across from the Game Warden Office Bldg 24201, and at the Newton gate.

e. Hunters wounding game will make every effort to track down the animal or bird. They will notify the Game Warden officers (334-255-4735/4213) of lost game. Tracking wounded game into the impact area is prohibited. Tracking for game is not allowed in areas known or suspected to contain UXOs.

f. As part of the Wildlife Management Program (WMP) the number of hogs/coyotes hunted must be recorded to track the hog/coyote populations. All hogs hunted must be recorded on the hunter's "kill card." Kill Cards can be picked-up from ODR at BLDG 24235, once the card is full, it must be turned-in to ODR. ODR shall report all Kill Card Data to Natural Resources within two days of receipt.

g. Turkey hunters will only possess ammunition legal for hunting turkeys.

Section IV

FISHING.

4-1. SEASONS. All ponds, lakes, and streams, with the exception of Buckhorn Lake and those identified as in the impact area, will be open for fishing 24 hours a day. Ponds, lakes, and streams may be closed due to military training or restocking. Notice will be published on the MWR Web site (<http://rucker.armymwr.com/us/rucker>) of closed ponds or lakes as well as effective dates of closing. Signs, indicating closures, will be displayed at all ponds or lakes when closed for any purpose.

4-2. METHODS.

a. Fisherpersons will have in their possession at all times their Alabama State fishing license, Fort Rucker fishing permit, and a picture ID card.

b. Methods of Fishing. Rod and reel, hook and line, cane pole, and similar methods of fishing are authorized. Fisherpersons are limited to two fishing poles or rods per person while fishing off of designated fishing piers on Lake Tholocco. Bait restrictions for small lakes and ponds are outlined in paragraph 4-3 below.

c. Line Fishing. Trotlines, throw lines, or setlines (to include jugs) are authorized only under the following conditions:

(1) All such lines will be prominently marked with the owner's last name and Fort Rucker hunting/fishing permit number.

(2) Trotlines will be prominently marked at both ends and will not be located on any span that may interfere with other fisherpersons' lines or watercraft. Trotlines are limited to 200 feet in length and not more than 2 lines per individual. Trotlines and setlines will not be placed in a water ski area, Area 1.

(3) All lines will be checked each 12-hour period.

(4) Unmarked lines and improperly set lines will be confiscated by GLE officers or state and federal game wardens.

(5) Glass and metal containers are prohibited for jug fishing. All jugs will be marked with the owner's last name and Fort Rucker hunting/fishing permit number. Jugs will be attended to prevent them drifting into recreational areas.

d. Traps, Seines, and Nets.

(1) The only fish traps authorized in any waters on Fort Rucker are minnow traps with an aperture of 1 inch or less.

(2) Special regulations governing sucker netting are as follows.

(a) Persons participating must comply with the license provisions of paragraph 1-4 and are required to have Fort Rucker fishing permits in their possession.

(b) Rods and reels, hooks and lines, cane poles, spears, gigs, longbows, or firearms are not allowed in boats with, or in the possession of, persons engaged in sucker netting.

(c) All nets will be marked with buoys or floats readily visible above the water line and prominently marked with the owner's last name.

e. Fishing Lake Tholocco.

(1) No fishing in the primary ski area while being used by skiers, tubers, etc.

(2) No fishing within 100 feet around designated swimming areas, except on the West Beach fishing pier.

(3) No fishing on beach areas when open for swimming activities.

(4) No fishing within 50 feet of boat docks.

(5) No fishing within 50 feet of vessel launching areas.

(6) No fishing from a boat within 150 feet of the spillway.

4-3. RESTRICTIONS APPLYING TO SMALL LAKES AND PONDS. The following regulations apply to Beaver Lake, Buckhorn Lake, Ech Lake, and Parcours Lake on the Fort Rucker military reservation.

a. Minnows of all types are prohibited.

b. Seining or netting is prohibited, except for specific military training.

c. Trotlines and/or jugs are prohibited.

d. Only paddles, oars, and electric motors are allowed as means of boat propulsion on Beaver Lake, Buckhorn Lake, Ech Lake, Parcours Lake, and other waters of the military reservation. The operation of gasoline engines on these four lakes is prohibited. Float tubes or belly boats are authorized for fishing.

e. Swimming and wading are prohibited in the lakes identified in paragraph 4-3.

f. Lake creel limits are posted at Lake Tholocco, Beaver Lake, Buckhorn Lake, Ech Lake, and Parcours Lake.

g. Giggling for frogs on ponds open for fishing is permitted if the gig has at least three prongs. A post fishing permit is required.

h. Parours Lake is reserved for youth fishing, 15 years of age or younger. Adults may assist youth fishing activities but cannot actively fish themselves. ~~The following regulations apply to Beaver Lake, Buckhorn Lake, Ech Lake, and Parours Lake on the Fort Rucker military reservation.~~

Section V

RECREATIONAL TRAPPING.

1. **GENERAL.** Recreational Trapping refers to trapping of fur bearing creatures. The following are designated as furbearing animals in Alabama (2016-2017): beaver, bobcat, fox, mink, muskrat, nutria, opossum, otter, raccoon, striped skunk, coyote and feral swine. Recreational hunting is at the expense of the trapper. Fort Rucker provides no additional resources to support trapping or baiting of furbearing animals. Recreational trapping is not depredation trapping and has separate procedures and policies.

2. **RESPONSIBILITIES.**

a. ODR, DFMWR. For patrons declaring their intention to trap on Fort Rucker, ODR staff will annotate trapping authorization on the trapper's Fort Rucker hunting permit, brief the patron on the major rules and procedures of this regulation, and specifically address trapping procedures within the lettered TAs surrounding the cantonment area. ODR will maintain a roster of all trappers registered and approved to trap on Fort Rucker. ODR will ensure Corvias Housing includes a statement in military tenants' housing agreements denoting that trapping is authorized in the TAs surrounding the cantonment area but is restricted to at least 200 yards from any housing areas, facilities, or structures.

b. DPS/Game Law Enforces. GLE are responsible for enforcing state and federal law as well as regulations and guidelines identified in FRR 215-1 and FRR 385-1. They are authorized to enforce all applicable regulations and/or state laws pertaining to trapping on Fort Rucker. They will take appropriate actions against violations.

c. Fish and Wildlife Section, DPW. Consolidate trapping information from all recreational trappers. Fort Rucker biologists will maintain annual records of all game trapped on Fort Rucker.

d. Recreational Trappers. Patrons wanting to trap on Fort Rucker will declare those intentions at the ODR Office Bldg 24235 at Lake Tholocco. They will receive the trapping briefing from the ODR staff, and have trapping authorized on their Fort Rucker hunting permit. Trappers will fully understand and adhere to Fort Rucker regulations and Alabama state laws that govern trapping. Trappers will check traps set in water at least once every 72 hours. All other types of traps will be inspected at least once every 24 hours. Trappers shall report the number and types of game trapped to the Fish and Wildlife Section, DPW, at 334-255-1664/2416 and/or via email.

e. Trappers who are specifically trappings feral hogs must coordinate with DPW Natural Resource at (334) 255-1659.

3. ADMINISTRATIVE RULES.

a. Recreational trappers will adhere to all requirements found in Section I and Section III of this regulation.

b. Trapping is not authorized in the impact area, TA 19E, portions of TA 7 and 11, and as depicted on the surrounding cantonment TAs.

4. CLEARANCE/PROCEDURES FOR TRAPPING IN NUMBERED TRAINING AREAS.

a. Recreational trapping is only authorized within TAs in an open status. Trappers are required to check TA's statuses through the Range Operations briefing tape at 334-255-4086. Trappers must sign in and out via <http://fortrucker.isportsman.net> to sign in to TAs. Traps in TAs scheduled to be closed must be disarmed prior to the scheduled closed date. TAs projected open and closed dates are published on the ODR Hunting Area Status Map website.

b. Licensed motor vehicles are limited to operation on paved roads, gravel roads, and maintained dirt roads. Upon entering a TA, trappers will not block roads, tank trails, etc., when parking their vehicle. Trappers must display the ODR Dashboard Registration Card in plain view on the dashboard of the driver's side of their vehicle. The card must be filled out legibly and in its entirety.

c. Trappers may only carry and use a .22-caliber rimfire weapon to dispatch trapped furbearing game. The weapon will not be loaded until the trapper is ready to dispatch the trapped game. Conducting animal dispatch, see **5-7 CLEARANCE OF FIRES (WHEN DISPATCHING)** paragraph below.

5. CLEARANCE/PROCEDURES FOR TRAPPING IN THE LETTERED TRAINING AREAS.

a. TAs surrounding Fort Rucker's cantonment area known as lettered TAs, thus, extra safety measures will be exercised. Lettered TAs are A1, A2, B, C, D, E, F, G, H, I, and 19E. The lettered TAs and their boundaries are depicted on the Fort Rucker reservation hunting map issued by ODR with the purchase of an annual Fort Rucker hunting permit.

b. Trappers will follow normal log-in procedures notifying Range Operations and signing-in to iSportsman. See **Section III para 3-1 CLEARANCE TO ENTER TRAINING AREA.**

c. The trapper must maintain constant cognizance of his location when trapping and dispatching, especially when trapping in a lettered TA.

d. For those lettered TAs that border any portion of the residential housing, trappers are not authorized to park vehicles on any street, grass, field, or road (dirt or otherwise) that is in or between the residential housing and the lettered TAs. Trappers will not transit through any portion of the residential housing with weapons or game or to inspect traps.

e. Trapping is not authorized within 200 yards of the cantonment area or in specific areas with extended restricted areas, to include houses, schools, offices, storage buildings, riding stables, airfield, recreational area, etc.

f. Trappers may only carry and use a .22-caliber rimfire weapon to dispatch trapped furbearing game. The .22-caliber firearm is the only authorized firearm for use in lettered TAs to dispatch. The weapon will not be loaded until the trapper is ready to dispatch the trapped game. Conducting animal dispatch, see **5-7 CLEARANCE OF FIRES (WHEN DISPATCHING)** paragraph below.

6. **FIREARMS AND AMMUNITION.** Rifles may be used to dispatch furbearing game in TAs 1 – 21, TAs 29 – 32, and TAs 40 – 41. Only .22-caliber firearms are permitted to dispatch in lettered TAs, TAs A – I. There are no firearms permitted in TA 19E.

7. **CLEARANCE BEFORE DISCHARGING FIREARMS (WHEN DISPATCHING).**

a. Trappers will not fire in the direction of any post housing or any other structure bordering or surrounding a lettered TA. If there is any doubt as to which direction is the safe direction to fire, the trapper will not fire. The trapper will either release the trapped animal or regain his bearing to determine which direction is the safe direction to fire before dispatching the animal.

b. Trappers will ensure the firearm is loaded and aimed in a ‘downward’ manner to prevent rounds from departing the immediate area placing personnel or infrastructure at risk (no free shooting of trapped or un-trapped animals).

c. Trappers will ensure the area surrounding the trap is cleared before firing. Trappers will not dispatch game greater than 50 yards from the target.

- d. No discharge of firearms within 50 yards of trails, paved roads, gravel roads or maintained roads.
- e. No discharge of firearms within 200 yards of airstrips, recreational areas (to include trails), or buildings – to include stables and housing areas.
- f. Weapons, firearms and bows will not be fired in the direction of roads, airstrips, recreational areas, fishing areas lakes, or buildings.
- g. All weapons will be properly cleared and placed on safe immediately following animal dispatch.
- h. The weapon will remain unloaded and unconcealed while removing the dispatched animal from the area.
- i. Trappers must ensure the animal is deceased before transporting it. Alabama law prohibits the transport of live game animals.

8. **ADDITIONAL RECREATIONAL TRAPPING MANDATES AND RESTRICTIONS.**

- a. Recreational Trapping **is not authorized** in a closed TA. Traps must be de-armed (unset) prior to unit occupation.
- b. Hunter orange is required for all Recreational Trappers.
- c. Any person trapping furbearing animals in Alabama is required to carry a choke stick.
- d. Trap markings. Leg and water-traps will be marked with a 3-foot high (minimum) stake, topped with a small strip of orange marking tape, and staked within 5 feet of the trap location with a plastic or metal tag showing the trapper's last name, Fort Rucker permit number, and state license number.
- e. Reporting. All trappers shall report the number and types of game trapped to the Fish and Wildlife Section, DPW, at 334-255-1664/2416.
- f. Violations and penalties associated with trapping on Fort Rucker are as published in Appendix B of this regulation.

Section VI

DEPREDATION ANIMAL TRAPPING.

1. GENERAL.

a. Increases in feral hog populations on Fort Rucker over the last 25 years have resulted in numerous problems for the Installation. Feral hogs directly compete with both game and non-game species for available resources; displace native wildlife populations; disrupt and destroy nests of native wildlife; and cause damage to crops, trees, landfill caps and erosion control structures.

b. In order to reduce the feral hog population on the installation, Fort Rucker Natural Resources has instituted a depredation hog trapping program. As part of this program hog traps and a limited amount of corn have been purchased by Natural Resources and will be made available for use by depredation trapping volunteers. A limited amount of corn will be available from the Natural Resources Branch at no cost to the trapper. One 50-lb. bag of corn per trap will be available each month on the first Wednesday of the month.

2. RESPONSIBILITIES.

a. DPW, Natural Resources is responsible for identifying the need for depredation trapping due to damage, disease or safety risk caused by wild animals. Natural Resources will be responsible for developing a plan for accomplishing depredation animal trapping and implementing the plan through the use of Natural Resources personnel, USDA, Wildlife Resources personnel, and volunteer resources. Natural Resources will provide updated depredation trapping maps to DPTMS Training Division and the Garrison Command as changes occur.

b. DPTMS, Training Division is responsible for reviewing the depredation trapping plan and de-conflicting trapping activities with training and other users of TAs.

c. DPS, Game Law Enforcers. GLE are responsible for enforcing state and federal law as well as regulations and guidelines identified in FRR 215-1 and FRR 385-1. They are authorized to enforce all applicable regulations and/or state laws pertaining to trapping on Fort Rucker. They will take appropriate actions against violations.

d. MWR, Outdoor Recreation is responsible for the recreational aspects of trapping as well as the maintenance of traps. MWR is also responsible for consolidating Kill Cards information from hunters and depredation trappers for both feral hogs and coyotes. MWR will issue recreational hunting and trapping permits and provide incentive opportunities for depredation animal control by recreational hunting. MWR is the proponent for this regulation. ODR shall report all Kill Card Data to Natural

Resources within two days of receipt. ODR shall coordinate approval of any “Hunting Incentives” with Natural Resources prior to publishing policy.

3. FERAL HOG DEPREDATION TRAPPING. Administrative Rules.

a. All volunteer trappers and their assistants must have an Alabama hunting license and a Fort Rucker hunting permit. There should be no charge for the Fort Rucker hunting permit if no other species are to be hunted. They submit a DD 2793 Volunteer Agreement with NR.

b. Volunteers will sign an agreement/permit stating familiarity with FRR 215-1, location of trap, responsible personnel for trap, receipt of trap, and any special considerations for the specific location used.

c. Only one person will be issued a volunteer trapping permit for each trap and will be accountable for that trap. All trappers are limited to three traps. Only the permit holder is authorized to make arrangements with the Natural Resources Branch (NRB). If other personnel are assisting with the trap in the field, their names must be added to the permit issued to the responsible individual and signed off by NRB. A copy of the trapping permit must be in the trapper’s possession when inspecting traps.

d. Depredation trappers must call Range Operations briefing tape at 334-255-4086 to obtain information regarding TA status. **If the area is open, depredation trappers will follow Procedures for Open TAs. If the area is closed, depredation trappers will follow Procedures for Occupied TAs.**

e. When the trap is set the volunteer must inspect the trap daily (once every 24 hours), dispatch and remove any hogs that have been caught in accordance with state law. Hogs must be dispatched inside the trap with firearms authorized in the assigned TA, with the exception of the lettered (bow) areas in which only a .22 rimfire firearm can be used.

f. Depredation trappers must wear a yellow identification vest and display a NR Vehicle Identification card on the dash of their vehicles during trapping activities in the TA. These items will be provided by DPW, Natural Resources.

4. CLEARANCE TO ENTER NON-OCCUPIED (OPEN) TAs.

a. It is mandatory that all depredation trappers call Range Operations Training Division’s Automated Briefing System also known as briefing tape at 334-255-4086 to obtain information regarding TAs status. After confirming TA’s status, trappers must sign-in via <https://fortrucker.isportsman.net>. It is

the trapper's responsibility to check TA closures each period posted daily by DPTMS Range Operations at 1100, 1600, and 2000.

b. Volunteers are responsible for verifying with Range Operations that the area is available for trapping on a daily basis.

c. If the TA is open, trappers may proceed during daylight hours to inspect, bait, and run their traps in the TA.

d. Trapped feral hogs will be dispatched in the trap using firearms approved for that specific TA. Only .22 caliber is authorized in lettered TAs. See para **6-6 FIREARMS AND AMMUNITION** paragraph below for more details. Conducting animal dispatch, see para **6-7 CLEARANCE OF FIRES (WHEN DISPATCHING)** paragraph below.

5. CLEARANCE TO ENTER OCCUPIED (CLOSED) TAs.

a. It is mandatory that all depredation trappers call Range Operations Training Division's Automated Briefing System also known as briefing tape at 334-255-4086 to obtain information regarding TAs status. After confirming TA's status, trappers must sign-in via <https://fortruck.isportsman.net>. It is the trapper's responsibility to check TA closures each period posted daily by DPTMS Range Operations at 1100, 1600, and 2000.

b. Range Operations must be contacted at 334-255-4303 and authorization must be received to proceed into a Closed TA. The depredation trapper cannot enter Closed TA without authorization.

c. After gaining authorization, depredation trappers have two periods during the day when they can request clearance to enter for the purposes of inspecting traps. These periods are 0500-0800 and 1500-1800 daily. If the traps cannot be inspected during these time periods, the traps must be disabled.

d. Trappers will provide estimation (duration) of time on site to Range Operations.

e. The depredation trapper must notify Range Operations again to clear the trap and TA. If multiple traps are within a TA, the depredation trapper must inform Range Operations each time they clear a trap site and request authorization to proceed to the next trap site.

f. If feral hogs are in the trap, the depredation trapper must notify Range Operations that dispatch is required at the trap site. Range Operations will notify using training unit of animal dispatch activities

and advise trappers once that notification is complete. Once notification is in concurrence, feral hogs will be dispatched using weapons approved for that specific TA. See **6-6 FIREARMS AND AMMUNITION** paragraph below for more details. Conducting animal dispatch, see **6-7 CLEARANCE OF FIRES (WHEN DISPATCHING)** paragraph below.

g. Once dispatch is complete and trappers have cleared the TA, trappers will notify Range Operations. Range Operations will notify training unit personnel that dispatch activities have been completed and trapping personnel have departed.

6. **FIREARMS AND AMMUNITION.** Rifles may be used to dispatch hog/coyotes in TAs 1 – 21, TAs 29 – 32, and TAs 40 – 41. Shotguns may also be used to dispatch hogs in all TAs except lettered TAs. Only .22-caliber firearms are permitted to dispatch hogs in lettered TAs, TAs A – I.

7. **CLEARANCE OF FIRES (WHEN DISPATCHING).**

a. When conducting animal dispatch, trappers will ensure the area surrounding the trap is cleared before firing.

b. When in a lettered TA, trappers will not fire in the direction of any post housing or any other structure bordering or surrounding. If there is any doubt as to which direction is the safe direction to fire, the trapper will not fire. The trapper will either release the trapped animal or regain his bearing to determine which direction is the safe direction to fire before dispatching the animal.

c. Trappers will ensure the firearm is loaded and aimed in a ‘downward’ manner to prevent rounds from departing the immediate area placing personnel or infrastructure at risk (no free shooting of trapped or un-trapped animals).

d. Trappers will not dispatch a game/hog greater than 50 yards from the target.

e. No discharge of firearms within 50 yards of trails, paved roads, gravel roads or maintained roads.

f. No discharge of firearms within 200 yards of airstrips, recreational areas (to include trails), fishing areas, lakes, or buildings – to include stables and housing areas. Weapons, firearms and bows will not be fired in the direction of roads, airstrips, recreational areas, fishing areas lakes, or buildings.

g. All weapons will be properly cleared and placed on safe immediately following animal dispatch.

h. The weapon will remain unloaded and unconcealed while removing the dispatched animal from the area.

8. COYOTE DEPREDAATION TRAPPING.

a. Control measures for coyotes have become necessary because non-native coyotes have reached high populations and are seriously impacting game and non-game species to include the gopher tortoise (a DOD designated SAR) by predation. Coyotes have also caused safety issues with joggers, bikers, and Soldiers on foot training in remote areas and around base housing.

b. **Natural Resources and USDA Wildlife Services personnel are the ONLY parties to conduct Depredation Coyote Trapping.** Coyote trapping activities will be accomplished during February-March and July-August timeframes. All coyote trapping activities will be coordinated with Training Division for de-conflicting with training activities.

c. Trap locations will be marked with 4-ft tall 1-inch galvanized pipe with reflective tape around the top. Traps will be within 2 meters of pipe. Both leg-hold and snare traps may be used depending on agency authorization. Traps will be marked with an identifying band listing agency name and contact phone number.

d. **Firearms and Ammunition.** Dispatch of coyotes in traps will be accomplished with .22 rimfire weapons and ammunition.

e. **Clearance of Fires.** See **6-7 CLEARANCE OF FIRES (WHEN DISPATCHING).**

f. **Reports.** Records will be kept of all coyotes taken by trapping or shooting and will be maintained by Natural Resources for reporting to the Garrison Command. Recreation hunters taking coyotes will report their harvest on Kill Cards maintained by Outdoor Recreation.

9. DEPREDAATION MANDATES AND RESTRICTIONS.

a. **Trap Location.** Traps will be placed by volunteers in areas with existing hog populations as approved by Natural Resources personnel. Traps **will not** be relocated without approval by Natural Resources. Requests for new traps or relocation of existing traps will be handled on the first Wednesday of each month. Please email Daniel M. Spillers at daniel.m.spillers.civ@mail.mil for permit application.

b. Trap Inspection. Volunteers will be responsible for monitoring and inspecting assigned traps. Each trap will have a NRB provided and signed placard. The placard will have assigned trappers' name and contact number. Traps must be inspected daily when they are set. If a trapper is unable to inspect assigned traps daily, the traps must be disabled. If the trapper is unable to run the trap for an extended period (i.e., two weeks or longer) Natural Resources Personnel must be contacted so that the trap can be turned in and reissued. If traps are not being inspected as required, trapping privileges will be revoked.

c. Reports.

(1) Reports of trapping activity must be turned in at the end of each month. DPW Natural Resources personnel provides a "Feral Hog Trapping/Harvesting Report" (spreadsheet) for this purpose. This report should be sent by email to james.bruner5.ctr@mail.mil. If trapping reports are not turned in, trapping privileges will be revoked.

(2) Outdoor Recreation Kill Cards must be maintained and turned in for any feral hogs taken by trapping or hunting. Kill Cards are available at the ODR Office Bldg 24235 at Lake Tholocco.

d. The hogs can be utilized by the volunteer for meat if desired. A list will be made available to volunteers of personnel who are available to receive trapped hogs for meat.

e. Under no circumstances will live hogs be removed from the trap and/or transported. This is a violation of state law and of Fort Rucker regulations and violators will be prosecuted. Violators will have their hunting, fishing and trapping privileges suspended and/or revoked.

f. Violations and penalties associated with trapping on Fort Rucker are as published in Appendix B of this regulation.

Section VII

BOATING AND WATER ACTIVITIES.

1. GENERAL.

a. All motorized (gasoline powered) vessels used on the waters of the Fort Rucker military reservation must have a current state registration.

b. Vessel launch passes must be paid as indicated on area signs.

c. All patrons/personnel and vessels will comply with Alabama and federal laws and regulations, unless specified below.

d. Persons operating watercraft in a reckless or hazardous manner or in violation of the regulations in this section may lose their privileges to operate a boat on the waters of Fort Rucker. Watercraft not having the required equipment will not be allowed to operate until the required equipment is obtained.

2. BOAT OPERATIONS SPECIFIC TO LAKE THOLOCCO.

a. The operator of any vessel, motorized or not, must have in his/her possession a Lake Tholocco Boater Safety Certificate. One may be obtained online at <https://rucker.armymwr.com/programs/hunting-and-fishing> or call 334-255-4305.

b. All powerboat operators will follow a clockwise traffic pattern in the primary ski area of the lake, keeping the red buoys on the right and the white buoys on the left. Operators of all vessels (as defined by Alabama state regulations) will obtain and thoroughly familiarize themselves with the Lake Tholocco Traffic Pattern.

c. Boats and personal watercraft (PWC) will not be operated within 100 feet of the authorized swimming area.

d. Boats and PWC will not be operated within 150 feet of the spillway structure of the dam.

e. Non-powered pleasure boats, including rowboats and canoes except when being used for fishing, will operate only in designated areas.

f. Sailboats, windsurfing, wave runners, jet skis, and airboats will be restricted to areas north of West and East Beach piers, with the following exceptions:

(1) Watercraft launched at the marina may use the west side of the lake en route to the authorized area, provided they take the most direct route.

(2) Watercraft may proceed directly to and from East and West Beach drop-off areas to pick up/discharge riders. They may not enter the main circulation area unless they are pulling skiers or tubes. Jet skis and wave runners pulling skiers/tubes must operate within the normal vessel/ski pattern in area 1.

(3) Jet skis and wave runners will be launched from boat ramps.

g. PWC may only operate from sunrise to sunset, except for fishing. Fishing from a boat is authorized 24 hours a day. In addition to Alabama boat lighting requirements, fishing boats operating at night must have an operational flashlight or spotlight onboard and required Type I, II, III, or V, U.S. Coast Guard-approved Personal Floatation Device (PFD) lifejackets.

h. Boat and PWC operators are prohibited from leaving skiers in any area other than authorized drop-off points (East and West Beach outside roped-off swimming areas).

i. Swimming from boats is prohibited, except in the event of an emergency.

j. Patrons/personnel under 18 years of age must be accompanied by an adult when using ODR boats.

k. Windsurfing is authorized only on Lake Tholocco. Windsurfers will stay clear of water ski and swimming areas. Windsurfers must wear a PFD lifejacket.

l. Impoundments are restricted from use.

m. Reckless or negligent operation of boats or PWC will not be tolerated. Except for specifically approved special events such as boat races, boats will be operated at a safe and prudent speed dictated by congestion and lake utilization.

n. Automobiles/trucks and their boat trailers will spend only minimum time on the launching ramps. Minimum time is defined as only that time required to safely launch and/or to recover boats.

o. During periods of severe weather or very low water when lakes are hazardous to boating, the DFMWR designee, DFMWR lifeguards, or GLE officer may close that portion of the ODR facility for safety reasons.

p. Paddle boards may only be used in Area 2. Paddle boards are deemed a vessel and a life vest is required on board for each person.

3. SWIMMING, BEACH RULES, AND BEACH INFORMATION.

a. Lifeguards have the authority to close the swimming area when deemed unsafe.

b. Swimming is allowed during designated daylight hours when lifeguards are on duty. Swimming is allowed only inside the roped-off area.

c. “Swimming at your own risk” is not permitted on Fort Rucker.

d. Swimming enhancement rules: PFDs are not required, except for non-swimmers. No diving, jumping, or pushing allowed. No loitering. No roughhousing allowed. No sharp or dangling jewelry. No swimming under floating swim enhancements at any time.

e. All patrons will comply with posted rules and regulations and lifeguard instructions.

Section VIII

SAFETY.

8-1. GENERAL. We want our recreational activities to be performed in a safe, responsible and enjoyable manner. To achieve our goal we've implemented restrictions on hunting, fishing, and water activities established upon by safety considerations and our training environment. Anyone identifying or having knowledge of an accident or incident occurring on Fort Rucker will notify the appropriate authorities – Emergency dial 911, MP Desk at 255-2222, or Environmental Resources Division at 255-1659.

8-2. POLICIES.

a. General Rules.

(1) Hikers, runners, joggers, walkers, horseback riders, and nature watchers are strictly prohibited to use any TA that are not designated or identified as approved trails. Hikers, runners, joggers, walkers, horseback riders, and nature watchers are only allowed on designated trails/courses. Violators are subject to be fined.

(2) Patrons must obey all posted rules and restrictions listed at each trail/course location.

(3) Designated horse riding areas are coordinated between Range Operations and the riding stables. All riders will coordinate horse riding with the riding stables. Horse riding is restricted to approved established trails only; free riding throughout TAs is not authorized. Riders must wear a vest or jacket hunter orange and must be visible from any angle.

(4) No firearms are permitted in 19E.

(5) Pets must be on a leash no longer than 6 feet on Air Assault and Beaver Lake courses.

(6) Runners with animals are prohibited from using tracks during hours of scheduled physical training.

(7) Unit physical fitness training has priority of running tracks between the hours of 0600 and 0730, Monday through Friday.

(8) Additional running restrictions can be found in Fort Rucker Regulation 190-5, Fort Rucker Motor Vehicle Regulation, dated 6 December 2016.

(9) Removal or disturbance of any plant, mammal, reptile, bird, or antiquities is prohibited.

(10) Possession or use of alcohol and/or illegal drugs while hunting is prohibited.

(11) Removing, altering, or defacing signs is prohibited. All official Fort Rucker regulatory signs will be strictly obeyed.

(12) Littering or dumping is strictly prohibited.

(13) Civilians will not enter any training area that is closed for training as listed in iSportsman.

b. Designated Walking, Running, and Fitness Trails.

(1) Only designated walking, running, and fitness trails are to be used for recreational fitness activities.

(2) Designated walking, running, and fitness trails include the following:

(a) Parours Fitness Trails (behind IHG Army Hotels, Building 380).

(b) Beaver Lake Jogging and Hiking Trail.

(c) Air Assault Track (authorized night use).

(d) Quarter-Mile Track behind the Fort Rucker Physical Fitness Center, Building 4605 (authorized night use).

(3) Caution should be used in wooded areas and along trails that can harbor poison oak, ticks, and poisonous snakes. Be alert!

(4) Use of the buddy system is encouraged, especially in foul weather or low-light conditions.

(5) Children under 16 years of age must be accompanied by an adult when utilizing trails.

c. Hunter Orange. (See Section I, Paragraph 1-9 HUNTER ORANGE).

d. Duds and UXOs. Patrons/Personnel finding any unexploded ordnance (UXO) will immediately report the location to the Training Division, DPTMS, 334-255-4303/4793. Patrons will not pick up, move, or otherwise disturb an item suspected of being a UXO. Mark the area and path in such a way that the UXO can be easily located by Range Operations.

e. Indiscriminate shooting is not allowed within the confines of the Fort Rucker military installation. Target practice is only allowed at the Privately Owned Weapon (POW) Range. Range is located across from Range Operations Bldg 24314. Individuals must present a stamped copy of their Fort Rucker Form 818-E and a valid state or federal ID to Range Operations personnel and receive a safety brief before they are allowed to use the POW Range. Patrons/personnel should contact Range Operations for times of operation at 334-255-4303/4486.

f. ODR will ensure Corvias Housing includes a statement in military tenants' housing agreements denoting that trapping is authorized in the TAs surrounding the cantonment area but is restricted to at least 200 yards from any housing areas, facilities, or structures.

Section IX

NIGHT HUNTING (RACCOON AND OPOSSUM).

1. **GENERAL.** There is a significant demand for raccoon hunting at night. Fort Rucker sustains significant night flight operations which involves ground operations. This Chapter outlines

procedures that must be followed to allow our patrons use of TAs for night recreational hunting of raccoons/opossum IAW laws and regulations without disruption to flight operations or military training.

2. ADMINISTRATIVE RULES.

a. The only authorized night hunting in the state of Alabama is Raccoon and Opossum. Raccoon and Opossum may be hunted during daytime or nighttime hours. Legal hours for hunting raccoons and opossum are defined as 30 minutes before sunrise until 30 minutes after sunset. Effective for 2017, Raccoon and Opossum has no closed season.

b. Hunting raccoons with dogs is authorized, IAW Alabama state laws and regulations, No running of dogs during daytime or after 3:00 a.m. during and in areas of spring turkey season. See. **Paragraph 3-8 HUNTING WITH DOGS** for additional mandates and restrictions.

c. For 2017, there are no bag limits for opossums hunted on Fort Rucker. Raccoon bag limits are 5 Per Party.

3. CLEARANCE TO ENTER ZONES / TRAINING AREA.

a. It is mandatory that all hunters call Range Operations Training Division's Automated Briefing System (briefing tape) at 334-255-4086 to obtain information regarding TA status. After confirming TA status, hunters must sign-in via <https://fortrucker.isportsman.net>.

b. Night hunters are permitted to hunt the following TAs:

(1) "North of Highway 27" (TAs 1-11).

(2) "West of Highway 85" (TAs 12-31) **No firearms in 19E.**

(3) "East of Highway 85" (TAs 32-41).

c. Night hunters can only sign into and hunt in one zone at a time. Hunters will select an open TA. The selected TA assignment shall be binding. Hunters are allowed to change TAs by logging in to <https://fortrucker.isportsman.net> to change their TA.

4. FIREARMS AND AMMUNITION. Legal arms and ammunition for hunting on Fort Rucker is IAW the State hunting regulations. **Daytime hunting** are only authorized rifles using rimfire ammunition or those operated by air; muzzleloaders and black powder handguns; long bows, compound bows, or crossbows; shotguns 10 gauge or smaller, using standard No. 4 shot or smaller;

handguns or pistols. **Nighttime hunting** is only permitted with shotguns using No. 6 shot or smaller; .22 caliber rimfire rifles. The identified firearms and ammunition are authorized in TAs 1 – 21, TAs 29 – 32, and TAs 40 – 41. There are no firearms permitted in TA 19E.

5. **CLEARANCE OF FIRES.**

- a. Hunters will ensure the area behind the target is cleared.
- b. No discharge of firearms within 50 yards of paved roads, gravel roads or maintained roads. No discharge of firearms within 200 yards of airstrips, recreational areas (to include trails), fishing areas, lakes, or buildings – to include stables and housing areas.
- c. Weapons and bows will not be fired in the direction of roads, airstrips, recreational areas, or buildings.
- d. Indiscriminate shooting is not allowed within the confines of the Fort Rucker military installation.

6. **NIGHT HUNTING MANDATES AND RESTRICTIONS.**

- a. Raccoon nor opossum hunting are not permitted in lettered (bow) areas to include TAs A1, A2, B, C, D, E, F, G, H, I, and 19E.
- b. Dog are not allowed in the recreational areas at Buckhorn Lake, Ech Lake, and Parours Lake.
- c. Night lights will be use IAW Alabama State laws and regulations.
- d. Hunters wounding game will make every effort to track down the game. They will notify the GLE officers (334-255-4735/4213) of lost game. Tracking wounded game into the impact area is prohibited.
- e. Hunters must display the ODR Vehicle Registration Card in plain view on the dashboard of the driver's side of their vehicle. The ODR registration card must be filled out legibly and in its entirety.
- f. Hunting from a motor vehicle is prohibited.

g. Motor vehicles will not traverse cross-country through wildlife openings (food plots), through utility line rights-of-way, or around locked gates and cables.

Appendix A
REGULATORY VIOLATIONS AND PENALTIES.

	VIOLATION	OFFENSES	
		1ST	2ND
1	Failure to properly log into hunting area utilizing iSportsman. Failure to depart hunting area after legal hunting hours.*	7 Day	30 Day
2	Failure to properly display ODR Registration Card or NR Vehicle Identification Card	30 Day	180 Day
3	Hunting without prescribed hunter orange vest/ jacket or headgear.	30 Day	180 Day
4	Traversing through planted wildlife openings (food plots) with a motor vehicle.	30 Day	180 Day
5	Dismounting dogs to hugs to hunt prior to parking transporting vehicle.	30 Day	180 Day
6	Hunting with a dog without proof of a current rabies vaccination.	30 Day	180 Day
7	Using noise-producing devices to drive game i.e., fireworks, blank pistols, indiscriminate shooting, etc..	30 Day	180 Day
8	Failure to have covered quiver for broad heads while bow hunting.	30 Day	180 Day
9	Parking a vehicle on Artillery Road while hunting.	30 Day	180 Day
10	Hunting or trapping within 200 yards of the ASP, airstrips, recreational areas, or buildings.	30 Day	180 Day
11	Use and/ or possession on person of unauthorized ammunition.	30 Day	180 Day
12	Use of ammunition other than .22- caliber or smaller rimfire firearm or shotgun (specified by state regulations) using number 6 shot or smaller size shot for hunting raccoon/opossum at night.	30 Day	180 Day
13	Bow hunting in an open gun area during firearm season without Hunter Orange vest/headgear.	30 Day	180 Day
14	Hunting with firearms in bow only areas, such as 19E.	30 Day	180 Day
15	Indiscriminate shooting or target practice while gun or bow hunting.	30 Day	180 Day
16	Shooting before or after the legal shooting hours specified in state regulations.	30 Day	180 Day
17	Training hunting dogs in an unauthorized area.	30 Day	180 Day
18	Riding of horses in an unauthorized areas.	30 Day	180 Day
19	Failure to register a weapon on Fort Rucker.	30 Day	180 Day
20	Child in a boat under eight (8) years of age not wearing a Personal Flotation Device (PFD)	30 Day	180 Day

Appendix A
REGULATORY VIOLATIONS AND PENALTIES.

21	Improper safety equipment.	30 Day	180 Day
22	Improper and/ or expired watercraft registrations.	30 Day	180 Day
23	Reckless and/ or improper operation of watercraft.	30 Day	180 Day
24	Riding of horses without vest or jacket.	30 Day	180 Day
25	Unauthorized entry into a "Closed" Training Area.	30 Day	180 Day
26	Depredation trappers not wearing designated Yellow Identification Vest.	30 Day	180 Day
27	Discharge of weapon vicinity training unit in a "Closed Area" without authorization.	60 Day	1 Year
28	Use of ammunition other than .22- caliber or smaller rimfire firearm or shotgun (specified by state regulations) ammunition to dispatch a trapped animal.	60 Day	180 Day
29	Using horses in conjunction with hunting.	1 Year	Revoke
30	Tampering with or removal/ destruction of and barricade or gate.	1 Year	Revoke
31	Use of alcoholic beverages and/ or narcotics while hunting (including traveling to and from assigned area).	1 Year	Revoke
32	Spotlighting or hunting with an artificial light at night (except as provided in state regulations).	1 Year	Revoke
33	Operating an ATV, to include motor- driven cycles, in an hunting area, except to be operated by an approved hunter who is Individual with Disabilities (IWD)	1 Year	Revoke
34	Possession of illegally shot game.	1 Year	Revoke
35	Hunting, fishing, or trapping in Closed or un-assigned TA.	1 Year	Revoke
36	Hunting, fishing, or trapping without an installation permit or state license.	1 Year	Revoke
37	Hunting with unauthorized or improper firearms.	1 Year	Revoke
38	Possession of illegal bag or creel limit.	1 Year	Revoke
39	Failure to report all harvested game.	1 Year	Revoke
40	Fishing (including frog gigging) by unauthorized methods.	1 Year	Revoke
41	Use of unauthorized trapping equipment and devices.	1 Year	Revoke
42	Transporting a loaded and/ or uncased firearm in vehicle.	1 Year	Revoke
43	Discourteous or disrespectful conduct toward Fort Rucker employees.	1 Year	Revoke
44	Any boating regulations.	1 Year	Revoke
45	Riding of horses without prescribed hunter orange vest/ jacket or headgear.	1 Year	Revoke
46	Free riding throughout training areas.	1 Year	Revoke

Appendix A
REGULATORY VIOLATIONS AND PENALTIES.

47	Violations not covered above.	1 Year	Revoke
48	Unauthorized Night Hunting.	Revok e	
49	Hunting, fishing, or trapping in restricted areas (Impact Area, including section of Training Area 7 and 11) without authorization.	Revok e	
50	Shooting from a vehicle (not including IWD).	Revok e	
51	Taking of game from a baited area.	Revok e	
52	Permitting another to use state hunting/ fishing/ trapping licenses and post permits.	Revok e	
53	Any use of firearm in 19E.	Revok e	
	LEGEND: * Third Offense is One Year Suspense		

Appendix B

COYOTE/HOG DEPREDAATION TRAPPING IN OCCUPIED TRAINING AREAS.

1. PURPOSE.

- a.** To establish policies to be followed by all units and personnel in support of depredation trapping of invasive feral hogs and coyotes within training areas occupied by military training units on Fort Rucker.
- b.** To ensure that all units and personnel concerned with operations and training at Fort Rucker are thoroughly familiar with safety and utilization requirements.

2. APPLICABILITY. Unless directed otherwise, this policy applies to all units and personnel conducting training or depredation trapping in occupied training areas at Fort Rucker.

3. RESPONSIBILITIES.

- a.** The Chief, Training Division, under the direction of the DPTMS, will –

- (1)** Manage ranges, TAs, and other training facilities in a safe and effective manner.

- (2)** Assist the OIC of units to ensure the efficient operation and use of TAs, to include inspections and/or supervision of training to ensure compliance with this policy.

- (3)** Provide for the safety of personnel conducting operations within the training complex, to include ceasing operations or revoking privileges of individuals operating outside of compliance criteria.

- b.** The DPTMS, Training Division Range Operations will –

- (1)** Make on-the-spot correction of any violation of this policy or other applicable publications and report violations to DPTMS.

- (2)** Provide TA information to all active duty, reserve, and national guard units; the Environmental and Natural Resources Division, DPW; the Natural Resources Branch, DPW, and all others requiring entry into TAs.

(3) Coordinate with EOD personnel for the necessary clearing of any reported UXO identified during depredation trapping or training activities.

(4) Provide safety briefings to the OIC of using units and Natural Resources personnel. The Unit OIC briefing will include, but not limited to, locations of Coyote/Hog traps in their TAs, associated hazards, times to check traps/dispatch animals, trap identification, trapper identification (e.g. yellow vest, ID card in vehicle, etc.), and to leave traps alone. Failure to follow these instructions may result in administrative disciplinary actions.

(5) Publish a list daily of areas scheduled for use by military units or maintenance and sustainment activities.

(6) Immediately notify the installation Command Group and the GSO of any incident involving injury, death, or property damage within the training complex.

(7) Immediately notify GSO of all incidents that involve violations of this regulation.

(8) Assist using units in developing DRAWs as necessary and inform using units of any risks associated with depredation-trapping activities within occupied TAs.

(9) Notify using units of animal dispatch activities prior to depredation-trapping personnel entering occupied training area for the purpose of checking traps or dispatching animals. Provide notification to unit personnel of the anticipated times to check traps, dispatch time, when dispatch activities have been completed, and when depredation-trapping personnel have departed.

(10) Maintain a copy of the current depredation-trapping DRAW and staff for semi-annual update or changes as required.

c. Commanders of using units will –

(1) Ensure compliance with procedures and guidance outlined in training facility SOPs, unit SOPs, depredation-trapping DRAW, and this regulation for the safe training within the command.

(2) Incorporate internal depredation-trapping mitigation measures, avoidance, and reporting criteria within unit DRAW.

(3) Designate in writing a qualified OIC to be responsible for the safe conduct of training and the proper use of facilities. Personnel selected will be:

(a) Competent and properly instructed in the performance of their duties.

(b) Knowledgeable in the hazards and mitigation strategies associated with each specific training event they are conducting.

(c) Provide adequate communications (FM/VHF) and ensure that constant monitoring and hourly communications checks are maintained with Range Operations during training.

d. The Unit OIC will –

(1) Be certified in writing and knowledgeable of hazards, DRAW, and requirements associated with the training event and or facilities.

(2) Be present at all times during the training event.

(3) Receive a TA briefing from Range Operations upon signing for the location.

(4) Sign for all Range Operations equipment necessary to operate the training facility.

(5) Ensure that communications are established and maintained with Range Operations, and strictly adhered to all communications requirements.

(6) Review Natural Resources map and grid location spreadsheet of the Coyote/Hog Traps provided at time of signing for TA and be familiar with all trap locations within the TA to include current status of either active or inactive.

(7) Ensure that all safety measures are taken, including but not limited to the following:

(a) Ensure all Soldiers are briefed on trap locations and avoidance or reporting procedures.

(b) Ensure a copy of the unit DRAW, map of trap location and status, depredation-trapping DRAW and spreadsheet containing grid locations for traps are on hand at all times.

(c) Ensure Soldiers are familiar with medical requirements to include awareness of established medical evacuation points contained within Appendix B.

(d) Report any trapped hogs to Range Operations upon discovery, to include trap number and eight (8) digit grid location.

(e) Report any UXO or suspected UXO IAW procedures contained within paragraph 1-3h.

(f) If required, provide depredation-trapper personnel an escort to dispatch trapped hogs in TA 15 and 38 during SERE operations.

e. The Garrison Safety Office will –

(1) Conduct review and/or make recommendations for safety requirements contained within this appendix and the depredation-trapping DRAW.

(2) Assist with investigations regarding safety incidents associated with depredation-trapping activities conducted within occupied training areas.

(3) Review required documentation and conduct inspections to assist with compliance of all applicable policies, guidelines, or regulations.

f. The DPW Environmental Division, Natural Resource Branch will –

(1) Publish current map of active, inactive, and unserviceable trap locations. In addition, as changes occur updates will be sent via email to the same distribution chain as the daily range and training area utilization/confirmation schedule.

(2) Provide and update spreadsheet to Range Operations containing eight (8) digit grid locations of trap locations.

(3) Ensure traps utilizing wireless cameras (Jager Pro) are not placed within TA 38.

(4) Ensure Hog traps are placed at locations other than known specified training sites (e.g. BIVOUAC, bleacher areas, courses, buildings, etc.) and no closer than 50 yards from paved roads.

(5) De-conflict internal operations such as timber harvest, spraying, marking, cruising, or other natural resource activities co-located within training areas not occupied by training units.

(6) Ensure depredation trappers are briefed they must contact Range Operations and receive approval prior to entering any occupied training area for the purpose of checking/maintaining traps and/or dispatching operations.

(7) Ensure Coyote/Hog depredation-trapping personnel/vehicles are clearly marked (e.g. yellow vests labeled TRAPPER, magnetic signs, etc.) and is clearly articulated in depredation-trapping program.

(8) Ensure depredation trappers are briefed they must maintain communications with Range Operations throughout animal dispatching activities and at all times while within occupied training areas.

(9) Ensure depredation trappers are provided with specific guidelines and procedures for using firearms to dispatch animals while within occupied training areas.

(10) Ensure all traps placed within training areas are properly identified with a four (4) x four inch sign containing numeric identification.

(11) Cease operations and notify Range Operations immediately upon discovery of UXO or suspected UXO.

(12) Ensure depredation trappers are briefed all weapons will remain on safe and unloaded prior to animal dispatch. Upon conducting animal dispatch, the weapon will be loaded and aimed in a manner to prevent rounds from departing the immediate area and placing personnel or infrastructure at risk (no free shooting of trapped or un-trapped animals). All weapons will be properly cleared and placed on safe immediately following animal dispatch.

(13) Ensure compliance of all mitigation and safety measures contained within this regulation, Fort Rucker Reg 385-1, internal DPW Trapping SOP and depredation-trapping DRAW at all times while conducting depredation trapping or dispatching operations within occupied training areas.

(14) Identify scheduled times for checking traps and possible dispatch procedures in depredation-trapping plan. Scheduled times will be no more than twice daily, 0500-0800 and 1500-1800.