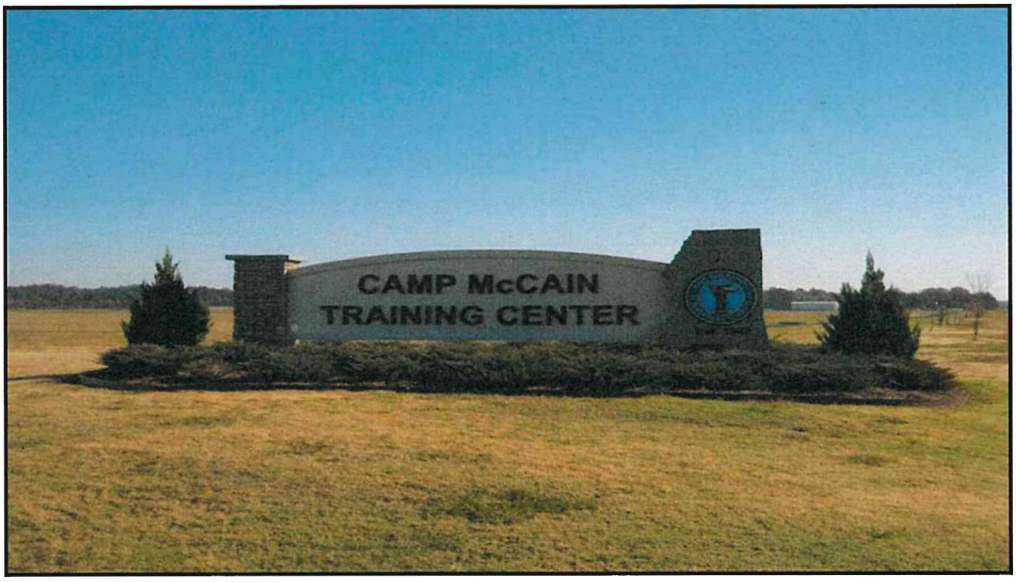
2019

INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

MISSISSIPPI ARMY NATIONAL GUARD
CAMP MCCAIN TRAINING CENTER



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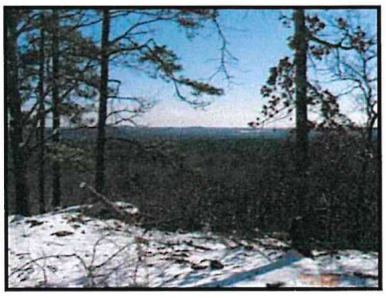

EXECUTIVE SUMMARY

The purpose of this Integrated Natural Resources Management Plan (INRMP) is to update, review, and implement plans for the natural resource programs at Camp McCain Training Center (CMTC) that is consistent with military training and uses. The plan includes CMTC operations from 2018 through 2023 and provides a solid foundation on which to build the program beyond the year 2023.

The plan ensures the MSARNG achieves its goals to ensure the sustainability of desired military training areas and maintenance of ecosystem viability. This INRMP will allow CMTC to achieve its goals to ensure the sustainability of desired military training area conditions and maintain ecosystem viability. In addition, this INRMP will ensure that natural resources conservation measures and Army activities on MSARNG lands are integrated and are consistent with federal stewardship requirements.

The original INRMP established plans to manage natural resources on CMTC training sites from 2001 through 2006. The revised INRMP provides assessments and revisions of management plans and goals established by the original documents.

This INRMP has been prepared pursuant to the Sikes Act Improvement Act (SAIA), 21 Mar 97 US Army policy entitled *Army Goals and Implementing Guidance for Natural Resources Planning Level Surveys (PLS) and Integrated Natural Resources Management Plan (INRMP) ("Army INRMP Policy")',* Army Regulation (AR) 200-1, *Environmental Protection and Enhancement',* 32 Code of Federal Regulations (CFR) 651; Defense (DoD) Directive 4700.1, *Natural Resources Management Programs',* and Department of Defense Instruction (DoDI) 4715.3, *Environmental Conservation Program',* and National Guard Bureau (NGB) policy. Updated guidance regarding INRMP reviews was issued 01 November 2004 by the DoD. DoD policy emphasizes that INRMP review is intended to determine whether existing INRMPs are being implemented to meet the requirements of the SAIA and contribute to the conservation and rehabilitation of natural resources on military installations. DoD policy also requires installations to review INRMPs annually in cooperation with the other cooperative parties to the INRMP (USFWS and State Fish and Wildlife Agency). As required by the SAIA, this INRMP has been developed in cooperation with the United States Fish and Wildlife Service (USFWS) and the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) no less frequently than every five (5) years; all cooperative parties (MSARNG, NGB, USFWS, and MDWFP) must complete a review.

Currently, the following natural resources programs are being implemented at CMTC:

- Forest and Fire Management;
- Fish and Wildlife Management;
- Land and Water Management (including Storm Water and Water Quality Control; Floodplain and Riparian Zone Management; Wetland and Aquatic Habitat Management; Invasive and Exotic Species and Noxious Weeds; Integrated Pest Management; Threatened and Endangered Species; and Urban Forestry; and Erosion Control and Soil Conservation);
- Outdoor Recreation and Public Access;
- Land Use, Land Planning, and Natural Resources Management.

SIGNATURE PAGE

Integrated Natural Resources Management Plan
Camp McCain Training Center
Grenada and Montgomery Counties, Mississippi

November 2018

This updated Integrated Natural Resources Management Plan (INRMP), with National Environmental Policy Act review (Record of Environmental Consideration) meets the requirements for INRMPs as specified in the Sikes Act Improvement Act (SAIA) (16 USC §670a *et seq.).* It has set appropriate and adequate guidelines for conserving and protecting the natural resources of the Camp McCain Training Center.

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1.0 CAMP MCCAIN

1.1 Historic Overview

In the early 1940s, the War Department acquired 42,073 acres for the Army to establish a Triangular Division Camp. Once the camp was established, the name was changed from the Provisional Grenada Triangular Division Camp to Camp McCain in honor of Major General Henry P. McCain from neighboring Carroll County, Mississippi. In December 1944, Camp McCain was designated an inactive installation. On 25 January 1946, the Army reported the 42,073 acres in fee surplus to the War Assets Administration. On 3 December 1946, 3005.69 acres were withdrawn from surplus and licensed to the State of Mississippi for year-round use in support of the National Guard. On 12 August 1986, an additional 4,600 adjoining acres were added to the Camp McCain property, increasing the tactical training area. In 1987 and 1988, eight modern small arms ranges were constructed. In 1994 and 1995, Mobile District U.S. Army Corps of Engineers acquired approximately 5,800 more acres for Camp McCain. All of the newly acquired land falls within the original borders of the installation dating back to the 1940s. Through this expansion, Camp McCain has grown to its current size of approximately 13,027 acres.

1.2 Location and Size

Camp McCain is located in the north central area of Mississippi approximately 95 miles south of the Memphis Tennessee metropolitan area and 100 miles north of the Jackson Mississippi metropolitan area. Camp McCain lies almost entirely (with the exception of 8 acres in Montgomery County) within Grenada County. The largest city within 30 miles is Grenada with a population of 13, 092 (2010 U.S. Census). Camp McCain lies entirely within the 2nd congressional district. Camp McCain is approximately 13,027 acres.

1.2.1 Highway Access

Several state and federal highways are in the proximity to Camp McCain. U.S. Highway 51 lies 3 miles to the west, MS Highway 8 lies 5 miles to the north and Interstate 55 lies 6 miles to the west.

1.2.2 Railroad Access

Camp McCain owns a 35 acre tract adjacent to the Grenada Railroad, a 206 mile section of the Iowa Pacific Holding Company that runs from Memphis TN to Jackson MS. The rail access is approximately 3 miles to the west of the cantonment area.

1.2.3 Air Access

A military rotary wing facility is located within Camp McCain with 6 landing zones (LZ) scattered throughout the installation. Grenada Municipal Airport is located 10 miles to the north in Grenada.

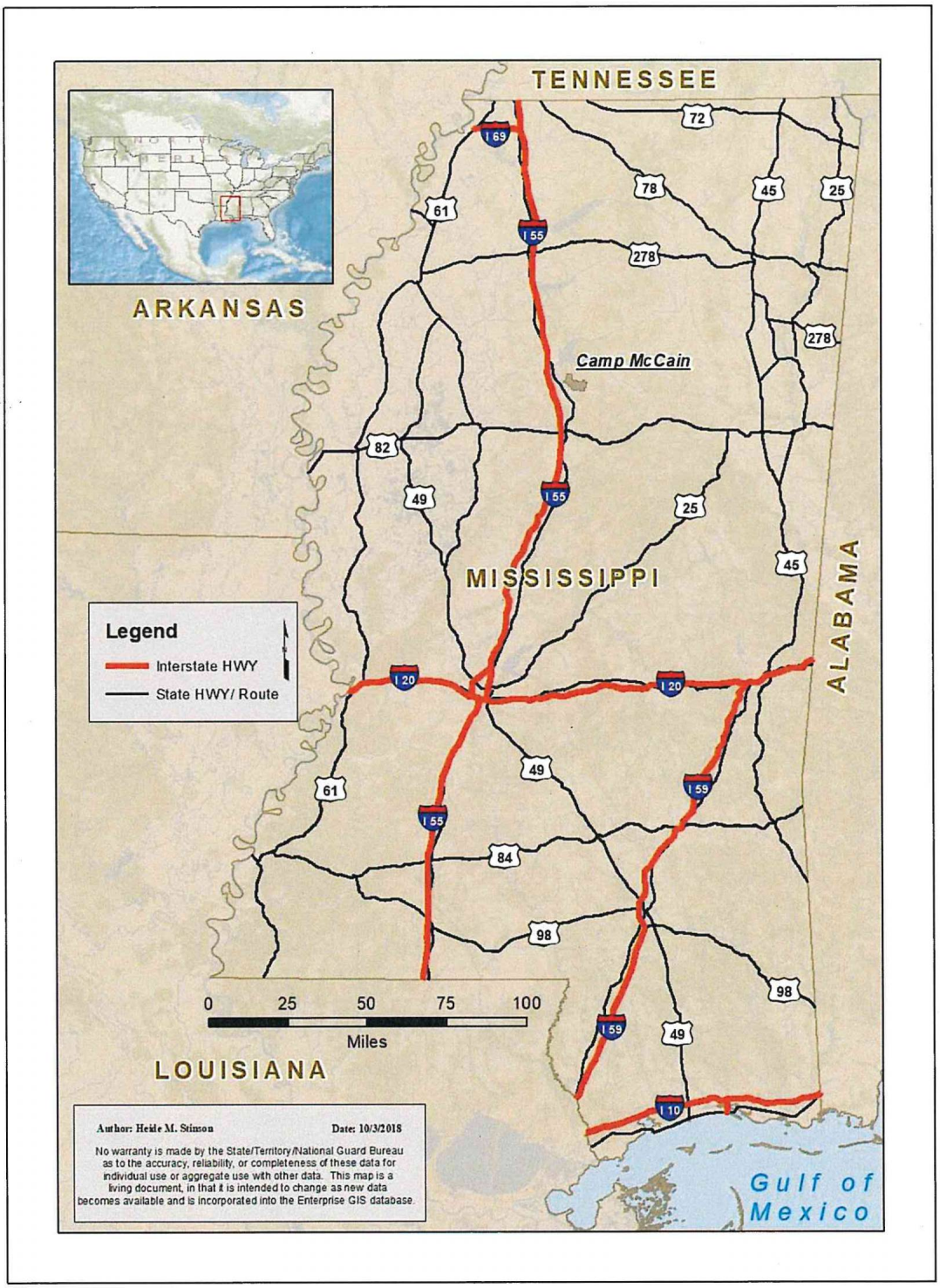

Figure 1. Camp McCain Vicinity Map

1.3 Military Mission

The Mission of Camp McCain is: (1) to command, operate, manage, and administer the use of resources of a Maneuver Training Center - Light Level III (MTC-111) in order to provide realistic training support simultaneously to three battalions conducting Individual Duty Training (IDT), Annual Training (AT), and on order to become a logistical base for DSCA missions; (2) provide customer service through administrative, engineering, logistical, training and operations support to assigned, attached, transient, or tenant units and joint forces activities for up to, and including, multiple Battalion sized elements; and (3) to become authorized for designation as a MTC-L III capable of supporting three Battalion sized elements concurrently. The Camp McCain Training Mission is to provide year-round operations that efficiently and effectively manage all facilities and resources of the collective training center to support all assigned missions. Camp McCain is designated as a Maneuver Training Center Light (MTC-L). The training area encompasses over 13,000 acres and the post can accommodate over 1,200 military personnel for training in small arms firing, and non-firing tactical maneuver areas for Armor, Armored Cavalry, Infantry, Mechanized Infantry, Artillery, Engineer, Medical, Aviation, and other troop units. Camp McCain has several large drop zones which regularly support regional Special Forces training as well as the Nat Troutt Range Complex provides ranges for all small arms weapon systems below .50 caliber.

1.4 The Relationship between the Military Mission and Natural Resources:

Ongoing military operations performed in support of the mission at Camp McCain alter the affected environment and condition of the natural resources. For example, construction of force protection berms, ditches, foxholes, and roads result in vegetation loss and inversion, compaction, and erosion of the soils. Although short-term changes in the affected environment may still provide for relatively realistic training opportunities, the absence of long-term management measures to properly conserve and restore natural resources could impede Camp McCain‘s ability to continue to adequately train soldiers. It is the goal of this plan to ensure the preservation of the capability of Camp McCain’s lands to support the military mission of the facility. In addition to the impacts mentioned above, environmental damage can also place other artificial constraints on training, such as the following:

- Loss of training acreage
- Decreased tactical maneuverability
- Increased land and natural resource maintenance costs
- Increased safety hazards

The trainers and soldiers who use Camp McCain are aware of the environmental effects of training and recognize that their actions in the field directly affect the long-term sustainability of the training lands and their ability to continue training. Training the leaders and soldiers to understand their environmental stewardship responsibilities can help to prevent environmental degradation during training activities. Implementing appropriate management measures, as well as considering alternatives to these measures as they are developed, limits the potential for serious alteration to the natural resources that are critical to providing a realistic training environment. In addition, such measures likely result in a more effective long-term approach to natural resource protection and conservation. The proper management of natural resources and

their use by the military is not only a sound environmental practice, but it directly supports Camp McCain's mission to provide a realistic training environment.

1.5 Description of Training Site

1.5.1 Cantonment Area

Camp McCain's 350 acre cantonment area contains the administrative and logistical buildings, troop housing, utilities and other support facilities for the training site. The cantonment area utilities have all been upgraded within the past 10 years to accommodate higher demand and ensure compliance with environmental regulations. The utilities include electrical power distribution, heating facilities, drinking water system, natural gas system, wastewater treatment facility, storm water management system, and communication system. Logistical support services are provided as part of the cantonment area operational activities. Support facilities include warehouses and buildings that store supplies such as ammunition, food, petroleum, and training equipment. The support facilities also include headquarters buildings, troop housing, museum, post exchange, and Camp McCain Headquarters buildings. The Training Site Unit personnel assigned to Camp McCain are essential to the operation and maintenance of these support facilities.

The cantonment area also includes several tenant facilities in support of Camp McCain: State Director of Logistics (DOL), Combined Support Maintenance Shop (CSMS), Unit Training Equipment Site (UTES), and military units assigned to Camp McCain.

1.5.2 Training Areas

Camp McCain is divided into 23 areas called training area/natural resource management areas. Control and scheduling for all uses at Camp McCain is accomplished using the Range Facility Management Support System (RFMSS). RFMSS is a computerized scheduling system used to schedule training areas, facilities and ranges.

The scheduling and subsequent land use activities at Camp McCain will be monitored for each individual training area. Additionally, implementation of this INRMP will be monitored for each training area to ensure compatibility of the training mission with sound natural resource management practices. Each training area has a designated training area number.

Table 1. Camp McCain Range Descriptions

	Range Descriptions
Range 1	Grenade Launcher (M-203) training rounds only
Range 2	M16/M4 Record Fire (5.56 mm)
Range 2A	M16/M4 Zero Range (5.56 mm)
Range 2B	M16/M4 Record Fire (5.56 mm)
Range 3	Pistol range (9mm, .45 cal, and .38 cal)
Range 3 A	Pistol range (9mm, .45 cal, and .38 cal)
Range 4	Multi-use small arms range (7.62 mm and below)
Range 5	M60 Machine gun transition range (7.62 mm and below)

Range 13	Light demolition range
CPC	Crew Proficiency Course
Sniper course	Light sniper field fire

2.0 Land Use

2.1 Philosophy of Land Use

Ongoing military operations performed in support of the mission at Camp McCain alter the affected environment and condition of the natural resources. For example, construction of force protection berms, ditches, foxholes, and roads result in vegetation loss and inversion, compaction, and erosion of the soils. Although short-term changes in the affected environment may still provide for relatively realistic training opportunities, the absence of long-term management measures to properly conserve and restore natural resources could impede Camp McCain's ability to continue to adequately train soldiers. It is the goal of this plan to ensure the preservation of the capability of Camp McCain's lands to support the military mission of the facility. In addition to the impacts mentioned above, environmental damage can also place other artificial constraints on training, such as the following:

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2.2 Existing and Proposed Land Use

The area bordering Camp McCain consists of farmlands, residential areas, managed and natural forest lands, streams, and pastured areas. Grenada County has a total area of 449 square miles and the 2010 population was 21,906 (U.S. Census Data 2010). Camp McCain's 350 acre cantonment area contains the administrative and logistical buildings, troop housing, utilities and other support facilities for the training site.

2.2.1 The Planning Goals and Objectives of Camp McCain

Obtain the necessary authorizations to meet the standards of a MTC-L III National Guard Training Center and provide up to date training facilities, while simultaneously expanding the capabilities to train more than a Battalion sized unit concurrently. The individual goals needed to meet the required Goals and Objectives are:

1. Enlarge Battalion Headquarters and Supply Buildings

2. Add new Battalion barracks
3. Construction of a Company Mess Hall (DFAC)
4. Add new Company Headquarters and Supply building, 1 per company
5. Renovate existing BAM buildings
6. Relocate and construct new PX, Laundry and Post
7. Integrate required force protection measures into cantonment.
7.1 Create an entry control point for traffic control.
7.2 Force in the cantonment area.
7.3 Move all facilities to east side of James H. Biddy Road.
8. Provide billeting assets capable of housing three battalions.
9. Provide training capabilities to three battalions simultaneously.
10. Develop a flexible regional training installation.
11. Provide excellent MWR facilities.
12. Provide a military sense of place.
13. Integrate cantonment area districts, zones and themes into a more cohesive installation with a clear vision for facility standardization building and landscape standards to tie district together and improve wayfinding. In the course of redefining the cantonment area, apply substantial strategies to reduce infrastructure and to create a more compact enhanced walkable environment with a sense of place.
14. Reinforce the function and heritage of the installation through infrastructure improvements, restoration of historic facilities and to program to meet under-served and unavailable training requirements.

The scope of the INRMP focuses on land management related to the natural resources of the training area; therefore, issues relating to the management of the cantonment area and facilities are not addressed in this document. Training area land management includes military use of training areas, including access (e.g., combat trails) and mission activities; protection and management of listed threatened and endangered species; agricultural outleasing programs; management of natural resources for wildlife; recreation programs; forestry program, which includes forest access for road maintenance.

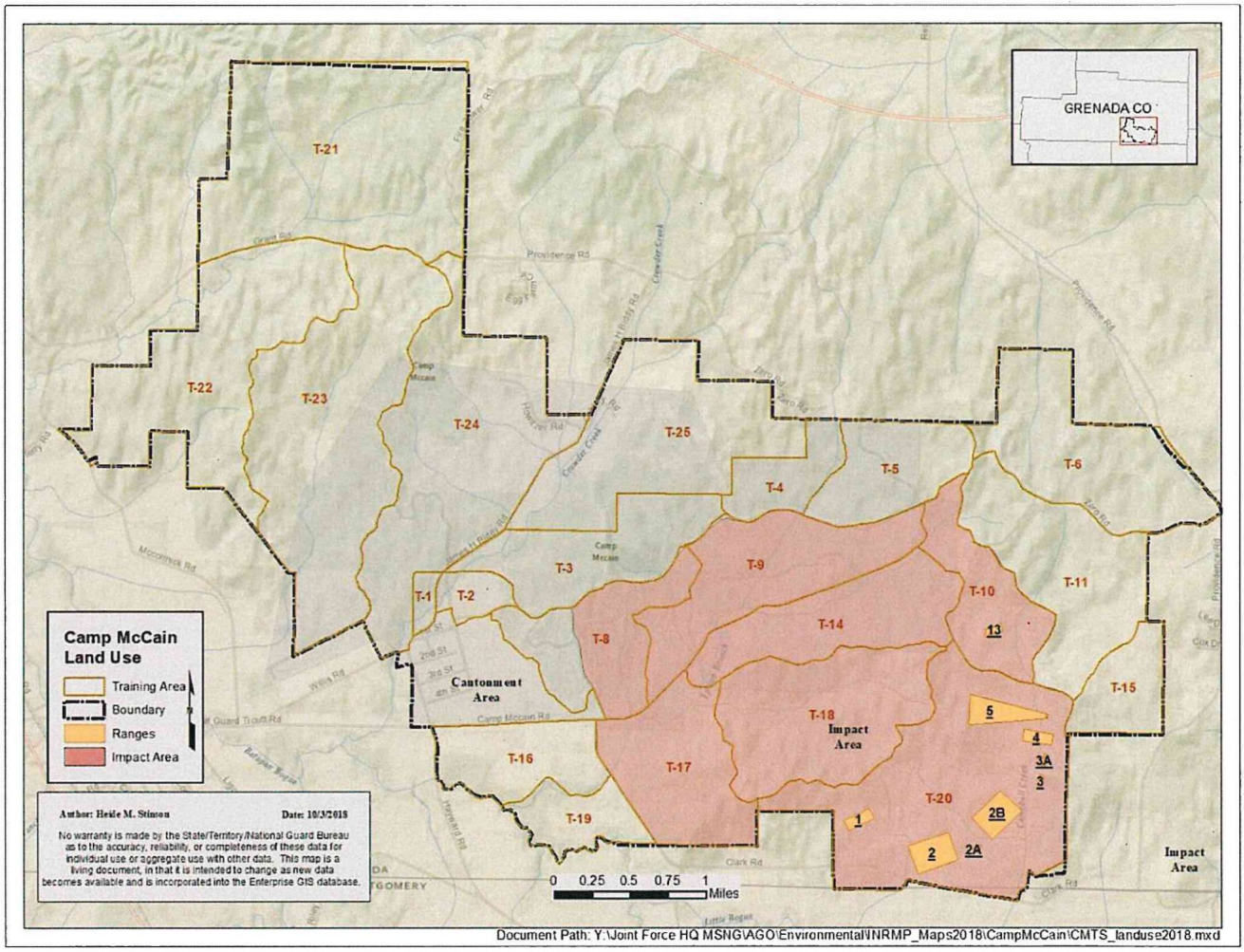

Figure 2. Land Use at Camp McCain Training Center

2.3 Ecological Setting

2.3.1 Affected Environment

Camp McCain lies within the subtropical moist forest life zone of the East Gulf Coastal Plain of the North American continent (Holdridge 1967). This zone is typified by humid and temperate climatic conditions that support climax ecosystems dominated by deciduous forests and mixed deciduous-coniferous forests (Smith 1996). Climax forests of north-central Mississippi were historically dominated by hardwoods, such as oak *(Que reus* spp.) and hickory *(Carya* spp.), and mixed hardwood-pine, such as loblolly and shortleaf pine *(Pinus taeda, P. echinata)* (Shelford 1974). General Land Office records of forest surveys conducted in Mississippi during the early 1830's reported that forests were comprised of >75% hardwoods and <25% pine in northern and central areas of the state (unpublished data, Mississippi Archives). Mixed hardwood-pine and pine-hardwood forests were most common on upland sites. On sites where forests were removed by natural events or human activity, early successional plant communities colonized. These communities were comprised of grass and grass-like species, forbs, woody vines, shrubs, and young trees during the first 10 to 15 years following forest removal. These early successional communities were eventually replaced by subclimax pine forests and climax hardwood and hardwood-pine forests over time (Smith 1996). Climax forests of alluvial floodplains of streams were dominated by arborescent oaks and hickory on upper elevations of terraces and ridges (Hodges and Switzer 1979). Low-lying areas of the floodplains, such as swamps, sloughs, and flats, were dominated species, such as willows *(Salix* spp.), alder *(Alnus* spp.), bald cypress *(Taxodium distichum)* and tupelo gum *(Nyssa aquatica)* (Hodges and Switzer 1979). Early successional communities of wetlands and riparian habitats were comprised of herbaceous grasses (Poaceae), sedges (Cyperaceae), rushes (Juncaceae), woody vines, and shrubs and small trees *(Cephalanthus, Salix, Alnus).*

2.3.2 Agricultural Outleases

Camp McCain currently has two outleases for the harvesting of hay that total approximately 741 acres.

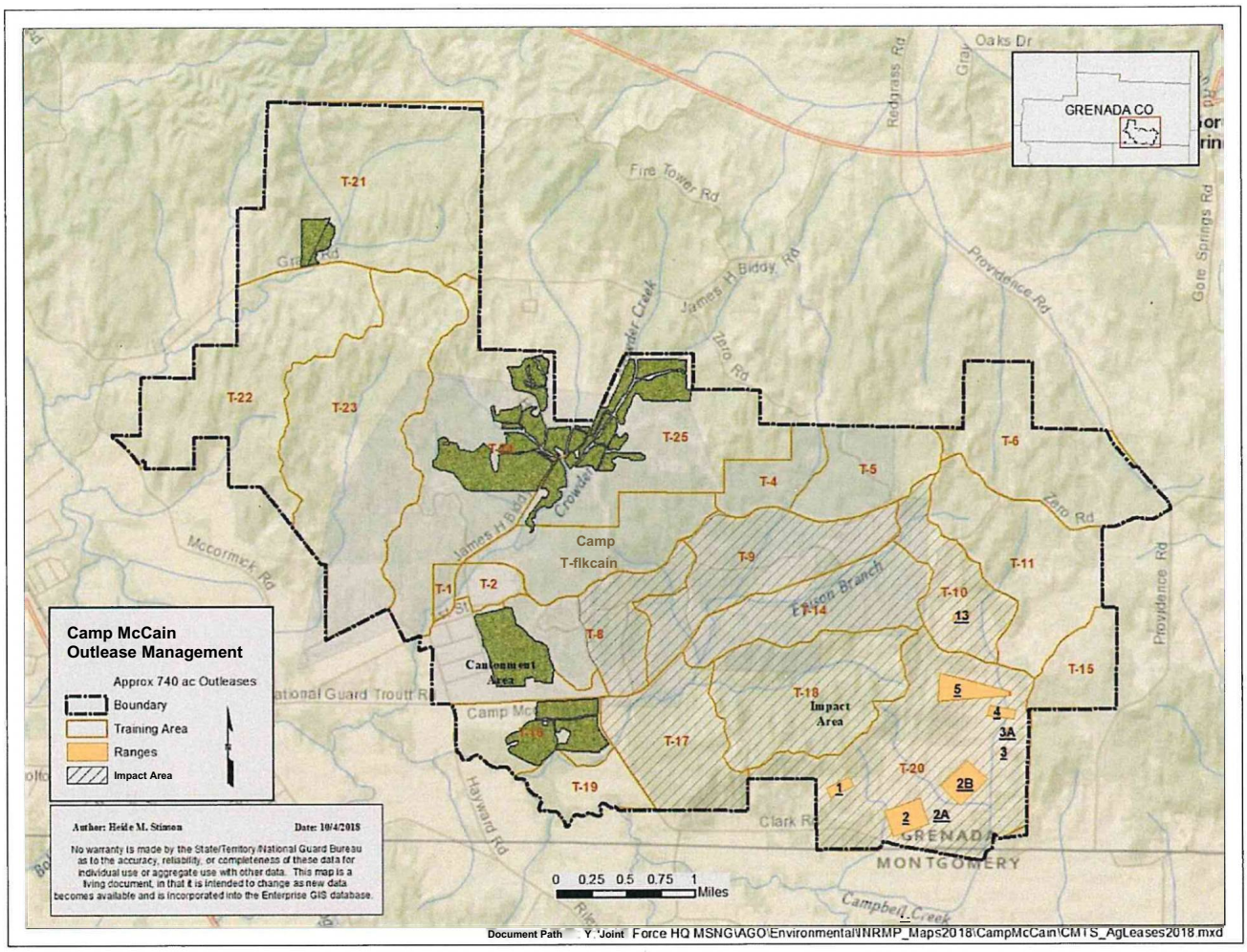

Figure 3. Camp McCain Agricultural Outlease

2.4 Public Use Management

2.4.1 Public Access

In accordance with Public Law, DoD Policy, and Army Regulation, land and water suitable for outdoor recreation will be managed to provide sustained multiple use of the resource. Public access to Camp McCain is allowed to the extent that it does not interfere with the military mission. The Cantonment Area is limited to non-consumptive use, such as wildlife watching.

2.4.2 Recreational Use on Camp McCain

When no military training is occurring, Camp McCain is opened for hunting and fishing if the respective seasons are open. To assist in the management, study, or monitoring of natural resources, federal, state and local officials and natural resource management professionals are given access to installation natural resources after proper safety and security measures are met. Additionally, selected areas and impoundments may be closed to recreational access for management purposes (i.e. population management, weed control, habitat restoration or habitat/species protection).

2.4.3 The Sikes Act Hunting or Fishing Permit

Camp McCain charges twenty ($20) dollars for a one year hunting and fishing permit. Users must access the appropriate website to purchase the permit. Prior to obtaining the Sikes Act Permit, the permittee is required to have a valid state license corresponding to the type of permit. The permit entitles the permittee to the privilege of fishing or hunting in areas open to such use for the period indicated on the permit. The permit does not constitute a guarantee of access on all days during the period for which issued. All permit holders stand at par with each other for use privileges. Access will be equitably distributed by impartial procedures, such as a first-come-first-serve basis or by drawing lots. In accordance with Title 16, U.S. Code 670b, the possession of a State Sikes Act permit will not relieve the permittee of the requirements of other federal laws (i.e. Migratory Bird Treaty, Lacey Act), nor of the requirements pertaining to state laws.

2.4.4 Expenditures of Sikes Act Permit Funds

Future monies accrued from collection of Sikes Act Permit fees should be expended in support of the Fish and Wildlife Management Program on Camp McCain. Collections and disbursements will be accounted for in accordance with the following guidance: "Wildlife Conservation, Military Reservations" Army account 21X5095 (Army Reg. 37-100 and 37-108). Unobligated balances shall be accumulated with current fee collections; total amount accumulated at Camp McCain will be available for obligation as apportioned by Office of Management and Budget, NGB.

2.4.5 Safety Restrictions for All-Terrain Vehicles (ATV's)

No vehicles of any type are allowed by anyone for recreational purposes, unless approved by the Camp McCain Commander. If approved, all-terrain vehicles including 3-wheelers, 4-wheelers, dirt bikes, mountain bikes, and 4-wheel-drives are prohibited in and adjacent to sensitive habitats, protected species habitats, streams and riparian areas, and wetlands.

2.4.6 Law Enforcement

Law enforcement as it relates to natural resources is under the responsibility of the MDWFP Law Enforcement Division with assistance from Camp McCain Access Control Personnel (Security).

2.4.7 Responsibilities

On-site fish and wildlife management activities are conducted by the Natural Resources Specialist(s) under the supervision of Environmental Officer (EO). Fish and wildlife conservation and management planning is cooperatively developed and funded by the Natural Resources Program Manager at MSARNG, Jackson, Mississippi.

2.4.8 Public Use Management Goals and Objectives

Goals:

1. To provide quality outdoor recreation that is compatible with the training mission in a safe setting.
2. To address the need for management information on deer herds, populations, and availability of recreational opportunities.
3. To ensure multiple use of natural resources for outdoor recreation, fish and wildlife conservation, and protection of biological diversity.
4. Ensure the integration of natural resource.
5. Maintain and improve positive relationships with the local community.

Table 2. Public Use Management Objectives

Objective	INRMP Reference	Date Accomplished	Cost	Status
Issue public notices that are specific and address issues such as hunter safety, fishing or other outdoor recreational activities on Camp McCain	2.4.8			
Provide training sessions to those in charge of regulating hunting and fishing on Camp McCain.	2.4.8			
Encourage public involvement through different media to address military concerns or issues.	2.4.8			
Establish hunting/fishing check stations and notice boards.	2.4.8			
Build handicap accessible hunting blinds.	2.4.8			
Establish special hunts, fishing days, youth hunts, wounded warrior events, etc. to involve different groups.	2.4.8			

3.0 Environmental Overview

3.1 Climate

Camp McCain is within the North American temperate zone. The area's climate exhibits seasonal fluctuations in temperature and precipitation, but is influenced by the warm waters of the proximal Gulf of Mexico. Maximum rainfall occurs in the spring (15"), with minimum rainfall occurring in the fall (9"), resulting in an average rainfall of 54.1 inches annually. The average annual temperature is 64o F with maximum temperatures (90° - 100° F) occurring during the summer and low temperatures (20° - 35° F) occurring during winter months. Relative humidity is greater than 60% for over 65% of the year, and below 40% for only 12% of the year.

3.2 Geomorphology and Slope

3.2.1 Topography

Located in the North Central Plateau Physiographic region, the predominant topography of the area consists of narrow, winding ridgetops with very steep side slopes (12%-45%) that are cut by many drainage ways (USDA 1967). Because of steep slopes, runoff is rapid and erosion can be a severe problem. The soils were formed mainly from sediments laid down by the seas during the Pliocene epoch. After the seas receded, this material was covered by a thin layer of loess which remains on some ridges. Erosion has removed most loess deposition from side slopes.

3.2.2 Geology

The geologic formations that underlie Camp McCain extend from the Paleozoic era, which was formed until about 270 million years ago (USACE 1993). The Paleozoic formations are deeply buried, and their strata have an irregularly beveled surface that generally slopes to the southwest. Slope of the upper Paleozoic, which lies about 4,000' below the land surface, determines the dip of the overlying beds.

The Tallahatta Formation (Eocene) comprises the surface and near-surface Tertiary sediments over most of Camp McCain. Regionally, the Tallahatta Formation overlies the Wilcox Formation (Eocene) (Brown and Adams, 1943). The lithology of the Tallahatta Formation is variable and consists of localized sand, sandstone, clay, and claystone occurring as interbeds and facies. Very generally, the upper part of the formation is more clayey; whereas, the lower part is sandier. Thus stream valleys, particularly to the east, are cut into the lower, sandy part of the formation. The Quaternary deposits consist of Holocene alluvium within the principal drainages; Holocene or Pleistocene terraces lying above the flood plains of larger streams; and, upon upland surfaces, a relatively thin veneer of wind-blow silt, or loess, deposited during the Pleistocene. The stream channels at Camp McCain have been adversely affected by headcutting which originated downstream on the Yalobusha River and subsequently migrated upstream through these basins. The movement of the headcut resulted in widespread and significant channel degradation (lowering) and bank erosion (Albertson and Patrick, 1996). Channel degradation resulted in lowered water tables and accompanying bank erosion has, most likely, significantly impacted riparian vegetation, including hydrophytic vegetation, along these streams.

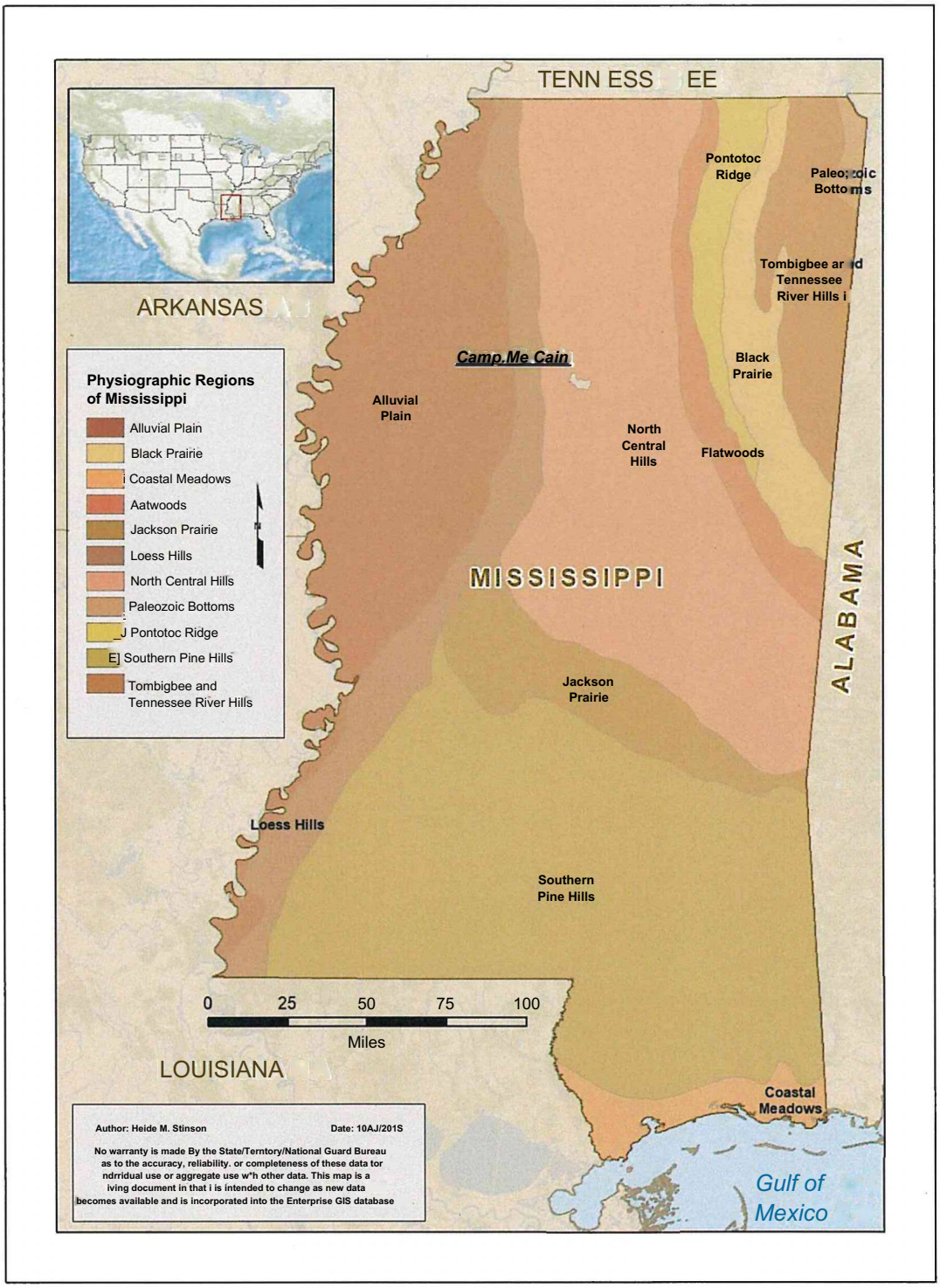

Figure 4. Physiographic Regions of Mississippi

3.2.3 Petroleum and Minerals

There are currently 3 active and 2 inactive borrow pits located on Camp McCain. The active pits provide sand and clay for projects on the installation. These borrow pits are permitted through the Mississippi Department of Environmental Quality (MDEQ).

3.2.4 Soils

Camp McCain contains three major soil associations:

Fayala-Collins-Waverly Association

Poorly drained to moderately well drained soils formed in recent alluvium from the Yalobusha and its tributaries. This series is found in the floodplains adjacent to Batupan Bogue, Little Bogue, and Campbell Creeks, and makes up approximately 3% of Camp McCain. The hazard of flooding limits the use of this association for residential and industrial development. Recreational development, except for hunting and fishing, is also limited by the flooding.

This soil association is well suited to farming, and is among the most productive in the county, making them well suited for quail, dove, and rabbit management. Most of the wooded areas are hardwoods, providing excellent habitat for deer, turkey, squirrels, and forest-dwelling songbirds and raptors, and amphibians. Plants that supply food and cover for quail, such as annual lespedezas, partridge pea, and beggarticks, are well adapted to these soils.

The naturally flooded woodlands of this association provide good habitat for turkey, deer, squirrels, waterfowl, and forest dwelling nongame birds due to the productivity of hardwood forests, habitat structure, high availability of hard and soft mast, and cavity-nesting trees.

Grenada-Calloway Association

Silty soils that have a fragipan and border flood plains of the Yalobusha and its tributaries. This association, which makes up approximately 14% of the Camp McCain, is well suited for residential and industrial development, and recreational opportunities. The cantonment area and some ranges are located on this series. This association generally supports similar species and numbers of wildlife as the Fayala-Collins-Waverly association above.

Ruston-Cuthbert-Providence Association

Sandy, silty, and clayey soils that cover the rough, hilly uplands in the central and eastern parts of Camp McCain. This series is located on approximately 83% of the Camp McCain, occupying narrow winding ridgetops and steep side slopes (12%-45%) that are cut by many short drainage ways.

The well-drained Ruston soil generally is on the very steep middle and upper parts of the slopes, the moderately well drained Cuthbert soil is on the middle and lower parts of slopes, and the well-drained Providence soil is found on narrow ridgetops where there is a thin layer of loess. A 1'-3' thick fragipan begins at a depth of about 24 inches and is underlain by sandy material. All three soils are acidic (pH of 5.1-5.5), medium to low in fertility, with medium available water capacity.

Almost all of these soils support pine and hardwood forests, with cultivated crops or pasture not being suitable uses. The slopes are steep, runoff is rapid, and erosion can be a very severe problem. These characteristics pose severe limitations as sites for residential and industrial development.

This soil association is inhabited by most animals native to upland habitats of northern Mississippi. The woodlands provide good habitat for many game and non-game species.

Detailed information on Camp McCain soils can be found in *Soil Survey of Grenada County, Mississippi* (USDA 1967). This publication contains information about engineering uses of soils, forestry, wildlife, and recreation capabilities, etc.

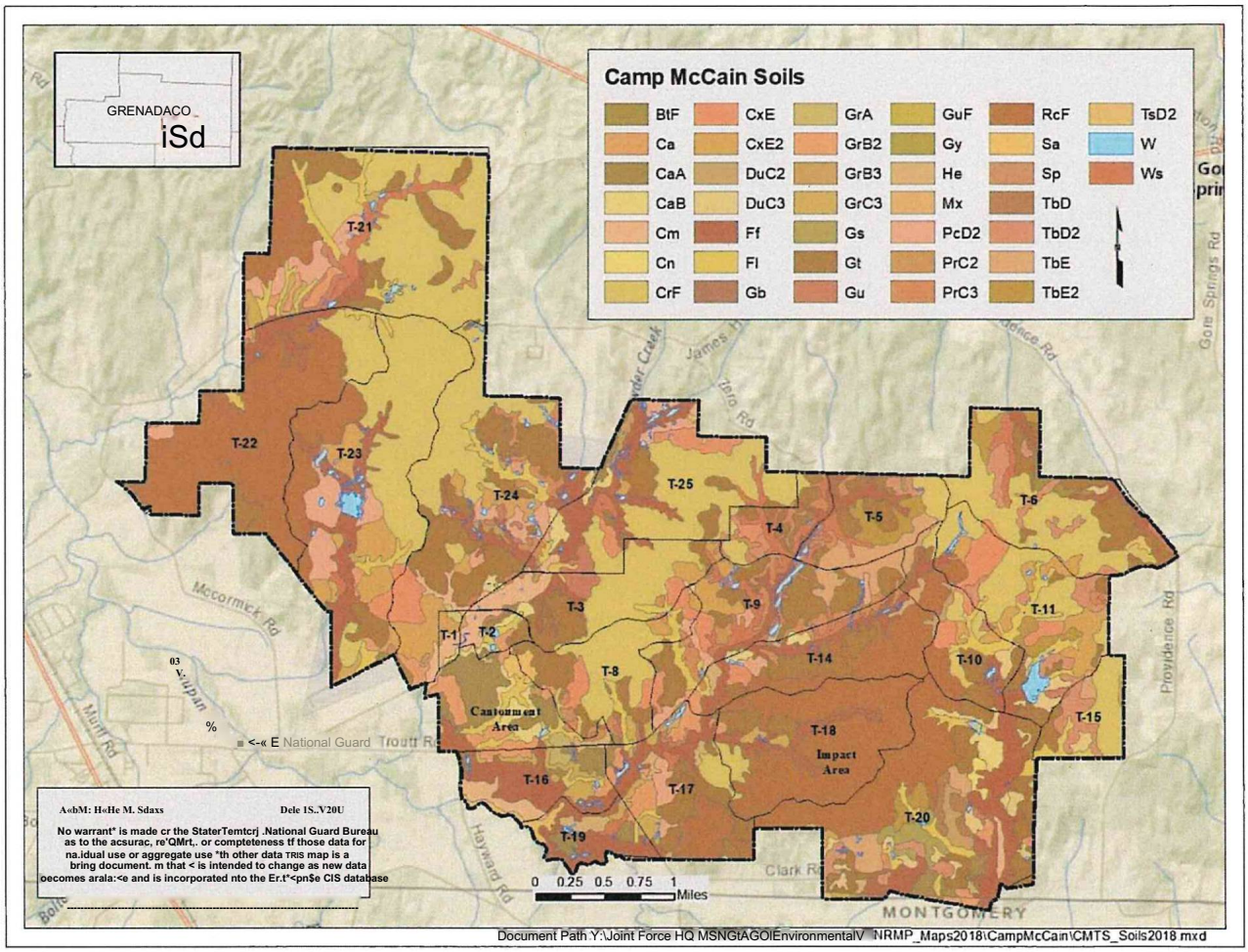

Figure 5. Soils of Camp McCain

4.0 Natural Resources

A diversity of terrestrial ecosystems occurs on Camp McCain. Forest management on these tracts is focused on supporting the military training mission and accomplishing ecosystem restoration, biological conservation of flora and fauna, and sustainable timber commodity production.

To integrate the military training mission and timber harvest, extensive surveys and monitoring of natural communities and biological diversity have been conducted.

4.1 Flora

Forest cover on Camp McCain is comprised of natural pine and mixed pine/hardwood species on upland sites, and a dominance of hardwoods along stream bottoms, lower portions of ridges, and low-lying watersheds. A total of 997 plant species have been identified on the approximate 13,000 acres of Camp McCain (Rosso and Howell 1998). This represents about 1/3 of the known plants in the >30 million acres of the entire state of Mississippi. A total 117 grass, 97 grass-like, 529 forbs, 49 vine, 40 shrub, 6 shrub/tree, and 106 tree species has been collected on Camp McCain. A complete list of Camp McCain flora can be found in Appendix D.

4.1.1 Non-Native Pest or Invasive Plants

Many non-natives plants threaten natural biocommunities through increased competition that reduces plant diversity and wildlife habitat quality. Timely control of pest plants prevents spreading to uninfested sites. Primary pest plants occurring on Camp McCain are kudzu *(Pueraria lobata),* Chinese privet *(Ligustrum sinense),* autumn olive *(Elaeagnus umbellata),* sericea lespedeza *{Lespedeza cuneata)* fescue *(Festuca arundinacea),* and Cogon *(Imperata cylindrical-* A variety of application methods can be used on non-natives and include but are not limited to the following: aerial, hack and squirt, backpack spraying, and skidder applications. Method of selection is dictated by tract size, level of inundation, terrain, and proximity to sensitive areas.

4.1.2 Forest Management

Forest management involves exercising influence over the ecological processes of a forest in an effort to provide specific sustainable products and amenities from the forest while maintaining its long-term health and vigor. The Army Forest Management Program is required to support and enhance the immediate and long-term military mission and to meet natural resource stewardship requirements set forth in federal laws (AR 200-1) and supplemented with MSARNG 200-1. Army policy further stipulates that forest resources must be managed for multiple uses, using an ecosystem management approach to optimize the benefits of the installation's natural resources. Ecosystem management provides a framework for holistic management of the resources rather than focusing emphasis on a single aspect of activity such as commercial timber production or game species management. Timber harvests will be prohibited during the months of May, June and July due to requirements for the protection of the Northern Long Eared Bat. Certain exceptions to this rule may be made on a case by case basis after consultation with USFWS for projects involving security or other special concerns.

Of the 8,989 acres contained in management units approximately 7,779 acres are currently forested. The remaining MU acreage is open fields, tank maneuver areas, etc. The forest management plan of this INRMP addresses only the approximate 7,779 acres of forested MU on Camp McCain.

Camp McCain contains relatively abundant acreage consisting exclusively of pines from which to support silvicultural operations and provide revenue. Pine-dominated MU will provide the volume for the thinning/removal operations that will occur on Camp McCain now and in the future. Management units consisting of natural pine regeneration (NPR), pine plantations, or relatively mature pines total 5,167 acres, or 66.4% of the forested MU on Camp McCain. A description of management units is contained in Appendix E.

Hardwood forests on Camp McCain are unique ecosystems, providing diversity for numerous species of fauna and flora. Upland and bottomland hardwood forests on Camp McCain support over 70 species of birds and 23 rare species of plants and animals not found in any other habiat on Camp McCain. Natural seeps that are found only in relatively mature hardwood forests support an additional 5 rare species of plant and animal species. Existing forest fragmentation threatens rare species and Neotropical migrant birds. Additional fragmentation and loss of the >50-year-old hardwood covertype further increases that threat.

Upland Sites: Naturally occurring cover types on Camp McCain ridgetops and slopes consist of varying percentages of pines and hardwoods. In some areas, species composition consists of mixed hardwoods sporadically interspersed with clumps of pines in the upper canopy. Other areas consist of pines as the dominant species, interspersed with hardwoods in the upper canopy, and hardwoods making up the understory. Microsite topography, soils, moisture, and human use determine which species dominate an area.

Natural Pine Forest (Mixed Pine/Hardwood): Natural pine forests occupy many upland, xeric or mesic sites on Camp McCain. Shortleaf pine is the dominant naturally occurring conifer on these sites, although there are also loblolly pine and eastern red cedar. The understory consists of miscellaneous hardwoods. These sites are often intermixed with upland hardwoods, such as blackjack oak, post oak, scarlet oak, southern red oak, black cherry, and sweetgum to form a mixed pine/hardwood forest. The hardwoods eventually dominate the stand, resulting in the oak/hickory climax forest of the region.

Upland Hardwoods: Upland hardwoods occur on ridgetops and the upper 1/2 of slopes in areas similar to those of the natural pine forest. Soil moisture is the major determinant of which community will dominate an area. The ridgetops and slopes with higher soil moisture usually result in miscellaneous hardwood composition, whereas the more xeric sites are dominated by pines. There are at least 9 rare plant and animal species located in upland hardwood sites on Camp McCain. Oak species found in upland sites include black, blackjack, cherrybark, post, southern red, and white. Other deciduous-leaved trees include mockemut hickory, pignut hickory, black cherry, southern magnolia, persimmon, sweetgum, and yellow poplar.

Bottomlands: Bottomlands are low areas of shallow relief bordering, or located in the floodplain of, creeks, streams, or rivers. At least 14 rare plant and animal species inhabit bottomland sites on Camp McCain. Major bottomland tree species include green ash, river birch, black cherry,

cottonwood, black gum, red maple, cherrybark oak, Nuttall oak, overcup oak, shumard oak, swamp chestnut oak, water oak, willow oak, sweetgum, sycamore, and black willow.

Timber harvests will be conducted to produce timber products and enhance wildlife habitat through selective thinning, precommercial thinning, and small group selection harvest. Small group selection harvest will be used to remove disease or insect infested trees for maintenance of forest health. Prescribed burning in forested areas will be used at Camp McCain in forest and wildlife management. Dormant season bums are those from November-February and are recommended for hazardous fuel reduction and stimulation of wildlife food plants. Growing season bums conducted from March through May and August through October are recommended for enhancement of herbaceous grasses and control of woody vegetation.

Forested streamside management zones will be maintained along streams, and protective buffers will be retained around wetlands. Protected buffers will be at a minimum of 65' when conditions are warranted from the protected area. These areas will be protected from silvicultural operations, vehicular traffic, site conversion, and unauthorized tracked vehicle maneuvers. Protective measures will be established/maintained around threatened/endangered plants, animals, and other areas of special concern.

Because forest stands at Camp McCain vary depending on stand age and basal area, species composition, and site conditions, refer to site-specific forest management goals for detailed management information.

To ensure integration of timber management and conservation of native biological diversity, the following practices should be prioritized over specific silvicultural goals.

1. Vehicular activity, and vegetative disturbances (disking, planting) in or adjacent to wetlands, streams, seeps, lakes, and ponds is prohibited without environmental approval.
2. In areas where "no silvicultural activity" is to occur around protected species habitat, this does not preclude prescribed burning of these areas if burning is a normal management tool for this species.
3. Restricted activities in wetland and streamside corridors include the following:
   A. Injection, girdling, removal of native site specific trees
   B. Broadcast herbicide application
   C. Site-conversion to pine species
   D. Vehicular traffic
   E. Removal of living cavity trees, snags, and downed deadwood
4. Protected species habitats should be avoided when constructing logging decks, roads, or other site-converting activities. Any reclamation activity or planned stream crossing in these areas should involve the following pre-project protocol:
   A. Check for protected sites and protected species.
   B. Minimize activities near protected species habitats by maintaining an undisturbed buffer zone.
   C. Outside of the buffer, use minimum disturbance reclamation options, including seeding with non-invasive or native plants.

5. Ground disturbance during silvicultural operations should be avoided on slopes and upslope from sensitive or protected species habitats, wetlands, or streams. Mississippi Best Management Practices will be followed during all silvicultural activities.
6. When silvicultural recommendations are made to thin or reduce a stand to a particular basal area, remove poorly formed or diseased trees first.
7. Where present and practical, retain cavity trees and snags.

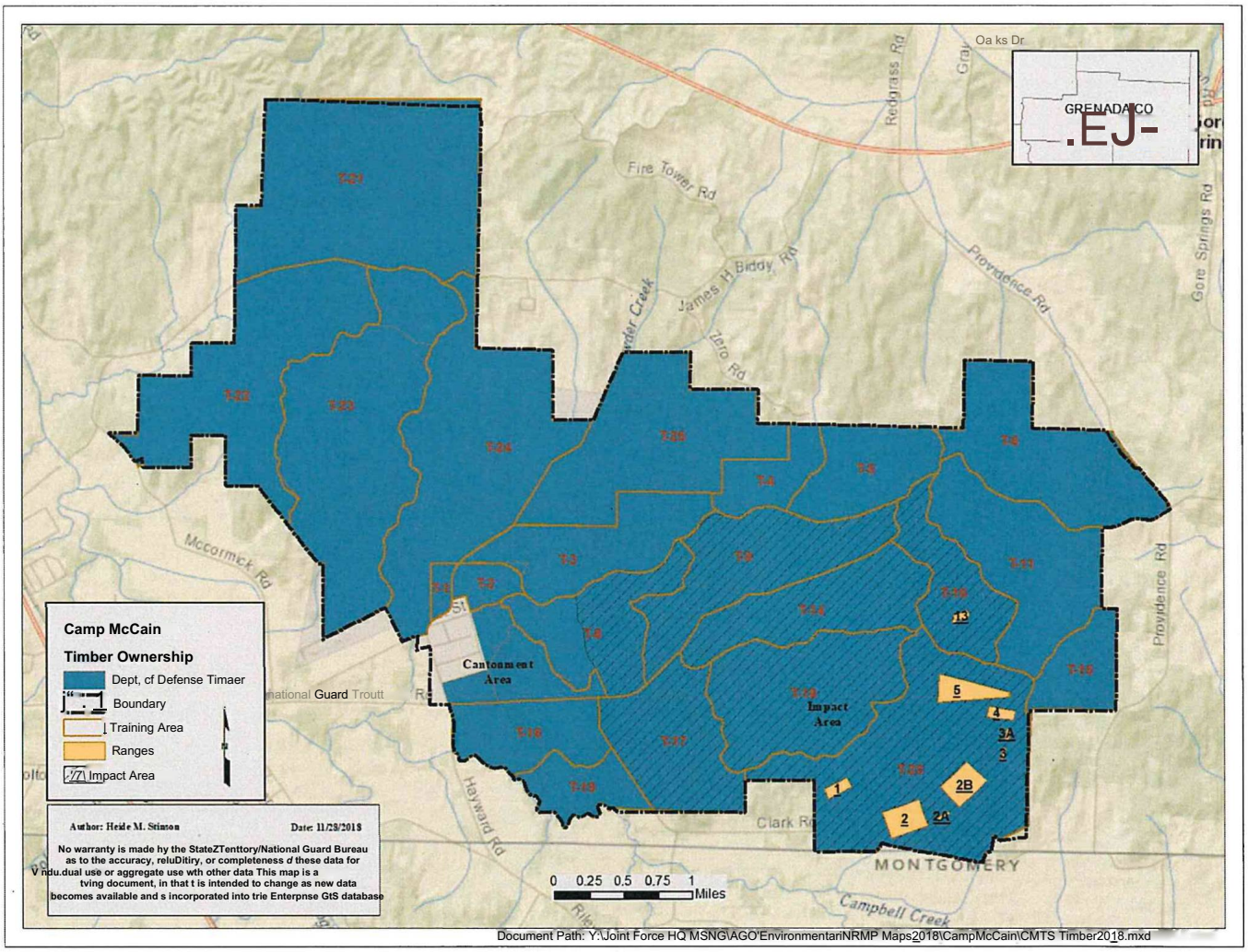

Figure 6. Camp McCain Timber Ownership

4.1.3 Grasslands

Camp McCain has 1,454 acres of grasslands with approximately 741 acres in hay leases, 296 acres of grassland in the Crew Proficiency Course (CPC), 276 acres of grassland in the Range Complex, and 114 acres of grassland in the Drop Zone. These areas that are not in the hay lease are either mechanically cut, burned or chemically treated to inhibit natural vegetative succession. These grasslands are composed of a mixture of native warm and cool season grasses and forbs, and introduced forage grasses.

4.1.4 Prescribed Fire

Prescribed fire is one of the major and least expensive management tools for the MSARNG natural resources staff. Managed fire was both naturally occurring in the Upper Coastal Plain and historically used by Native Americans. This helped form and shape the ecosystems that we now occupy and use. Benefits to forest and grasslands associated with prescribed fire include vegetation control, restoration and maintenance of native and historic vegetation, wildlife habitat improvement, T&E species management, succession set back and inhibition, site preparation for planting and regeneration, disease control, fuel reduction and wildfire prevention. Prescribed fire at Camp McCain is conducted both during portions of the dormant season NOV-FEB, and portions of the growing season, MAR-MAY, and SEP-OCT, depending on habitat, weather and management objectives.

4.1.5 Flora and Forestry Goals and Objectives

Goals:

1. Restore shortleaf pine on historically and ecologically appropriate sites, aiding in the recovery of listed species assemblages for this ecosystem.
2. Protect streams, creeks, and wetland communities.
3. Maintain natural communities through ecosystem management.
4. Provide habitat diversity for game and non-game wildlife.
5. Limit forest fragmentation.
6. Preserve existing majority upland hardwood tracts.
7. Maintain and protect established property boundaries.
8. Maintain diversity and size of grasslands while encouraging conversion of non-native forage grasses to native warm season grasses and forbs.
9. Enhance and expand pollinator friendly species of grasses and forbs.
10. Maintain and protect vegetative habitat around water bodies.

Table 3. Flora and Forestry Objectives

Objective	INRMP Reference	Date Accomplished	Cost	Status
Restore 50 acres of shortleaf pine ecosystem.	4.1.5			
Conduct Timber Stand Improvement harvest to aid in natural regeneration.	4.1.5			

Conduct prescribed fire on 1 to 8 year intervals to aid in natural regeneration.	4.1.5			
Establish and maintain 100 foot SMZs and flag affected areas prior to timber harvest.	4.1.5			
Control invasive species	4.1.5			
Participate in implementation teams/working groups to accomplish landscape level ecosystem management.	4.1.5			
Complete forest stand inventory.	4.1.5			
Restore and maintain firebreaks and painted boundaries.	4.1.5			
Conduct artificial regeneration when natural seed source is inadequate.	4.1.5			
Establish field edge borders with pollinator friendly species and/or native warm season grasses/forbs	4.1.5			
Conduct periodic floral inventories	4.1.5			
Convert high density tall fescue areas in hay lease units to native warm season grasses.	4.1.5			
Use forestry mulcher, bush hog and/or appropriate chemicals to control woody plant incursion into grasslands.	4.1.5			
Retain herbaceous and woody species in forested and wetland edges around ponds and lakes.	4.1.5			

4.2 Water Resources

The major uses of Camp McCain's water resources are water supply, recreation, training, and aquatic habitat. The water resources at Camp McCain can be divided into 3 categories—groundwater, surface water and wetlands. Each has its own physical and chemical properties, which in turn influence the aquatic flora and fauna that compose these biological communities.

4.2.1 Groundwater

In the Camp McCain area, domestic, municipal and industrial water supplies are developed in aquifers within the Meridian sand group of the Tallahatta formation of the Claiborne group, and in the basal sand member of the Holly Springs formation near the middle of the Wilcox group. The Meridian sand extends from the surface to a depth of 250 feet. The sand member of the

Holly Springs formation is at a depth of 284 to 521 feet. Aquifers, in this context, are usable potable water bodies. Most ground water on and near Camp McCain occurs in confined aquifers in the basal part of the Tallahatta Formation and in several confined aquifers within the underlying Wilcox Formation. The aquifer bodies are separated by impermeable, clayey confining layers, and they lie as deep as 600 ft.

4.2.2 Surface Water

Streams and Rivers

The U.S. Army Engineer Waterways Experiment Station *Delineation of Wetlands and Other Regulated Waters, Camp McCain, MS,* dated 12 March 1998 identified 69.30 miles of streams on Camp McCain. This includes perennial and ephemeral creeks, sloughs, lakes, ponds, and associated drainage systems. Many of the wetlands are unnamed; however, wetlands and streams on the Camp McCain that are named include: Little Bogue Creek, Crowder Creek, Epison Branch, Campbell Creek, and tributaries from Redgrass and Pruill Creeks.

Lakes and Ponds

There are two large impoundments on Camp McCain. Slough Pond is 4 acres at full pool and Hunt Lake is estimated to be 22 acres at full pool. Numerous unnamed ponds are located on Camp McCain. Appendix E lists these ponds and their approximate size, description and location.

4.2.3 Wetlands

An inventory completed March 1998 by the U.S. Army Engineer Waterway Experiment Station identified 185 acres of regulated water bodies on Camp McCain including wetlands. The delineated waters, documented utilizing the Geographic Information System, (GIS) include streams, ponds, lakes and wetlands. The results of this study indicate wetlands make up a relatively small portion of Camp McCain. Of the approximately 184.78 acres identified, the majority of the wetlands (51.23 acres) are emergent systems, dominated by herbaceous vegetation, 31.79 acres of shrub dominated wetlands, and 33.23 acres of forested wetlands. In addition, two lakes, numerous ponds and 69.3 miles of intermittent or flowing streams were delineated. Camp McCain's wetlands are protected, restored and mitigated for under the jurisdiction of the Clean Water Act.

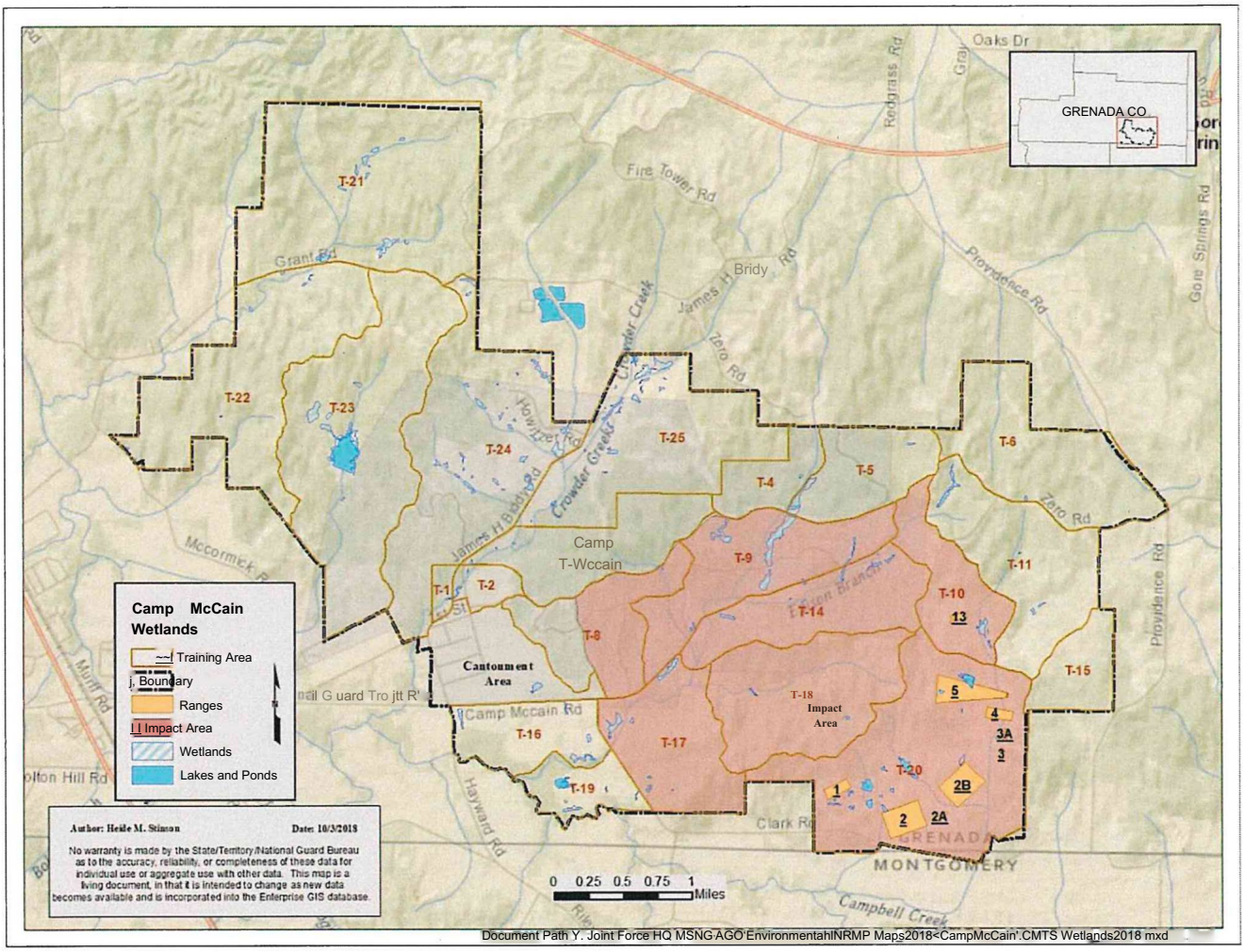

Figure 7. Camp McCain Wetlands

4.2.4 Protective Measures for Wetlands, Streams and Water Bodies

A Stormwater Pollution Prevention Plan (SWPPP) was updated in 2015. This plan governs control of nonpoint source pollution for Camp McCain. This report provides recommendations for treatment of erosion sites during and immediately following training activities, and sets up a monitoring program for early detection of problem areas, with the purpose of repairing problems before erosion and resulting sedimentation becomes critical. This SWPPP incorporates Mississippi Department of Environmental Quality (MDEQ) recommended best management practices and is maintained on file at the Camp McCain Environmental Office.

Streams and wetlands are protected from point source pollution to protect aquatic species. Only approved aquatic chemicals will be used in or adjacent to streams and wetlands. Results from multiple water quality investigations on Camp McCain show that there are no adverse levels of sediment and pollutants in water exiting the base. Currently, wetlands are protected from training activities by buffer strips at a minimum of 65' when conditions are warranted outside of the maneuver area. Wider buffers and an extension of that protection to cover ATV's, horseback riding, heavy equipment, timber harvest and site preparation, pesticide application with acute toxicities to fauna, are recommended. Streams will be protected from channelization, bank destabilization, and diversion. No culverts or bridges will be installed without the appropriate level of NEP A documentation. Any required wetland permits or subsequent mitigation is conducted through the Mobile District of the United States Army Corps of Engineers. Further, wetland fauna and flora are protected from unregulated collections. No collection or harvest of non-game aquatic organisms are allowed without the appropriate federal, state and Camp McCain permits.

4.2.5 Water Quality Summary

Water quality was measured from 1994 to 1998 on watersheds exiting Camp McCain (Pessoney et al 1998). Parameters measured include: Chlorophyll a (mg/m3), BOD (mg/1), Phytoplankton (org./l), Fecal Coliforms (col./lOOml), Turbidity (NTU), Alkalinity (mg/1), Total Hardness (mg/1), Ammonia-N (mg/1), Nitrite-N (mg/1), Nitrate-N (mg/1), TKN-N (mg/1), Total Phosphorus (mg/1), Orthophosphate (mg/1), Potassium (mg/1), Total Solids (mg/1), pH, Temperature (deg. C), Conductivity (umhos), and Oxygen (mg/1).

Sample points in 1994 (n=6), 1995 (n=6), 1996 (6), and 1997 (n=4) were established in the Camp McCain interior and at the point where streams exit the military border to detect changes in water quality. Results of the study show that there were no adverse effects in waters exiting Camp McCain during the study period. This data will provide baseline information on water quality for future profiles and assessments of development and land use impacts.

4.2.6 Water Resources Goals and Objectives

Goals:

1. Protect, restore, and manage existing wetlands on Camp McCain for the protection of wetland dependent species in accordance with federal and state laws and regulations.
2. Protect streams and other water bodies from siltation from soil erosion, and chemical runoff.
3. Protect lake and pond infrastructure.

Table 4. Water Resources Objectives

Objective	INRMP Reference	Date Accomplished	Cost	Status
Obtain all necessary permits required by the Clean Water Act before project implementation.	4.2.6			
Conduct storm water pollution prevention training.	4.2.6			
Conduct wetland delineation as needed.	4.2.6			
Establish and maintain 100' streamside management zones along perennial streams and water bodies.	4.2.6			
Insure only approved chemicals and fertilizers are used in areas adjacent to water resources.	4.2.6			
Maintain dams, levees and water control structures	4.2.6			

4.3 Fauna

A survey to detect protected flora and fauna on the land base was begun in 1993 as a cooperative effort between the Mississippi Natural Heritage Program (MNHP) and the Army National Guard. Bird, squirrel, and herpetofauna surveys were conducted in riparian hardwoods from 1997-1998. Other surveys at Camp McCain that have influenced fauna and flora management include erosion control (1989), fish and wildlife management (1996), forest resources management (1997), LCTA investigations (1992-1997), federally-protected/ state-listed species (1995-1997), water quality investigations (1992-1998), a floristic inventory (1995), bat survey (2005, 2016), and herpetological/mammal survey (2014).

Tables listing fish, reptiles and amphibians, birds, mammals, and small mammals inhabiting Camp McCain can be found in Appendix D. At least eight species of upland game birds and mammals, eleven species of mammalian furbearers, and five species of gamefish, occur at Camp McCain. A diversity of nongame animals also inhabits Camp McCain. Seventy-nine species of nongame birds and 21 species of reptiles and amphibians were surveyed in streamside forests from 1997 through 1998.

Population studies of fauna will be an ongoing part of the installation's INRMP. The data obtained will be used to help manage the natural resources on Camp McCain.

4.3.1 Mammals

Surveys have been conducted to determine the composition of mammal species utilizing Camp McCain. Techniques include trapping, track identification, camera observations and visual observations. To date there have been 35 species of mammals identified at Camp McCain. Refer

to Appendix D for species identified at Camp McCain. Surveys were conducted in 1994-1996 and again in 2013.

White-tailed Deer

Camp McCain has a large deer population based on camera surveys, harvest reports, and observations. The installation began participating in the MDWFP Deer Management Assistance Program (DMAP) in 2007-2008 hunting season. This program involves collecting a jawbone for aging live or dressed weight and recording antler beam length, circumference, and inside spread distance. After each season a MDWFP biologist ages the jawbones and compiles a report with applicable data and management recommendations. Participation in this program insures a healthier deer herd, reduced disease transmission, less damage from over browsing, and fewer deer-vehicle collisions.

Bats

Up to thirteen species of bats potentially occur seasonally at Camp McCain. Bat conservation is critical due to their ecological importance, listed status of some species and introduced threats such as White-Nose Syndrome. Bat management includes protection from harvest or collection, and enhancement of roosting and nursery sites. Foraging sites exist over open fields, waterbodies, and near night security lights. Placement of bat houses may be used to limit bat use of human occupied buildings. Any uninhabited buildings designated for demolition will be checked for bat occupancy prior to work beginning. Natural roosting and nursery sites will result from retention of cavity trees, snags and older age classes of trees (>70 years). Habitat types and management goals are listed in Table 6. A periodic survey of bats will be supplemented with annual inspections of bridges, culverts, and abandoned buildings.

Some species of bats use bat houses readily. If these species begin to occupy buildings exclusion practices and bat houses may be deployed to deter them. Bat houses should be built according to specifications developed by Bat Conservation International. The following BCI guidelines can increase bat use of houses in the southeastern United States (Tuttle and Hensley 1996). Below lists the general guidelines for bat house placement:

1. Bats exhibit preferences for houses placed in open or agricultural settings.
2. Bat houses should be located within 1/4 mile of streams or ponds of >3 acres.
3. Southern bats use houses more frequently if the house receives >6 hours of sun daily.
4. Highest occupancy rates (70%) occur when bat houses are placed 21-30' above ground. Placement at heights of 11-15' above ground resulted in 50% occupancy rates.
5. Maximum use has been recorded for the Mexican free-tailed bat by placing houses at least 20' from trees or forests. This occupancy trend is due to increased sun exposure and warming of boxes in openings.
6. Use of predator guards with bat houses mounted on poles or buildings is essential.
7. Corrugated tin or sheet metal wrapped around wood duck nest box posts over water may provide excellent roosting and nursery sites for some species, such as little brown bats.

Two bat surveys have been conducted at Camp McCain within the past 15 years, one in 2005 and another in 2016. 3 species were identified during mist netting and 5 species were detected during acoustic (Anabat) surveys in 2005. In 2016, 2 species were captured during mist netting and 6 species were detected during the acoustic survey. See Appendix F for results of these surveys. Two species of bats, *Lasionycteris noctivagans* (Silver-haired bat), and *Myotis*

grisescens (Gray bat) were acoustically identified in 2016. The silver haired bat is considered to accidental to Mississippi and then only in winter. There are only two records for this species in MS. The gray bat is listed as endangered (LE) by the USFWS. The only records from MS on this species are from 125 miles northeast and the closest records from TN are from 130 miles north. Although the contractor conducting this study is an experienced bat biologist, after discussions with other bat biologists in MS, the consensus opinion is that these detections were a misidentification due to software in the acoustical recording instruments.

4.3.2 Birds

Camp McCain has a variety of habitats that include forest habitats such as mature upland hardwood, mature mixed pine/hardwood, bottomland hardwood, forested wetlands, plantation pine and early successional habitats such as scrub-shrub/old field, and grassland/pastures. These varied habitats provide for a wide variety of birds that migrate annually within and beyond North America. Regardless of how these migratory birds use Camp McCain, their presence provides important ecological services and an important indicator of ecosystem health. Primary considerations with regard to migratory bird management are: compliance with the Migratory Bir d Treaty Act (MBTA) and implementation of migratory bird management actions in accordance with Executive Order 13186.

Federal Agencies are responsible for protecting migratory birds and supporting, contributing and ensuring compatibility with the goals and efforts of numerous regional migratory and game bird conservation programs. Virtually all birds that occupy Camp McCain throughout the year are protected under the MBTA. Comprehensive bird conservation plans for migratory birds have recently been developed for land birds, shorebirds and water birds. These conservation plans identify species and habitat conservation priorities at the national and more detailed regional scales. Plans that encompass Mississippi and are applicable to Camp McCain include:

Partners in Flight, North American Land Bird Conservation Plan

- Partners in Flight, Bird Conservation Plan for The East Gulf Coastal Plain
- North American Waterfowl Management Plan (NAWMP)
- North American Waterbird Conservation Plan (NAWCP)
- North American Bird Conservation Initiative (NABCI)
- Mississippi's Comprehensive Wildlife Conservation Strategy (CWCS)

These plans provide the framework, conservation priorities, goals, and objectives comparable to INRMP goals and objectives for various migratory bird species and their habitats within the manageable area of Camp McCain.

Consistent with these plans, and within the framework of mission-focused conservation, Camp McCain's conservation management will continue to support migratory bird conservation efforts. Camp McCain's restoration and maintenance of early successional habitat contributes valuable habitat benefits to migratory birds.

Population Monitoring

Migratory bird surveys and breeding bird counts provide a strong, statistically valid framework for detecting trends in migratory bird populations and assist managers in meeting their bird conservation goals. The "Support Activities" section below lists the surveys that will be used for population monitoring.

Support Activities

Based upon the above considerations, Camp McCain has developed several goals and objectives to support conservation efforts.

4.3.3 Reptiles and Amphibians

The North American Amphibian Monitoring Program was established to monitor and address global declines in amphibian diversity. This program has since been closed but Camp McCain's amphibian monitoring program is based on this and the Mississippi Amphibian Monitoring Program protocols. Habitat loss and increased pollution are primary factors contributing to these declines. Habitat management implemented for conservation of amphibians includes:

1. Wetland and ephemeral pool protection
2. Retention of snags and downed deadwood
3. Protection of riparian, mesic slope forests
4. Habitat protection from ORV's/ATV's and timber harvest operations that disturb soil surface and detrital deposition
5. Annual Amphibian Monitoring Program survey

Surveys (1994-1996, 2014) have been conducted to determine the composition of reptile and amphibian species utilizing Camp McCain, and how their populations change over time. Techniques include trapping, chorus surveys, drift fences, bucket traps and visual observations. To date there have been 44 species of reptiles (23) and amphibians (21) identified at Camp McCain. Refer to Appendix D for a list of these species.

Anuran surveys have been conducted at Camp McCain beginning in 2017. Survey protocols are based on the now defunct North American Amphibian Monitoring Program (NAAMP).

4.3.4 Mussels

No candidate or petitioned mussel species are known to occur on Camp McCain. BMP's are followed in wetlands and SMZ's to ensure preservation of habitats.

4.3.5 Insects

No candidate or petitioned insect species are known to occur on Camp McCain. All natural resources management efforts are made with the intent of protection, restoration and enhancement of native habitat types.

4.3.6 Crustaceans

No candidate or petitioned crustacean species are known to occur on Camp McCain. BMP's are followed in wetlands and SMZ's to ensure preservation of habitats.

4.3.7 Threatened and Endangered (T&E) Management

All MSARNG activities, including military training, testing, timber harvesting, recreation, and grazing are subject to the requirements of the Endangered Species Act for the protection of listed species and their critical habitat (AR 200-1, Chapter 11) (DoA 1995, pl). According to historic inventories conducted by MNHP, there are 27 state-listed plants and 5 state-listed animals on Camp McCain. Refer to Appendix D for a list of these species and Appendix A and B for a list

of potentially occurring rare plants and animals respectively. Although no federally listed plant or animal species are known to exist on Camp McCain, the installation falls under the potential range of the Northern Long Eared Bat. Best Management Practices are implemented to minimize impacts to threatened and endangered species. Guidelines and recommendations from T&E species recovery plans and management plans take precedence over all other recommendations for an area.

Northern Long-Eared Bat

Life History

Habitat Requirements:
During summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. Males and non-reproductive females may also roost in cooler places, like caves and mines. This bat seems opportunistic in selecting roosts, using tree species based on suitability to retain bark or provide cavities or crevices. It has also been found, rarely, roosting in structures like bams and sheds. Northern long-eared bats spend winter hibernating in caves and mines, called hibernacula. They typically use large caves or mines with large passages and entrances; constant temperatures; and high humidity with no air currents. Specific areas where they hibernate have very high humidity, so much so that droplets of water are often seen on their fur. Within hibernacula, surveyors find them in small crevices or cracks, often with only the nose and ears visible.

Food Habits:
Northern long-eared bats emerge at dusk to fly through the understory of forested hillsides and ridges feeding on moths, flies, leafhoppers, caddisflies, and beetles, which they catch while in flight using echolocation. This bat also feeds by gleaning motionless insects from vegetation and water surfaces.

Reproductive Strategy:
Breeding begins in late summer or early fall when males begin swarming near hibernacula. After copulation, females store sperm during hibernation until spring, when they emerge from their hibernacula, ovulate, and the stored sperm fertilizes an egg. This strategy is called delayed fertilization. After fertilization, pregnant females migrate to summer areas where they roost in small colonies and give birth to a single pup. Maternity colonies, with young, generally have 30 to 60 bats, although larger maternity colonies have been observed. Most females within a maternity colony give birth around the same time, which may occur from late May or early June to late July, depending where the colony is located within the species range. Young bats start flying by 18 to 21 days after birth. Adult northern long-eared bats can live up to 19 years.

4.3.8 Fisheries Management

Camp McCain has two large named water bodies, Hunt Lake and Slough Pond and 4 other former farm ponds that are open to the public for fishing after the purchase of the Camp McCain Hunting and Fishing Permit. See Appendix C for a complete set of regulations regarding fishing at Camp McCain. Hunt Lake was rehabilitated and restocked with 4 species of game fish in

2013. Annual pond balance checks are used to determine age structure and gather other reproductive data about Hunt Lake.

4.3.9 Fauna Goals and Objectives

Goals:

1. Integrate conservation with the military training mission.
2. Provide quality fish and wildlife recreation that is compatible with the military training mission through science based habitat and population management.
3. Protect and restore federally listed threatened and endangered species and their habitats.
4. Protect state listed flora and fauna.
5. Establish and/or maintain baseline data on birds at Camp McCain.
6. Protect bird species of concern as listed by DoD Partners in Flight.
7. Contribute to national and international initiatives to protect sensitive species (migrant and resident birds, small mammals, and herpetofauna, and native pollinators) through ecosystem management and restoration.
8. Coordinate and integrate land, recreation, and forestry management practices with flora and fauna conservation.
9. Control invasive and nuisance fauna to maintain native biological diversity.
10. Develop waterfowl management area.
11. Maintain/improve wildlife habitat in and adjacent to lakes and ponds.

Table 5. Fauna Objectives

Objective	INRMP Reference	Date Accomplished	Cost	Status
Continue participation in the annual Christmas Bird Count	4.3.9			
Continue BBS route on Camp McCain	4.3.9			
Continue raptor, quail and turkey surveys.				
Promote the restoration and/or maintenance of native warm season grasses, shrub-scrub, and other early successional habitats.	4.3.9			
Selective timber harvesting	4.3.9			
Use prescribed fire, herbicide, and mechanical control for understory/midstory vegetation control and maintenance	4.3.9			
Restoration of natural fire regimen to a 1 to 8 yr interval.	4.1.4			

Continue following Best Management Practices of no cut SMZs, 100% snag retention, and no timber harvest during JUN-JUL for the NLEB.	4.3.9			
Conduct periodic bat surveys	4.3.9			
Continue amphibian monitoring surveys	4.3.9			
Continue participation in DMAP, turkey brood surveys, and other programs.	4.3.9			
Control nuisance fauna, and restore native species.	4.3.9			
Conduct biological inventories periodically (5-10 years)	4.3.9			
Continue Canada Goose depredation permit and control measures.	4.3.9			
Continue wood duck monitoring program.	4.3.9			
Evaluate, design and construct waterfowl management area in Training Area 19 or other suitable area.	4.3.9			
Install wood duck, kestrel and other bird nesting boxes or enhancements where applicable.	4.3.9			

5.0: REFERENCES

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6.0: ACRONYMS, ABBREVIATIONS AND GLOSSARY

- **AASF -** Army Aviation Support Facility
- **ACHP -** Advisory Council on Historic Preservation
- **ACSIM -** Assistant Chief of Staff for Installation Management
- **ACTS** -Army Compliance Tracking System
- **AEC** - Army Environmental Center
- **AIRFA -** American Indian Religious Freedom Act
- **APE -** Area of Potential Effect
- **AR -** Army Regulation
- **ARNG -** Army National Guard
- **ARPA -** Archaeological Resources Protection Act
- **ASP -** Ammunition Supply Point
- **AT -** Annual Training
- **ATV -** All-terrain vehicle
- **AVCRAD -** Aviation Classification and Repair Depot
- **BCI -** Bat Conservation International
- **BLM -** Bureau of Land Management
- **CA -** Comprehensive Agreement (per 43 CFR Part 10)
- **CAA -** Combined Arms Area
- **CALFEX -** Combined Arms Live-Fire Exercise
- **CERL -** Construction Engineering Research Laboratories
- **CFR -** Code of Federal Regulations
- **CEQ -** Council on Environmental Quality
- **CID -** Criminal Investigation Division
- **CITA** - Close-in training area
- **CSMS -** Combined Support Maintenance Shop
- **CMTC -** Camp McCain Training Center
- **DA -** Department of the Army
- **DEP -** Directorate of Environmental Programs
- **DBH -** Diameter breast height - a term used in forestry
- **DEQ -** Department of Environmental Quality
- **DOA -** Department of the Army
- **DOD -** Department of Defense
- **DOI -** Department of the Interior
- **DPTM -** Director of Planning, Training, and Mobility
- **DPW -** Director of Public Works
- **DZ -** Drop Zone
- **EA -** Environmental Assessment
- **ECAS -** Environmental Compliance System
- **ECS -** Equipment Concentration Site
- **EIS -** Environmental Impact Statement
- **EO -** Executive Order

- **EPA** - Environmental Protection Agency
- **ERB** - Environmental Resources Branch
- **EPR** - Environmental Program Requirement
- **EQR** - Environmental Quality Report
- **FMO-E** - Facilities Management Office- Environmental
- **FNSI** - Finding of No Significant Impact
- **FR** - Federal Register
- **FY** - Fiscal Year
- **GIS** - Geographic Information System
- **GOSO** - Government-Operated State-Owned
- **HABS** - Historic American Building Survey
- **HAER** - Historic American Engineering Record
- **HLA** - Helicopter Landing Areas
- **HWS** - Hazardous Waste Specialist
- **HPP** - Historic Preservation Plan
- **HQDA** - Headquarters, Department of the Army
- **INRMP** - Integrated Natural Resources Management Plan
- **IPM** - Integrated Pest Management
- **ISR** - Installation Status Report
- **IRT** - Innovative Readiness Training Program
- **IT AM** - Integrated Training Area Management
- **JAG** - Judge Advocate General
- **LCTA** - Land Condition Trend Analysis
- **LRAM** - Land Restoration and Maintenance
- **LRWMA** - Leaf River Wildlife Management Area
- **MACOM** - Major Army Command
- **MATES** - Mobilization and Training Equipment Site
- **MCES** - Mississippi Cooperative Extension Service
- **MDWFP** - Mississippi Department of Wildlife Fisheries and Parks
- **MILES** - Multiple Integrated Laser Engagement System
- **MNHP** - Mississippi Natural Heritage Program
- **MOA** - Memorandum of Agreement (per 36 CFR Part 800)
- **MPRC-H** - Multiple Purpose Range Complex - Heavy
- **MSARNG** - Mississippi Army National Guard
- **MSHPO** - Mississippi State Historic Preservation Officer
- **MSU** - Mississippi State University
- **NAGPRA** - Native American Graves and Protection Reperation Act
- **NEPA** - National Environmental Policy Act
- **NGB** - National Guard Bureau
- **NHL** - National Historic Landmark
- **NHPA** - National Historic Preservation Act of 1966, as amended
- **NPDES** - National Pollutant Discharge Elimination System
- **NPS** - National Park Service
- **NRHP** - National Register of Historic Places

- **NRMPDG -** Natural Resource Management Plan and Design Guidelines
- **NRS -** Natural Resources Specialist
- **OMS -** Organizational Maintenance Shop
- **ORV -** Off-road vehicle
- **PA -** Programmatic Agreement (per 36 CFR Part 800)
- **PAM** - Pamphlet
- **PI -** Principal Investigator
- **PLS -** Planning Level Surveys
- **PM -** Pest Management
- **PMP -** Pest management plan
- **PWO -** Public Works Officer
- **RCW -** Red-cockaded Woodpecker
- **REC -** Record of Environmental Consideration
- **REPSITE -** Retro Euro Facility
- **ROD** - Record of Decision
- **RPDP -** Real Property Development Plan
- **RTLP -** Range and Training Land Program
- **SCORP** - Mississippi State Comprehensive Outdoor Recreational Plan
- **SHPO -** State Historic Preservation Office
- **SOP -** Standard Operating Procedure
- **SOSO -** State-Operated State-Owned
- **SUP -** Special-Use Permit
- **T&E -** Threatened and Endangered Species
- **THPO -** Tribal Historic Preservation Officer
- **TRI -** Training Requirements Integration
- **US -** United States
- **USACE** - United States Army Corps of Engineers
- **USC -** United States Code
- **USDA -** U.S. Department of Agriculture
- **USFS -** United States Forest Service
- **USFWS -** United States Fish and Wildlife Service
- **USM -** University of Southern Mississippi
- **UTES -** Unit Training and Equipment Site
- **WWI -** World War I
- **WWII -** World War II

GLOSSARY

Advisory Council on Historic Preservation (ACHP)- The Council was established by Title 11 of the National Historic Preservation Act to advise the President and Congress, to encourage private and public interest in historic preservation, and to comment on federal agency action under Section 106 of the National Historic Preservation Act.

American Indian Religious Freedom Act (AIRFA)- States that the policy of the United States is to protect and preserve for American Indians their inherent rights of freedom to believe, express and exercise the traditional religions of the American Indian, Eskimo, Aleut and Native Hawaiians. These rights include, but are not limited to, access to sites, use and possession of sacred objects, and the freedom to worship though ceremony and traditional rites.

Amphibians - Frogs, toads, and salamanders

Antiquities Act of 1906- Provides for the protection of historic and prehistoric ruins and objects of antiquity on federal lands, and authorizes scientific investigation of antiquities on federal lands, subject to permits and other regulatory requirements.

Archeological Artifact- An object, a component of an object, a fragment or sherd of an object that was made or used by humans, a soil, botanical or other sample of archeological interest.

Archeological Records-Notes, drawings, photographs, plans, computer databases, reports and any other audio-visual records related to the archaeological investigation of a site.

Archeological Resource- Any material of human life or activities that is at least 100 years of age, and is of archaeological interest (32 CFR Section 229.3(a)).

Archeological Resources Protection Act (ARPA) of 1979- Prohibits the removal, sale, receipt and interstate transportation of archaeological resources obtained illegally (without permits), from federal or Indian lands and authorizes agency permit procedures for investigations of archeological resources on lands under the agency's control.

Area of Potential Effect (APE)- The geographical area within which the undertaking may cause changes in the character of or use of historic properties, if any such properties exist. The APE may change according to the regulation under which it is being applied.

Army Compliance Tracking System (ACTS)- Annual report required by AEC for environmental compliance actions.

Carnivore - An animal that eats meat

Code of Federal Regulations (CFR)- Includes the government-wide regulations that all federal agencies must follow, and have the force of law.

Cultural Landscape Approach- To serve as an organizing principle for cultural and natural

features in the same way that the idea of an ecosystem serves as an organizing principle for different parts of the natural environment.

Curation of Federally Owned and Administered Archeological Collections (36CFR79)- Ruling issued by the National Park Service which establishes definitions, standards, procedures, and guidelines to be followed by federal agencies in the preservation and maintenance of collections of prehistoric and historic material remains and records in their care, that are recovered from federal or federally-assisted programs.

Ecosystem - A combination of the biotic (living) and abiotic (nonliving) factors of an area, and their interrelationships. Biotic factors include plants, animals, bacteria, and fungi; whereas, abiotic factors include water, climate (recipitation and temperature), soil, slope, elevation, aspect of the land base.

Endangered - A federal or state listing that means a plant or animal species "is in danger of extinction within the foreseeable future throughout all or a significant portion of its range".

Endemic - restricted to a certain area.

Environmental Assessment (EA)- An EA is prepared under NEPA for actions that the project proponent does not anticipate will have a significant effect on the environment, or if significance of the potential impact is unknown. An EA results in a Finding of No Significant Impact (FONSI) or a Notice of Intent (NOI) to prepare an EIS.

Environmental Compliance Assessment System (ECAS)- Assists the Army in achieving, maintaining and monitoring environmental compliance with federal, State and local environmental regulations. ECAS identifies environmental compliance deficiencies and develops corrective actions and cost estimates to address these deficiencies.

Environmental Impact Statement- A detailed written statement required by NEPA for major federal actions with significant environmental effects. The purpose of the document is to disclose to decision makers and the public, the potential environmental impacts of federal undertakings.

Environmental Program Requirement (EPR)- Standard Army budgeting process that identifies programming, budgeting, and resource allocation needs to execute the Army Environmental Program.

Executive Order 13007 of 1996 on Indian Sacred Sites- Provides additional direction to federal agencies regarding Indian sacred sites. Federal agencies are, "within the constraints of their missions", required to accommodate Indian tribes' requirements for access to and ceremonial use of sacred sites on public lands; and avoid damaging the physical integrity of such sites.

Exotic - A plant or animal species that is not native to an area

Fauna - Animal Species

Flora - Plant Species

Fragmentation - Creating isolated patches of vegetation by removal of interconnecting vegetation

Geographical Information System (GIS)- GIS is an electronic mapping tool that can assist with the management and planning of cultural resources by analyzing the spatial relationship of cultural resources to each other and other resources within a natural setting.

Hydrology - Pertaining to water and its influence on an area

Habitat - The area in which a plant or animal naturally occurs

Herbivore - An animal that eats only plant material

Indian Tribe- Any tribe, band, nation, or other organized Indian group or community of Indians, including any Alaska Native village or corporation as defined in or established by the Alaska Native Claims Settlement Act (43 U.S.C. 1601 et seq.) that is recognized as eligible for special programs and services provided by the United States to Indians because of their status as Indians. Such acknowledged or "federally recognized" Indian tribes exist as unique political entities in a govemment-to-govemment relationship with the United States. The Bureau of Indian Affairs maintains the listing of federally-recognized Indian tribes.

Indigenous - Native to an area

Introduced - A plant or animal species that has been brought to an area of which it is not native

Memorandum of Agreement (MOA)- A formal written agreement containing the result of negotiations among the federal agency, the SHPO, the ACHP and interested public. The MOA documents mutual agreements upon statements of facts, intentions, procedures and parameters for future actions and matter of coordination. It shows how the needs of the federal agency, the needs and desires of the public, and the scientific/historical significance of the property have all been protected.

Memorandum for Heads of Executive Departments and Agencies dated 29 April 1994: Government-to-Government Relations with Native American Tribal Governments- Directs that consultation between the Army and federally-recognized Indian tribes shall occur on a govemment-to-govemment basis in accordance with this Memorandum. Designated representatives of federally-recognized Indian tribal governments shall be treated by installation commanders as the representatives of government. Consultation with federally-recognized Indian tribes on a govemment-to-govemment basis occurs formally and directly between installation commanders and heads of federally-recognized tribal governments. Installation and tribal staff-to-staff communications do not constitute govemment-to-govemment consultation.

Mitigate - To lessen the effects

National Environmental Policy Act of 1969 (NEPA)- (P.L.91-90; 42 U.S.C. 4321-4347) This Act requires federal agencies to prepare an Environmental Impact Statement (EIS) for every major federal action that affects the quality of the human environment, including both natural and cultural resources. It is implemented by regulations issued by the Council on Environmental Quality (40 CFR 1500-08), that are incorporated into AR 200-2, *Environmental Effects of Army Actions.* NEPA states that the policy of the federal government is to preserve important historic, cultural and natural aspects of our national heritage and requires consideration of environmental concerns during project planning and execution.

National Historic Landmark (NHL)- National Historic Landmarks are buildings, historic districts, structures, sites and objects that possess exceptional value in commemorating or illustrating the history of the United States. They are so designated by the Secretary of the Interior after identification by National Park Service professionals and evaluation by the National Park System Advisory Board, a committee of scholars and other citizens.

National Historic Preservation Act (NHPA) of 1966- [as amended (P.L. 89-665; 16 U.S.C. 470-470w-6)], establishes historic preservation as a national policy and defines it as the protection, rehabilitation, restoration and reconstruction of districts, sites, buildings, structures and objects significant in American history, architecture, archeology or engineering. Section 106 of the National Historic Preservation Act requires that federal agencies take into consideration the effects of their actions on properties listed on or eligible for listing on the NRHP. It is implemented by regulations (36 CFR 800) issued by the ACHP. Section 110 requires federal agencies to locate, inventory and nominate all properties on their lands that may qualify for the NRHP.

National Park Service- The bureau of the Department of the Interior to which the Secretary has delegated the authority and responsibility for administering the National Historic Preservation Program.

National Register Criteria-The criteria established by the Secretary of the Interior for use in evaluating the eligibility of properties for the NRHP (36 CFR Part 60).

National Register of Historic Places (NRHP)- A nationwide listings of districts, sites, buildings, structures and objects of national, state or local significance in American history, architecture, archaeology, or culture that is maintained by the Secretary of the Interior. National Register listings must meet the eligibility criteria found in 36 CFR Section 60.4.

Neotropical Migrant - Term usually referring to birds that spend the winter months in the New World Tropics and return to the North American continent in spring to breed.

Omnivore - An animal that feeds on animal and vegetable material

Paleontological Resources- Scientifically significant fossilized remains, specimens, deposits and other such data from prehistoric, non-human life.

Predictive Model- Modeling used to determine areas of high, medium and low archeological potential.

Programmatic Agreement (PA)-A formal agreement between agencies to modify and/or replace the Section 106 process for numerous undertakings in a program.

Real Property Development Plans (RPDP)- A written resource prepared by the Army, to be consulted and used during the preparation of an ICRMP, specifically in dealing with standing structures at each activity or installation.

Record of Environmental Consideration (REC)- A NEPA document that is used to describe a proposed action and anticipated timeframe, identify the proponent, and explain why further environmental analysis and documentation is not required. It is a signed statement to be submitted with project documentation. It is used when the proposed action is exempt from the requirements of NEPA, or has been adequately assessed in existing documents and determined not to be environmentally significant. A REC is also used to document the use of those CX that require such records.

Reptiles - Turtles, lizards, and snakes

Riparian Zone - Relating to the bank of a stream or lake

Savannah - An open area with a diversity of native grasses and other plant species, with a few trees scattered throughout

Section 106- Under the National Historic Preservation Act, Section 106 requires that federal agencies take into consideration the effects of their actions on properties listed on or eligible for listing on the NRHP. It is implemented by regulations (36 CFR Part 800) issued by the ACHP.

Section 110- Under the National Historic Preservation Act, Section 110 outlines agencies responsibilities with respect to historic properties and requires federal agencies to locate, inventory and nominate all properties that may qualify for the NRHP.

Section 111- Under the National Historic Preservation Act, Section 111 addresses leases and exchanges of historic properties. It allows the proceeds of any lease to be retained by the agency for use in defraying the costs of administration, maintenance, repair and related expenses of historic properties.

Site Locational Models- A model, through past examples, used to predict locations of archeological sites.

State Historic Preservation Officer (SHPO)- The person who has been designated in each state, in accordance with the NHPA (101(b)(1)A)), to administer the State Historic Preservation Program, including identifying and nominating eligible properties to the NRHP and otherwise administering applications for listing historic properties in the NRHP.

Threatened - A federal or state listing that means a plant or animal species "is likely to become endangered within the foreseeable future throughout all or a significant portion of its range".

Undertaking- Any project, activity, or program that can result in changes in the character or use of historic properties as defined by the NHPA. A project, activity, or program under the direct or indirect jurisdiction of the installation commander, including those project, activities, or programs carried out or on behalf of the agency; those carried out with federal financial assistance; those requiring a federal permit, license, or approval; and those subject to State or local regulation administered pursuant to a delegation or approval by a federal agency. Undertakings include new and continuing projects, activities, or programs and any of their elements not previously considered under Section 106 of the NHPA.

Appendix A

Rare Plant and Animal Species Potentially Occurring at Camp McCain As Compiled From Mississippi Natural Heritage Program

Table A-l. Tracked Plant Species detected within the boundaries and a two-mile buffer of Camp McCain. Data was extracted from the Mississippi Natural Heritage Program Database.

Family	Scientific Name	Common Name	Global Rank	State Rank
Apiaceae	*Osmorhiza longistylis*	Smoother Sweet-cicely	G5	S3
Araliaceae	*Arcilia racemosa*	American Spikenard	G5	SI
Araliaceae	*Panax quinquefolius*	American Ginseng	G3G4	S3
Asclepiadaceae	*Matelea carolinensis*	Carolina Anglepod	G4	S3
Asclepiadaceae	*Matelea obliqua*	Climbing Milkweed	G4?	S2
Asteraceae	*Antennaria solitaria*	Single-head Pussytoes	G5	S3S4
Asteraceae	*Rudbeckia subtomentosa*	Sweet Coneflower	G5	SI
Buxaceae	*Pachysandra procumbens*	Allegheny-spurge	G4G5	S3
Caprifoliaceae	*Triosteum angustifolium*	Yellowleaf Tinker's-weed	G5	S3
Celastraceae	*Celastrus scandens*	Climbing Bittersweet	G5	S3
Cucurbitaceae	*Cayaponia quinqueloba*	Five-lobe Cayaponia	G4	S4
Cyperaceae	*Carex crinita* var. *brevicrinis*	Short Hair Sedge	G5T5	S3S4
Cyperaceae	*Carex laxiflora* var. *laxiflora*	Broad Loose-flower Sedge	G5T5	SI
Cyperaceae	*Carex meadii*	Mead's Sedge	G4G5	S3S4
Cyperaceae	*Carex stricta*	Tussock Sedge	G5	S2
Cyperaceae	*Cyperus lancastriensis*	Many-flowered Umbrella-sedge	G5	S3S4
Cyperaceae	*Cyperus plukenetii*	Plukenet's Flatsedge	G5	S3
Fabaceae	*Rhynchosia latifolia*	Prairie Rhynchosia	G5	S2
Gentianaceae	*Sabatia campestris*	Prairie Pink	G5?	S2
Juglandaceae	*Carya glabra* var. *hirsuta*	Swamp Hickory	G5T3T5	S3
Juncaceae	*Luzula acuminata*	Hairy Woodrush	G5	S3
Lamiaceae	*Pycnanthemum verticillatum* var. *pilosum*	Whorled Mountainmint	G5T5	SI
Liliaceae	*Lilium superbum*	Turk's-cap Lily	G5	S3S4
Liliaceae	*Melanthium virginicum*	Virginia Bunchflower	G5	S3S4

Table A-l Continued

Family	Scientific Name	Common Name	Global Rank	State Rank
Orchidaceae	*Cypripedium parviflorum* var. *pubescens*	Yellow Lady's-slipper	G5T5	S2S3
Orchidaceae	*Platanthera lacera*	Green Fringed-orchid	G5	S1S2
Orchidaceae	*Spiranthes ovalis*	Lesser Ladies'-tresses	G5?	S2S3
Orchidaceae	*Triphora trianthophoros*	Nodding Pogonia	G3G4	S2
Poaceae	*Muhlenbergia sylvatica*	Woodland Muhly	G5	S2
Pteridaceae	*Cheilanthes lanosa*	Hairy Lipfem	G5	S1S2
Rosaceae	*Crataegus calpodendron*	Pear Hawthorn	G5	S3
Santalaceae	*Comandra umbellata*	Umbellate Bastard Toad-flax	G5	S3?
Schisandraceae	*Schisandra glabra*	Bay Starvine	G3	S3
Scrophulariaceae	*Agalinis viridis*	Green False-foxglove	G4?	S2S3
Scrophulariaceae	*Dasistoma macrophylla*	Mullein Foxglove	G4	S3S4
Scrophulariaceae	*Veronicastrum virginicum*	Culver's-root	G4	S3S4
Violaceae	*Hybanthus concolor*	Green Violet	G5	S3

State Rank

51 — Critically imperiled in Mississippi because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it vulnerable to extirpation.

52 — Imperiled in Mississippi because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it vulnerable to extirpation.

53 — Rare or uncommon in Mississippi (on the order of 21 to 100 occurrences).

State and Federal Status

LE Endangered — A species which is in danger of extinction throughout all or a significant portion of its range.

LT Threatened — A species likely to become endangered in foreseeable future throughout all or a significant portion of its range.

Table A-2. Plants detected in Grenada County. Data was extracted from the Mississippi Natural Heritage Program Database.

Family	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Apiaceae	*Osmorhiza longistylis*	Smoother Sweet-cicely	G5	S3		
Araliaceae	*Ar alia racemosa*	American Spikenard	G5	SI		
Araliaceae	*Panax quinquefolius*	American Ginseng	G3G4	S3		
Asclepiadaceae	*Asclepias hirtella*	Green Milkweed	G5	S2		
Asclepiadaceae	*Asclepias purpurascens*	Purple Milkweed	G5?	SI		
Asclepiadaceae	*Matelea carolinensis*	Carolina Anglepod	G4	S3		
Asclepiadaceae	*Matelea decipiens*	Old-field Milkvine	G5	SI		
Asclepiadaceae	*Matelea obliqua*	Climbing Milkweed	G4?	S2		
Asteraceae	*Antennaria solitaria*	Single-head Pussytoes	G5	S3S4		
Asteraceae	*Echinacea purpurea*	Eastern Purple Coneflower	G4	S3		
Asteraceae	*Rudbeckia subtomentosa*	Sweet Coneflower	G5	SI		
Asteraceae	*Symphyotrichum puniceum*	Swamp Aster	G5	SI		
Buxaceae	*Pachysandra procumbens*	Allegheny-spurge	G4G5	S3		
Campanulaceae	*Lobelia appendiculata*	Ear-flower Lobelia	G4G5	S3		
Caprifoliaceae	*Triosteum angustifolium*	Y ellowleaf Tinker's-weed	G5	S3		
Celastraceae	*Celastrus scandens*	Climbing Bittersweet	G5	S3		
Cucurbitaceae	*Cayaponia quinqueloba*	Five-lobe Cayaponia	G4	S4		
Cyperaceae	*Carex albicans var. albicans*	White-tinge Sedge	G5T5	S3S4		
Cyperaceae	*Carex crinita var. brevicrinis*	Short Hair Sedge	G5T5	S3S4		
Cyperaceae	*Carex decomposita*	Cypress-knee Sedge	G3G4	S3		
Cyperaceae	*Carex grayi*	Asa Gray's Sedge	G4G5	S2		
Cyperaceae	*Carex laxiflora var. laxiflora*	Broad Loose-flower Sedge	G5T5	SI		
Cyperaceae	*Carex meadii*	Mead's Sedge	G4G5	S3S4		
Cyperaceae	*Carex stricta*	Tussock Sedge	G5	S2		
Cyperaceae	*Cyperus lancastriensis*	Many-flowered Umbrella-sedge	G5	S3S4		
Cyperaceae	*Cyperus plukenetii*	Plukenet's Flatsedge	G5	S3		

Table A-2 Continued

Family	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Cyperaceae	*Rhynchospora miliacea*	Millet Beakrush	G5	S2S3		
Cyperaceae	*Scleria muehlenbergii*	Muehlenberg's Nutrush	G5	S3?		
Dryopteridaceae	*Dry opt er is x australis*	Southern Wood Fem	GNA	SI		
Equisetaceae	*Equisetum arvense*	Field Horsetail	G5	S1S2		
Fabaceae	*Rhynchosia latifolia*	Prairie Rhynchosia	G5	S2		
Fagaceae	*Quercus similis*	Bottomland Post Oak	G4	S3		
Gentianaceae	*Gentiana saponaria*	Soapwort Gentian	G5	S3S4		
Gentianaceae	*Sabatia campestris*	Prairie Pink	G5?	S2		
Iridaceae	*Iris fulva*	Red Flag	G5	S3		
Juglandaceae	*Carya glabra var. hirsuta*	Swamp Hickory	G5T3T5	S3		
Juglandaceae	*Juglans cinerea*	Butternut	G4	S2		
Juncaceae	*Luzula acuminata*	Hairy Woodrush	G5	S3		
Lamiaceae	*Pycnanthemum verticillatum var. pilosum*	Whorled Mountainmint	G5T5	SI		
Liliaceae	*Lilium superbum*	Turk's-cap Lily	G5	S3S4		
Liliaceae	*Melanthium virginicum*	Virginia Bunchflower	G5	S3S4		
Oleaceae	*Fraxinus profunda*	Pumpkin Ash	G4	S3		
Orchidaceae	*Cypripedium parviflorum var. pubescens*	Yellow Lady's-slipper	G5T5	S2S3		
Orchidaceae	*Platanthera cristata*	Yellow-crested Orchid	G5	S3S4		
Orchidaceae	*Platanthera lacera*	Green Fringed-orchid	G5	S1S2		
Orchidaceae	*Platanthera peramoena*	Purple Fringeless Orchid	G5	S2S3		
Orchidaceae	*Spiranthes ovalis*	Lesser Ladies'-tresses	G5?	S2S3		
Orchidaceae	*Triphora trianthophoros*	Nodding Pogonia	G3G4	S2		
Poaceae	*Glyceria arkansana*	Arkansas Manna-grass	G5	S2S3		
Poaceae	*Muhlenbergia sylvatica*	Woodland Muhly	G5	S2		
Primulaceae	*Hottonia inflata*	Featherfoil	G4	SI		

Table A-2 Continued

Family	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Pteridaceae	*Cheilanthes lanosa*	Hairy Lipfern	G5	S1S2		
Rosaceae	*Crataegus calpodendron*	Pear Hawthorn	G5	S3		
Santalaceae	*Comandra umbellata*	Umbellate Bastard Toad-flax	G5	S3?		
Schisandraceae	*Schisandra glabra*	Bay Starvine	G3	S3		
Scrophulariaceae	*Agalinis viridis*	Green False-foxglove	G4?	S2S3		
Scrophulariaceae	*Chelone glabra*	White Turtlehead	G5	S3		
Scrophulariaceae	*Dasistoma macrophylla*	Mullein Foxglove	G4	S3S4		
Scrophulariaceae	*Penstemon tenuis*	Sharp-sepal Beardtongue	G4	S2		
Scrophulariaceae	*Veronicastrum virginicum*	Culver's-root	G4	S3S4		
Staphyleaceae	*Staphylea trifolia*	American Bladdemut	G5	S3		
Ulmaceae	*Ulmus serotina*	September Elm	G4	S2		
Violaceae	*Hybanthus concolor*	Green Violet	G5	S3		

State Rank

51 — Critically imperiled in Mississippi because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it vulnerable to extirpation.

52 — Imperiled in Mississippi because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it vulnerable to extirpation.

53 — Rare or uncommon in Mississippi (on the order of 21 to 100 occurrences).

State and Federal Status

LE Endangered — A species which is in danger of extinction throughout all or a significant portion of its range.

LT Threatened — A species likely to become endangered in foreseeable future throughout all or a significant portion of its range.

Table A-3. Tracked Animal Species detected within the boundaries and a two-mile buffer of Camp McCain. Data was extracted from the Mississippi Natural Heritage Program Database.

Family	Scientific Name	Common Name	Global Rank	State Rank
Accipitridae	*Circus hudsonius*	Northern Harrier	G5	S4N
Cambaridae	*Faxonius validus*	Powerful Crayfish	G5	SI
Cambaridae	*Procambarus lylei*	Shutispear Crayfish	G2	S2
Cathartidae	*Cathartes aura*	Turkey Vulture	G5	S4B
Cathartidae	*Coragyps atratus*	Black Vulture	G5	S4B
Catostomidae	*Ictiobus niger*	Black Buffalo	G5	S3
Cyprinidae	*Cyprinella whipplei*	Steelcolor Shiner	G5	S3
Cyprinidae	*Notropis sabinae*	Sabine Shiner	G4	S2
Falconidae	*Falco sparverius*	American Kestrel	G5	S3B,S4S5N
Laniidae	*Lanius ludovicianus*	Loggerhead Shrike	G4	S4B,S4N
Pandionidae	*Pandion haliaetus*	Osprey	G5	S3B,S1S2N
Phalacrocoracidae	*Phalacrocorax auritus*	Double-crested Cormorant	G5	S4N
Plethodontidae	*Pseudotriton ruber*	Red Salamander	G5	S3
Ranidae	*Rana palustris*	Pickerel Frog	G5	S3S4
Vespertilionidae	*Lasiurus borealis*	Eastern Red Bat	G3G4	S4S5
Vespertilionidae	*Perimyotis subflavus*	Tri-colored Bat	G2G3	S3S4

State Rank

51 — Critically imperiled in Mississippi because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it vulnerable to extirpation.

52 — Imperiled in Mississippi because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it vulnerable to extirpation.

53 — Rare or uncommon in Mississippi (on the order of 21 to 100 occurrences).

State and Federal Status

LE Endangered — A species which is in danger of extinction throughout all or a significant portion of its range.

LT Threatened — A species likely to become endangered in foreseeable future throughout all or a significant portion of its range.

Table A-4. Animal Species Detected in Grenada County, MS. Data was extracted from the Mississippi Natural Heritage Program Database.

Family	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Accipitridae	*Circus hudsonius*	Northern Harrier	G5	S4N		
Accipitridae	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3B,S2N		
Alligatoridae	*Alligator mississippiensis*	American Alligator	G5	S4		
Cambaridae	*Faxonius etnieri*	Ets Crayfish	G4	S3S4		
Cambaridae	*Procambarus lylei*	Shutispear Crayfish	G2	S2		
Caprimulgidae	*Antrostomus carolinensis*	Chuck-will's-widow	G5	S4B		
Cathartidae	*Cathartes aura*	Turkey Vulture	G5	S4B		
Cathartidae	*Coragyps atratus*	Black Vulture	G5	S4B		
Catostomidae	*Ictiobus niger*	Black Buffalo	G5	S3		
Colubridae	*Cemophora coccinea*	Scarlet Snake	G5	S4		
Cyprinidae	*Cyprinella whipplei*	Steelcolor Shiner	G5	S3		
Cyprinidae	*Notropis sabinae*	Sabine Shiner	G4	S2		
Falconidae	*Falco sparverius*	American Kestrel	G5	S3B,S4S5N		
Hirundinidae	*Petrochelidon pyrrhonota*	Cliff Swallow	G5	S3B		
Icteridae	*Euphagus carolinus*	Rusty Blackbird	G4	S2N		
Laniidae	*Lanius ludovicianus*	Loggerhead Shrike	G4	S4B,S4N		
Mephitidae	*Spilogale putorius*	Eastern Spotted Skunk	G4	SI		
Odontophoridae	*Colinus virginianus*	Northern Bobwhite	G4G5	S3S4	PS	
Pandionidae	*Pandion haliaetus*	Osprey	G5	S3B,S1S2N		
Parulidae	*Geothlypis formosa*	Kentucky Warbler	G5	S5B		
Parulidae	*Protonotaria citrea*	Prothonotary Warbler	G5	S5B		
Parulidae	*Setophaga discolor*	Prairie Warbler	G5	S5B		
Pelecanidae	*Pelecamis erythrorhynchos*	American White Pelican	G4	S3N		
Petromyzontidae	*Ichthyomyzon castaneus*	Chestnut Lamprey	G4	S2S3		
Phalacrocoracidae	*Phalacrocorax auritus*	Double-crested Cormorant	G5	S4N		

Table A-4. Continued.

Family	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Physidae	*Physella gyrina*	Tadpole Physa	G5	SNR		
Picidae	*Melanerpes erythrocephalus*	Red-headed Woodpecker	G5	S4S5		
Plethodontidae	*Pseudotriton ruber*	Red Salamander	G5	S3		
Ranidae	*Rana palustris*	Pickerel Frog	G5	S3S4		
Strigidae	*Asio flammeus*	Short-eared Owl	G5	S2N		
Troglodytidae	*Thryomanes bewickii*	Bewick's Wren	G5	SIB,SIN		LE
Turdidae	*Hylocichla mustelina*	Wood Thrush	G4	S5B		
Tytonidae	*Tyto alba*	Common Barn-owl	G5	S3		
Unionidae	*Anodonta suborbiculata*	Flat Floater	G5	S4		
Unionidae	*Lampsilis teres*	Yellow Sandshell	G5	S5		
Unionidae	*Potamilus purpuratus*	Bleufer	G5	S5		
Unionidae	*Pyganodon grandis*	Giant Floater	G5	S5		
Unionidae	*Toxolasma texasiensis*	Texas Lilliput	G4	S4		
Unionidae	*Uniomerus tetralasmus*	Pondhom	G5	S5		
Unionidae	*Utterbackia imbecillis*	Paper Pondshell	G5	S5		
Ursidae	*Ursus americanus*	American Black Bear	G5	SI		LE
Vespertilionidae	*Eptesicus fuscus*	Big Brown Bat	G5	S5B,S5N		
Vespertilionidae	*Lasiurus borealis*	Eastern Red Bat	G3G4	S4S5		
Vespertilionidae	*Myotis austroriparius*	Southeastern Myotis	G4	S3S4		
Vespertilionidae	*Nycticeius humeralis*	Evening Bat	G5	SNRB,SNRN		
Vespertilionidae	*Perimyotis subflavus*	Tri-colored Bat	G2G3	S3S4		

State Rank

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State and Federal Status

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Appendix B

Camp McCain Hunting and Fishing Regulations and Procedures

NGMS-CMT-OP 16 May 2018

SUBJECT: Camp McCain 2018-2019 Hunting/Fishing and Access Procedures

1. Reference: Mississippi Department of Wildlife, Fisheries and Parks (“MDWFP") 2018-2019 Hunting and Fishing Regulations and 2018-2019 Hunting Seasons.
2. Reference: 16 USC 670 (“Sikes Act”).

Camp McCain, a Mississippi Army National Guard training center, is open to the public for hunting and fishing using an internet based fee permitting system, in accordance with the Sikes Act (16 USC 670), MDWFP 2018-2019 Hunting and Fishing Regulations, Hunting Seasons. All hunters and anglers must obtain a $20.00 non-transferable permit, if applicable, prior to hunting or fishing on Camp McCain. To obtain a permit, individuals must access the Camp McCain Hunting/Fishing internet site, https://ms.ng.mil/Pages/Default.aspx, and follow the instructions. Each permit will be valid for 1 year. Permit(s) must be displayed on the vehicle dashboard with the permit holder's name clearly visible through the windshield, and the wallet portion of the permit carried on your person. If there are multiple hunters/anglers in one vehicle, all permits must be displayed on the dashboard.

1. There are approximately 12,500 acres open to the public for hunting (see Camp McCain hunting/fishing map for restrictions). Fishing lakes/ponds are authorized in areas west of James H. Biddy Road and south of Greensboro Road. See paragraph 21 for fishing information. Closed dates for public access at Camp McCain are published weekly in the Grenada newspaper “The Grenada Star.” DATES ARE SUBJECT TO CHANGE. To determine when Camp McCain is open for hunting, call **662-294-0040** no earlier than 12 PM the day before your request. DURING PERIODS OF TRAINING, NO HUNTING WILL BE ALLOWED ON CAMP MCCAIN. See paragraph 21 for information on fishing access.

2. Camp McCain has Restricted Hunting Areas. Area A is archery hunting only from the beginning of archery season to the end of the last deer season. Small game hunting in area A is allowed starting the day after the end of the last deer season. Area B is archery hunting only. NO FIREARMS ALLOWED in Area “B" at any time. Area C (Cantonment Area) is NO HUNTING ALLOWED. Area D (Training Area 20) is ARCHERY HUNTING ONLY for deer. All other seasons in Area D have no additional restrictions. See Camp McCain 2018-2019 Hunting/Fishing and Access Map for details.

All persons accessing Camp McCain for the purpose of hunting, fishing, trapping, or other approved outdoor activities are responsible for following and adhering to all applicable Federal, State, Department of Defense, and Camp McCain laws and

3. regulations. Hunters and anglers are also responsible for knowing where they are at all times while on Camp McCain. A map showing the boundary, roads, gates and training areas is provided on purchase of a permit and is also available for viewing at the Security Office building (S-200) and inside the Deer Management Assistance Program building (S-408).

4. Enforcement of all applicable laws on Camp McCain will be the responsibility of Camp McCain Security in coordination with Mississippi Department of Wildlife, Fisheries, and Parks Conservation Officers. Hunters, anglers or other recreational users are subject to being checked for compliance at any time while on the premises of Camp McCain.

5. Safety precautions:

a. Target shooting is prohibited.
b. No hunting or shooting within 50 yards of any building.
c. No alcoholic beverages allowed.
d. Unauthorized personnel will not access any structure, facility, tower or building.
e. Do not touch or pick up any object that may be hazardous. Examples would be unexploded ordinance, ammunition, etc., that could cause injury or death.
f. No shooting across Camp McCain boundary lines. Boundary lines are marked with red spots on trees along boundary line. Lands adjacent to Camp McCain are private land and entering these properties may subject the hunter/angler to criminal liability for trespass. Stands, blinds, or other hunting positions should be placed so that the hunter does not shoot across any boundary line and onto adjacent private property.
g. When hunting deer or hogs during any firearm season for deer, hunters must wear in full view, a minimum of 500 square inches of solid unbroken fluorescent orange. When hunting quail or rabbit on Camp McCain hunters must wear a hunter orange vest or cap.

6. All persons fifteen (15) years of age and younger, must be in the presence and under the direct supervision of a licensed or exempt hunter at least twenty-one (21) years of age, when hunting. A licensed hunter supervising a child as provided in this section must hold a valid Mississippi license for the species being hunted.

7. RoadsA/ehicles: During all deer firearms seasons, no loaded shoulder-fired weapons are allowed within 50 feet of the center line of any road. No shooting is allowed in, on or across any road or right-of-way. No privately owned vehicles (POV) are allowed in the training areas of Camp McCain except for the retrieval of harvested deer while being escorted by Camp McCain Security. Vehicles blocking any Camp McCain gate may be towed at the owner's expense. No POV's are allowed on wildlife food plots or in stream beds.

8. Harassment of wildlife, including spotlighting is prohibited.

9. Tree Stands/Blinds: Constructing or hunting from any permanent stand or blind is prohibited. Destroying, defacing, cutting, driving nails or spikes into, or otherwise damaging any standing

live tree, natural feature, or plant is prohibited. Portable stands (including tripods and ground blinds) that are not removed from the area daily must have the hunter's name and phone number permanently and legibly written on or attached to the stand. Stands left on the installation do not reserve hunting locations. Camp McCain is not responsible for stands damaged or destroyed by any legal actions of its employees. Portable stands may not be installed on Camp McCain prior to 7 days before deer season opens, nor left longer than 14 days after the last deer season ends. Stands not in compliance with these regulations may be confiscated and disposed of by Camp McCain staff.

10. Fall-Arrest Systems: Every occupant of an elevated hunting device shall wear a Fall Arrest Device manufactured to applicable Treestand Manufacturers Association industry standards appropriate for the occupant's size and weight.

11. Baiting and Feeding: No bait or feed is allowed on Camp McCain at any time. No food plots may be placed on Camp McCain without prior written approval of the Camp McCain Environmental Office or the Base Operations Supervisor.

12. Man drives are prohibited on Camp McCain. A man drive is defined as two or more organized people moving through an area with the intent to flush, move or direct animals to make them more visible for harvest.

13. Guides/Outfitters: No person or group of persons may act as a guide, outfitter, or in any other capacity for which they are paid or promised to be paid by any other individual or individuals for services rendered.

14. Transporting or releasing onto Camp McCain or the capture and removal of any live animal or plant is prohibited without prior written permission by the Camp McCain Environmental office, or the Base Operations Supervisor.

15. Other Seasons: Hunting seasons for animals not listed in this document are the same as statewide seasons.

16. Use of metal detectors on Camp McCain is prohibited.

17. During Raccoon, Opossum, and Bobcat Seasons, hunting is allowed without dogs during daylight hours and with dogs from one-half hour after sunset until 4:00 A.M.

18. Wild Hogs: Wild hogs are classified as nuisance animals and hunters are encouraged to kill them at every opportunity. The opportunity to kill hogs on Camp McCain is provided only for population control purposes and not for sport. Wild hogs may be killed during daylight hours only during any open season with weapons and ammunition legal for that season. Trapping (including snaring) of hogs is prohibited.

Appendix C

State-listed Flora and Fauna
Indigenous Fauna
Indigenous Flora
2015 Camp McCain Herp/Mammal Surveys by Ed Kaiser, Ph.D.

Table C-l. Rare plant species on Camp McCain, Mississippi, state ranking, and location coordinates from Duck Hill Military Topographic Map (Source - MS Natural Heritage Program - January, 1997).

Scientific Name	Common Name and State Ranking	Location & Year Found
Agalinis viridis	Green False-foxglove (S2 S3)	Area #19, 1994
Antennaria solitaria	Singleheaded Pussytoes (S3?)	Bluffs South of Grant Rd., 1995
Aralia racemosa	American Spikenard (SI?)	Bluffs South of Grant Rd. 1995
Carex erinite var. brevicornis	Short Hair Sedge	Area 14 A, 1995
Carex meadii	Mead's Sedge	Area 9 A, 1995
Carex stricta	Uptight Sedge (S2)	Area#6B, 1995
Carya glabra megacarpa	Swamp Hickory (S2 S3)	Area #18, 1994
Celastrus scandens	Climbing Bittersweet (S2 S3)	Cut-over South of Grant Rd., 1995
Cheilanthes lanosa	Hairy-Lip Fem (S2)	Area#3B, 1994
Comandra umbellata	Umbellate Bastard toadflax (S?)	Area#3B, 1995
Crataegus calpodendron	Pearl Hawthorne	Grant Rd. 1995
Cyperus plukenetti	Plukenets Flatsedge	Area 3B, 1994
Cypripedium parviflorum	Yellow-Lady's-slipper (S2 S3)	Area #18, 1994
Dasistoma macrophylla	Mullein Foxglove	Grant Rd. 1995
Hybanthus concolor	Green Violet (S2)	Woods South of Grant Rd, 1995
Lilium superbum	Turk's-Cap Lily (S3 S4)	Area#l, 1994
Luzula acuminata	Hairy Woodrush (S3)	Bluffs South of Grant Rd, 1995
Matelea carolinensis	Carolina Anglepod (S3)	Area #18, 1994
Matelea obliqua	Climbing Milkweed (S2?)	Area#8B, 1996
Melanthium virginicum	Virginia Bunchflower (S2 S3)	Area#10B, 1995
Muhlenbergia sylvatica	Woodland Muhly (SU)	Area #2, 1994
Osmorhiza longistylis	Smoother Sweet-cicely (S3)	Woods South of Grant Rd., 1995
Pachysandra procumbens	Allegheny-spurge (S3)	Near Grant Rd. along Creek, 1994
Panax quinquefolius	American Ginseng (S3)	Area #18, 1994
Platanthera lacera	Green-Fringed Orchid (SI S2)	Cutover south of Grant Rd., 1995
Pycnanthemum verticillatum var pilosum	Hairy Mountainmint (SR)	Edge of Cox Lake, 1994
Rudbeckia subtomentosa	Sweet Coneflower (SI)	Edge of Cox Lake, 1995
Sabatia campestris	Prairie Pink (S2 S3)	Roadside in Area #4 '94
Schisandra glabra	Scarlet Woodbine (S3?)	Area #18, 1994
Spiranthes ovalis	Lesser Ladies'-Tresses(S2 S3)	Woods South of Grant Rd, 1995
Triosteum angustifolium	Narrow-Leaf Fever Root(S3)	Near Grant Road along Creek, 1995
Triphora trianthophora	Three Bird's Orchid(S2 S3)	Area #10, 1994
Veronicastrum virginicum	Culver's Root	Area 8E, 1995

Table C-2. Rare animal species on Camp McCain located during rare animal survey, their state rankings, and number of occurrences (EOR No.) (Source - MS Natural Heritage Program -1999).

Scientific Name	Common Name	State Rank	Location	EOR No. & Year recorded
CAMB ARID AE	**CRAYFISH**			
Procambarus lylei	Shutispear crayfish	S2	Area 16 stream	1-1994,1-1995
AMPHIBIA	**AMPHIBIANS**			
Pseudotriton ruber vioscai	Southern red salamander	S3	Area 3B(Drift 1)	1- 1994,1-1995, 2-1996
AVES	**BIRDS**			
Pandion haliaetus	Osprey	S3B,S1S2N	Area 12	1-1994
Accipiter cooperii	Cooper's hawk	S2B	Area 10B	1-1996
Accipiter striatus	Sharp-shinned hawk	S1?B	Area 16	1-1996

Mammals inhabiting Camp McCain Training Center, Mississippi.

Domestic cat *(Felis domesticus)*
Striped skunk *(Mephitis mephitis)*
Spotted skunk *(Spilogale putorius)*
Cottontail rabbit *(Sylvilagus floridanus)*
Swamp rabbit *(S. aquaticus)*
Opossum *(Didelphis virginiana)*
Gray squirrel *(Sciurus carolinensis)*
Fox squirrel *(S. niger)*
Southern flying squirrel *(Glaucomys volans)*
Eastern pipistrelle bat *(Pipistrellus subflavus)*
Evening bat *(Nycticeius humeralis)*
Brazilian free-tailed bat *(Tadarida brasiliensis)*
Southeastern myotis *(Myotis austroriparius)*
Nutria *(Myocastor coypus)*
Least shrew *(Cryptotis parva)*
Southeastern shrew *(Sorex longirostris)*
Shorttail shrew *(Blarina brevicauda)*
Eastern wood rat *(Neotoma floridana)*
Hispid cotton rat *(Sigmodon hispidus)*
Marsh Rice rat *(Oryzomys palustris)*
Domestic dog *(Canis familiaris)*
Coyote *(C. latrans)*
Bobcat *(Lynx rufus)*
Raccoon *(Procyon lotor)*
White-tailed deer *(Odocoileus virginianus)*
Armadillo *(Dasypus novemcinctus)*
Gray fox *(Urocyon cinereoargenteus)*
Red fox *(Vulpes vulpes)*
Long tail weasel *(Mustela frenata)*
Mink *(M. vison)*
Big brown bat *(Eptesicus fuscus)*
Eastern red bat *(Lasiurus borealis)*
Hoary bat *(L. cinereus)*
Seminole bat *(L. seminolus)*
Beaver *(Castor canadensis)*
River otter *(Lutra canadensis)*
Muskrat *(Ondatra zibethicus)*
Cotton mouse *(Peromyscus gossypinus)*
Golden mouse *(P. nuttalli)*
House mouse *(Mus musculus)*
Harvest mouse *(Reithrodontomys humulis)*
Pine vole *(Microtus pinetorum)*
Eastern mole *(Scalopus aquaticus)*

Reptiles and Amphibians occurring on Camp McCain Training Center, Mississippi.

Southern dusky salamander *(Desmognathus conanti)*
Southeastern crown snake *(Tantilla coronata)*
Slimy salamander *(Plethodon glutinosus)*
Southern cricket frog *(A. gryllus)*
Smooth earth snake *(Virginia valeriae)*
Southern red salamander *(Pseudotriton ruber vioscai)*
Rough earth snake *(V. striatula)*
Two-lined salamander *(E. cirrigera)*
Chorus frog *(P. triseriata)*
Eastern cottonmouth *(Agkistrodon piscivorus)*
Three-lined salamander *(Eurycea guttolineata)*
Bird-voiced tree frog *(Hyla avivoca)*
Copperhead *(A. contortrix)*
Spotted salamander *(Ambystoma maculatum)*
Green tree frog *(H. cinerea)*
Midland water snake *(Nerodia sipedon pleuralis)*
Mole salamander *(A. talpoideum)*
Yellow belly water snake *(Nerodia erythrogaster)*
Marbled salamander *(A. opacum)*
Bronze frog *(Rana clamitans clamitans)*
Stinkpot turtle *(Sternotherus odoratus)*
Small-mouthed salamander *(A. texanum)*
Spring peeper *(Pseudacris crucifer)*
Eastern Spiny Soft-shelled turtle *(Trionyx spinifera spinifera)*
Southern ringneck snake *(Diadophis punctatus)*
Barking tree frog *(H. gratiosa)*
Snapping turtle *(Chelydra serpentina)*
Com snake *(Elaphe guttata)*
Squirrel tree frog *(H. squirella)*
Three-Toed box turtle *(Terrapene Carolina triungus)*
Gray rat snake *(E. obsoleta)*
Gray tree frog *(H. Chrysoscelis)*
Eastern mud turtle *(Kinosternon subrubrum)*
Eastern coachwhip *(Masticophis flagellum)*
Mississippi map turtle *(Graptemys kohnii)*
Green water snake *(Nerodia cyclopion)*
Southern leopard frog *(R. sphenocephala)*
Central newt *(Notophthalmus viridescens)*
Bullfrog *(R. catesbiana)*
River Cooters *(Pseudemys concinna)*
Red-Eared Slider *(Trachemys Scripta elegans)*
Diamond-backed water snake *(N rhombifera)*
Five-lined skink *(E. fasciatus)*
Fence lizard *(Sceloporus undulatus)*
Eastern ribbon snake *(Thamnophis sauritus)*
Southeastern skink *(E. inexpectatus)*
Slender glass lizard *(Ophisaurus attenuates)*
Eastern garter snake *(T. sirtalis)*
Broad-headed skink *(E. laticeps)*
Timber rattlesnake *(Crotalus horridus)*
Ground skink *(Scincella lateralis)*
Yellow belly water snake *(Nerodia erythrogaster flavigaster)*
Pigmy rattlesnake *(Sistrurus miliarius)*
Green anole *(Anolis carolinensis)*
Speckled king snake *(Lampropeltis getula holbrooki)*
Scarlet snake *(Cemophora coccinea)*
Six-lined racerunner *(Aspidoscelis sexlineatus)*
Central newt *(Notophthalmus viridescens)*
Eastern worm snake *(Carphophis amoenus)*
Black racer *(Coluber constrictor)*
Mud snake *(Farancia abacura)*
Fence lizard *(Sceloporus undulatus)*
Eastern hognose snake *(Heterodon platyrhinos)*

Southern brown snake *(Storeria dekayi)*
Eastern narrow-mouthed toad *(Gastrophryne carolinensis)*
American toad *(Anaxyrus americanus)*
Eastern milksnake (Z. *triangulum)*
Eastern spadefoot toad *(Scaphiopus holbrooki)*
Rough green snake *(Opheodrys aestivus)*
Fowler's toad *(Anaxyrus fowleri)*
Red belly snake *(Storeria occipitomaculata)*
Three-toed box turtle *(Terrapene Carolina triunguis)*
Snapping turtle *(Chelydra serpentina)*
Copperhead *(A. contortrix)*
Eastern mud turtle *(Kinosternon subrubrum)*

Bird species inhabiting Camp McCain, Mississippi.

Game Birds

Northern bobwhite quail *(Colinus virginianus)*
Eastern wild turkey *(Meleagris gallopavo)*
Mourning dove *(Zenaida macroura)*
Green-winged teal *(Anas crecca)*
Common snipe *(Capella gallinago)*
Mallard *(Anas platyrhynchos)*
Woodduck *(Aix sponsa)*
Blue-winged teal *(Anas discors)*
Hooded merganser *(Lophodytes cucullatus)*

Nongame Birds

Green heron *(Butorides striatus)*
Great blue heron *(Ardea herodias)*
Little blue heron *(Egrettaa caerulea)*
Yellow-crowned night heron *(Nyctanassa violacea)*
Cattle egret *(Bubulcus ibis)*
Least bittern *(Ixobrychus exilis)*
Common nighthawk *(Chordeiles minor)*
Chuck-will's-widow *(Caprimulgus carolinensis)*
Pileated woodpecker *(Dryocopus pileatus)*
Red-bellied woodpecker *(Centurus carolinus)*
Red-headed woodpecker *(Melanerpes erythrocephalus)*
Downy woodpecker *(Picoides pubescens)*
Hairy woodpecker *(P. villosus)*
Yellow-bellied sapsucker *(Sphyrapicus varius)*
Common flicker *(Colaptes auratus)*
Great-crested flycatcher *(Myiarchus crinitus)*
Eastern wood pewee *(Contopus virens)*
Acadian flycatcher *(Empidonax virescens)*
Northern harrier *(Circus cyaneus)*
Sharp shinned hawk *(Accipiter striatus)*
Cooper's hawk *(Accipiter cooperii)*
Red-shouldered hawk *(Buteo lineatus)*
Broad-winged hawk *(B. platypterus)*
Red-tailed hawk *(B. jamaicensis)*
Barn owl *(Tyto alba)*
Common screech owl *(Otis asio)*
Barred owl *(Strix varia)*
Great-homed owl *(Bubo virginianus)*
Screech owl *(Otus asio)*
American kestrel *(F. sparverius)*
Yellow-billed cuckoo *(Coccyzus americanus)*
Ruby-throated hummingbird *(Archilochus colubris))*
Chimney swift *(Chaetura pelagica*
Rough-winged swallow *(Stelgidopteryx ruficolli*
Barn swallow *(Hirundo rustica)*
Tree swallow *(Iridoprocne bicolor)*

Carolina chickadee *(Parus carolinensis)*
Tufted titmouse *(P. bicolor)*
Brown creeper *(Certhia familiaris)*
Brown thrasher *(Toxostoma rufum)*
Catbird *(Dumetella carolinensis)*
Orchard oriole *(Icterus spurius)*
Brown-headed cowbird *(Molothrus ater)*
Kentucky warbler *(Oporornis formosus)*
Hooded warbler *(Wilsonia citrina)*
Pine warbler *(Dendroica pinus)*
Prairie warbler *(D. discolor)*
Yellow-rumped warbler *(D. coronata)*
Swainson's warbler *(Limnothlypis swainsonii)*
Prothonotary warbler *(Prothonotaria citrea)*
Yellow-breasted chat *(Icteria virens)*
Worm-eating warbler *(Helmitheros vermivorus)*
Black and white warbler *(Mniotilta varia)*
Yellow warbler *(Dendroica petechia)*
Chestnut-sided warbler *(Dendroica castanea)*
Yellow throated warbler *(Dendroica dominica)*
Magnolia warbler *(Dendroica magnolia)*
Common yellowthroat *(Geothlypis trichas)*
Hermit thrush *(Catharus guttatus)*
Eastern bluebird *(Sialia sialis)*
American robin *(Turdus migratorius)*
Northern cardinal *(Cardinalis cardinalis)*
Indigo bunting *(Passerina cyanea)*
Turkey vulture *(Cathartes aura)*
Black vulture *(Coragyps atratus)*
White-breasted Nuthatch (5. *carolinensis)*
Red-breasted nuthatch *(Sitta pusilia)* Mockingbird *(Mimus polyglottos)*
Red-winged blackbird *(Agelaius phoeniceus)*
Common grackle *(Quiscalus quiscula)*
Grey catbird *(Tyrannus dominicensis)*
Blue-gray gnatcatcher *(Polioptila caerulea)*
Red-eyed vireo *(Vireo olivaceus)*
White-eyed vireo *(V. griseus)*
Yellow-throated vireo *(V flavifrons)*
Rufous-sided towhee *(Pipilo erythrophthalmus)*
Wood thrush *(Hylocichla mustelina)*
American goldfinch *(Carduelis tristis)*
Blue grosbeak *(Guiraca caerulea)*
Summer tanager *(Piranga rubra)*
Chipping sparrow *(Spizella passerina)*
Field sparrow (S. *pusilia)*
Fox sparrow *(Passerella iliaca)*
White-throated sparrow *(Zonotrichia albicollis)*
Song sparrow *(Melospiza melodia)*
Carolina wren *(Thryothorus ludovicianus)*
Ruby-crowned kinglet *(Regulus calendula)*
Golden crowned kinglet *(Regulus satrapa)*
Belted kingfisher *(Megaceryle alcyon)*
American redstart *(Setophago ruticilla)*
Louisiana waterthrush *(Seiurus motacilla)*
Ovenbird *(Seiurus aurocapillus)*
Northern flicker *(Colaptes auratus)*
Killdeer *(Charadrius vociferus)*

Plant species occurring on Camp McCain, Mississippi (Source: LCTA surveys, University of Southern Mississippi and John MacDonald, Mississippi State University)

slender copperleaf *(Acalypha gracilens)*
rhombic copperleaf *(Acalypha rhomboidea)*
Virginia copperleaf *(Acalypha virginica)*
Florida sugar maple *(Acer floridanum)*
box elder *(Acer negundo)*
red maple *(Acer rubrum)*
silver maple *(Acer saccharinum)*
yarrow or milfoil *(Achillea millefolium)*
doll's eyes *(Actaeapachypoda)*
maidenhair fem *(Adiantum pedatum)*
red buckeye *(Aescuius pavia)*
fascicled agalinis *(Agalinis fasciculata)*
Gattinger's agalinis *(Agalinis gattingeri)*
large purple agalinis *(Agalinis purpurea)*
slender agalinis *(Agalinis tenuifolia)*
Agalinis viridis
agave or false aloe *(Manfreda virginica)*
many-flowered agrimony *(Agrimonia parviflora)*
woodland agrimony *(Agrimonia rostellata)*
Elliott's bent grass *(Agrostis elliottiana)*
winter or rough bent grass *(Agrostis hyemalis)*
upland bent grass *(Agrostis perennis)*
tree of heaven *(Ailanthus altissima)*
hair grass *(Aira elegans)*
mimosa *(Albizia julibrissin)*
Aphanes microcarpa
false garlic *(Nothoscordum bivalve)*
wild onion *(Allium canadense)*
field garlic *(Allium vineale)*
Carolina foxtail *(Alopecurus carolinianus)*
pigweed or pilewort *(Amaranthus hybridus)*
spiny pigweed *(Amaranthus spinosus)*
ragweed *(Ambrosia artemisifolia)*
lance-leaved ragweed *(Ambrosia bidentata)*
giant ragweed *(Ambrosia trifida)*
downy serviceberry *(Amelanchier arborea)*
pepper vine *(Ampelopsis arborea)*
purple ammannia *(Ammannia coccinea)*
sand parsley *(Ammoselinum butleri)*
hog peanut *(Amphicarpaea bracteata)*
spiny anoda *(Anoda cristata)*
turkeyfoot bluestem *(Andropogon gerardii)*
Andropogon gyrans
broomsedge *(Andropogon virginicus)*
pussy-toes *(Antennaria plantaginifolia)*
single-headed pussy toes *(Antennaria solitaria)*
mayweed or dog fennel *(Anthemis cotula)*
ground nut *(Apios americana)*
Cyclospermum leptophyllum
Indian hemp *(Apocynum canrtabinum)*
spikenard *(Aralia racemosa)*
devil's walking stick *(Aralia spinosa)*
jointhead arthraxon *(Arthraxon hispidus)*
sandwort *(Arenaria serpyllifolia)*
green dragon *(Arisaema dracontium)*
Arisaema quinatum
jack-in-the-pulpit *(Arisaema triphyllum)*
poverty grass *(Aristida dichotoma)*
three awn grass *(Aristida longespica)*
prairie three awn grass *(Aristida oligantha)*
arrowfeather or arrow grass *(Aristida purpurascens)*
branched aristida *(Aristida ramosissima)*
Dutchman's pipe *(Aristolochia serpentaria)*
giant cane or trimcane *(Arundinaria gigantea)*
giant reed *(Arundo donax)*
blunt-leaved milkweed *(Asclepias amplexicaulis)*
orange milkweed or butterfly weed *(Asclepias tuberosa)*
white milkweed *(Asclepias variegata)*
green milkweed *(Asclepias viridiflora)*
pawpaw *(Asimina triloba)*
ebony spleenwort *(Asplenium platyneuron)*
eastern silvery aster *(Symphyotrichum concolor)*
bushy aster *(Symphyotrichum dumosum)*
global aster *(Eurybia hemisphaerica)*
starved or calico aster *(Symphyotrichum lateriflorum)*
late purple aster *(Symphyotrichum patens)*
frost aster *(Symphyotrichum pilosum)*
willow aster *(Symphyotrichum praealtum)*
arrow-leaved aster *(Symphyotrichum sagittifolium)*
slim aster *(Symphyotrichum subulatus)*
wavy-leaved aster *(Symphyotrichum undulatus)*
southern lady fem *(Athyrium asplenioides)*
yellow foxglove *(Aureolaria flava)*

bushy beard grass *(Andropogon glomeratus)*
oats *(Avena sativa)*
carpet grass *(Axonopus affinis)*
Axonopus furcatus
eastern baccharis *(Baccharis halimifolia)*
round-leaved hedge-hyssop *(Bacopa rotundifolia)*
white wild indigo *(Baptisia alba)*
screw stem *(Bartonia paniculata)*
rattan vine or supple-jack *(Berchemia scandens)*
river birch *(Betula nigra)*
bearded beggar ticks *(Bidens aristosa)*
Spanish needles *(Bidens bipinnata)*
small beggar ticks *(Bidens discoidea)*
beggar ticks or stick tight *(Bidens frondosa)*
cross vine *(Bignonia capreolata)*
Blephilia ciliata
false nettle *(Boehmeria cylindrica)*
panicled boltonia *(Boltonia diffusa)*
silver bluestem *(Bothriochloa saccharoides)*
southern grape fern *(Botrychium biternatum)*
rattlesnake fern *(Botrychium virginianum)*
broadleaf signalgrass *(Brachiaria platyphylla)*
brown top millet *(Brachiaria ramosa)*
bearded short-husk *(Brachyelytrum erectum)*
Brassica kaber
Brassica napus
water shield *(Brasenia schreberi)*

quaking grass *(Briza minor)*
rescue grass *(Bromus catharticus)*
hairy chess or brome grass *(Bromus commutatus)*
Japanese brome grass *(Bromus japonicus)*
ladies' eardrops *(Brunnichia ovata)*
blue hearts *(Buchnera floridana)*
Bulbostylis capillaris
pale Indian plantain *(Arnoglossum atriplicifolium)*
Arnoglossum ovatum
American beauty berry *(Callicarpa americana)*
water starwort *(Callitriche heterophylla)*
Callitriche peploides
cup seed *(Calycocarpum lyonii)*

fem-leaved foxglove *(Aureolariapectinata)*
Carex albicans
Carex albolutescens
narrow-leaved sedge *(Carex amphibola)*
eastern sedge *(Carex atlantica)*
Carex austrina

woodland sedge *(Carex blanda)*
Carex bushii
Carex caroliniana

Carex cephalophora
wolftail sedge *(Carex cherokeensis)*
hirsute sedge *(Carex complanata)*
Carex corrugata
fringed sedge or sickle grass *(Carex crinita)*
white-edged sedge *(Carex debilis)*
slender wood sedge *(Carex digitalis)*
fescue sedge *(Carex festucacea)*
thin-fruited sedge *(Carex flaccosperma)*
frank sedge *(Carex frankii)*
Carex glaucodea
Carex hirsutella
Carex laevivaginata
Carex laxiflora
leavenworth's sedge *(Carex laevivaginata)*
Carex laptalea
Carex longii
hop sedge *(Carex lupulina)*

sallow sedge *(Carex lurida)*
Mead's sedge *(Carex meadii)*

Carex muhlenbergii

black-edged sedge *(Carex nigromarginata)*
Carex oxylepis
reflexed sedge *(Carex retroflexa)*
stellate sedge *(Carex rosea)*
Carex stricta

bent sedge *(Carex styloflexa)*
Swan's sedge *(Carex swanii)*
Carex triangularis
blunt broom sedge *(Carex tribuloides)*
umbel-like sedge *(Carex umbellata)*

trumpet creeper *(Campsis radicans)*
shepard's pursh *(Capsella bursa-pastoris)*
spring cress *(Cardamine bulbosa)*
bitter cress *(Cardamine hirsuta)*
balloon vine *(Cardiospermum halicacabum)*
Carex sp. Near amphibola
Carex sp. Near glaucodea
thicket sedge *(Carex abscondita)*
shagbark hickory *(Carya ovata)*
sand hickory *(Carya pallida)*
mockemut hickory *(Carya tomentosa)*
partridge pea *(Chamecrista chamaecristoides)*
wild or American senna *(Senna marilandica)*
wild sensitive plant *(Chamaecrista nictitans)*
sicklepod *(Senna obtusifolia)*
chestnut *(Castanea dentata)*
western catalpa *(Catalpa speciosa)*
New Jersey tea *(Ceanothus americanus)*
climbing bittersweet *(Celastris scandens)*
hackberry or sugarberry *(Celtis laevigata)*
spotted knapweed *(Centaurea maculosa)*
spurred butterfly pea *(Centrosema virginianum)*
buttonbush *(Cephalanthus occidentalis)*

Cerastium diffusum
Cerastium fontanum
mouse-ear chickweed *(Cerastium glomeratum)*
redbud *(Cercis canadensis)*
wild chervil *(Chaerophyllum tainturieri)*
fairy wand or devil's bit *(Chamaelirium luteum)*
wild oats or wood oats *(Chasmanthium latifolium)*
slender spike grass *(Chasmanthium laxum)*
spike grass *(Chasmanthium sessiliflorum)*
hairy lip fem *(Cheilianthes lanosa)*
lamb's quarters *(Chenopodium album)*
Mexican tea *(Chenopodium ambrosioides)*
feather finger grass *(Chlor is virgata)*
white, field, or ox-eye daisy *(Chrysanthemum leucanthemum)*
grass-leaved golden aster *(Chrysopsis graminifolia)*
Chrysopsis mariana
spotted water hemlock *(Cicuta maculata)*
wood or sweet reed grass *(Cinna arundinaceae)*
enchanter's nightshade *(Circaea lutetiana)*

fox sedge *(Carex vulpinoidea)*
Willdenow's sedge *(Carex willdenowii)*
American hornbeam *(Carpinus caroliniana)*
bittemut hickory *(Carya cordiformis)*
pignut hickory *(Carya glabra)*
pecan *(Carya illinoensis)*
swamp hickory *(Carya glabra var. megacarpa)*
red hickory *(Carya ovalis)*
horse balm *(Collinsonia canadensis)*
Collinsonia tuberosa
bastard toad flax *(Comandra umbellata)*
Asiatic dayflower *(Commelina communis)*
spreading dayflower *(Commelina diffusa)*
Virginia dayflower *(Commelina virginica)*
Conyza bonariensis
horseweed *(Conyza canadensis)*
autumn coral root *(Corallorhiza odontorhiza)*
lance-leaved tickseed *(Coreopsis lanceolata)*
calliopsis *(Coreopsis tinctoria)*
tall tickseed *(Coreopsis tripteris)*
flowering dogwood *(Cornus florida)*
swamp dogwood *(Cornus stricta)*
wart or swine's cress *(Coronopis didymus)*

hazel nut *(Corylus americana)*
pear hawthorn *(Crataegus calpodendron)*
barberry leaved hawthorn *(Crataegus engelmannii)*
parsley hawthorn *(Crataegus marshallii)*
Crataegus opima
Crataegus spp.
rattlebox *(Crotolaria sagittalis)*

goatweed *(Croton capitatus)*
honewort *(Crytotaenia canadensis)*
field dodder *(Cuscuta campestris)*
compact dodder *(Cuscuta compact a)*
dodder or love vine *(Cuscuta gronovii)*
Bermuda grass *(Cynodon dactylon)*
wild comfrey or hound's tongue *(Cynoglossum Virginian*

flat cyperus *(Cyperus compressus)*

Baldwin's cyperus *(Cyperus croceus)*
Cyperus difformis
globose cyperus *(Cyperus echinatus)*
redroot flatsedge *(Cyperus erythrorhizos)*

tall or roadside thistle *(Cirsium altissimum)*
Cirsium carolinianum
field thistle *(Cirsium discolor)*
spiny or yellow thistle *(Cirsium horridulum)*
bull thistle *(Cirsium vulgare)*
spring beauty *(Claytonia virginica)*
virgin's bower *(Clematis virginiana)*
butterfly pea *(Clitoria mariana)*
Carolina moonseed or coralbeads *(Cocculus carolinus)*

orchard grass *(Dactylis glomerata)*
silky oat grass *(Danthonia sericea)*
Dasistoma macrophylla
jimson weed *(Datura stramonium)*
Queen Ann's lace *(Daucus carota)*
American carrot *(Daucus pusillus)*

climbing hydrangea *(Decumaria barbara)*
weeping lovegrass *(Eragrostis curvula)*
prairie mimosa *(Desmanthus illinoensis)*
pond lovegrass *(Eragrostis glomerata)*
hoary tickclover *(Desmodium canescens)*
smooth creeping love grass *(Eragrostis hypno ides)*
hairy small-leaf ticktrefoil *(Desmodium ciliare)*
tufted love grass *(Eragrostis pectinacea)*
largebract ticktrefoil *(Desmodium cuspidatum)*
trailing tickseed *(Desmodium glabellum)*
smooth small-leaved tickseed *(Desmodium marilandicum)*
smooth tickseed *(Desmodium laevigatum)*
pointed-leaf ticktrefoil *(Desmodium glutinosum)*
naked flowered tickseed *(Desmodium nudiflorum)*
Nuttall's ticktrefoil *(Desmodium nuttallii)*
panicled tickseed *(Desmodium paniculatum)*
perplexing ticktrefoil *(Desmodium perplexum)*
dollar leaf *(Desmodium rotundifolium)*

chufa or yellow nutsedge *(Cyperus esculentus)*
yellow cyperus *(Cyperus flavescens)*
rice flatsedge *(Cyperus iria)*
Cyperus odoratus
marsh cyperus or marsh sedge *(Cyperus pseudovegetus)*
Cyperus plukenetii
Cyperus retrorsus
purple nutsedge *(Cyperus rotundus)*
false nutsedge *(Cyperus strigosus)*

yellow lady's slipper *(Cypripedium parviflorum var. pubescens)*
wooly elephant's foot *(Elephantopus tomentosus)*
goose grass *(Eleusine indica)*
wild rye grass *(Elymus virginicus)*
beech drops *(Epifagus virginiana)*
tiny love grass *(Eragrostis capillaris)*
stink grass *(Eragrostis cilianensis)*

sessile tickclover *(Desmodium sessilifolium)*
velvet-leaved tickseed *(Desmodium viridiflorum)*
deptford pink *(Dianthus armeria)*
Carolina ponysfoot *(Dichondra carolinensis)*
southern crab grass *(Digitaria ciliaris)*
slender crabgrass *(Digitaria filiformis)*
smooth crab grass *(Digitaria ischaemum)*
poor Joe or rough buttonweed *(Diodia teres)*
wild yam *(Dioscorea villosa)*
persimmon *(Diospyros virginiana)*
whitlow grass *(Draba brachycarpa)*
Indian strawberry *(Duchesnea indica)*
jungle rice *(Echinochloa colona)*
barnyard grass *(Echinochloa crusgali)*
creeping water plantain *(Echinodorus cordifolius)*
yerba de tajo *(Eclipta alba)*
silverberry *(Eleagnus umbellata)*
smallfruit spikerush *(Eleocharis microcarpa)*
blunt spikerush *(Eleocharis obtusa)*
slender spikerush *(Eleocharis tenuis)*
Carolina elephant's foot *(Elephantopus*

carolinianus)
warty spurge *(Euphorbia obtusata)*
India love grass *(Eragrostis pilosa)*
(Eragrostis poaeoides)
meadow love grass *(Eragrostis refracta)*
purple love grass *(Eragrostis spectabilis)*
fireweed *(Erechtites hieracifolia)*
silver or wooly plume grass *(Saccharum alopecuroides)*
spiral-awned plume grass *(Saccharum contortus)*
plume, or sugarcane plume grass *(Saccharum giganteus)*
daisy fleabane or whitetop *(Erigeron annuus)*
daisy or Philadelphia fleabane *(Erigeron philadelphicus)*
Robin's plantain *(Erigeronpulchellus)*
daisy fleabane *(Erigeron strigosus)*
slender rough fleabane *(Erigeron tenuis)*
Eryngium integrifolium
prostrate eryngo *(Eryngium prostratum)*
rattlesnake master *(Eryngium yuccifolium)*
strawberry bush *(Euonymus americanus)*
white boneset *(Eupatorium album)*
dog fennel *(Eupatorium capillifolium)*
mistflower or ageratum *(Conoclinium coelestinum)*
joe-pye-weed *(Eupatorium fistulosum)*
hyssop-leaved thoroughwort *(Eupatorium hyssopifolium)*
pink boneset *(Fleischmannia incarnatam)*
boneset *(Eupatorium perfoliatum)*
round-leaved boneset *(Eupatorium rotundifolium)*
white snakeroot *(Ageratina altissima)*
small-flowered boneset *(Eupatorium semiserratum)*
late thoroughwort *(Eupatorium serotinum)*
flowering spurge *(Euphorbia corollata)*
spotted spurge *(Euphorbia maculata)*
nodding spurge *(Euphorbia nutans)*
skeleton grass *(Gymnopogon ambiguus)*

bushy goldenrod *(Euthamia leptocephala)*
Facelis retusa
American beech *(Fagus grandifolia)*
tall or meadow fescue *(Festuca arundinacea)*
Vulpina myuros
nodding fescue *(Festuca subverticillata)*
slender or six-weeks fescue *(Festuca octoflora)*
annual fingerush *(Fimbristylis annua)*
slender fingerush *(Fimbristylis autumnalis)*
globe fingerush *(Fimbristylis miliacea)*
hairy fingerush *(Fimbristylis puberula)*
tomentose fingerush *(Fimbristylis tomentosa)*
Vahl's fingerush *(Fimbristylis vahlii)*
squarrose umbrella-grass *(Fiurena squarrosa)*
white ash *(Fraxinus americana)*
green ash *(Fraxinus pennsylvanica)*
milk pea *(Galactia regularis)*
downy milk pea *(Galactia volubilis)*
cleavers *(Galium aparine)*
wild licorice. *(Galium circaezans)*
witch hazel *(Hamamelis virginiana)*
rough pennyroyal *(Hedeoma hispida)*
Houstonia micrantha
small bluets or star violet *(Houstonia pusilia)*
Venus' pride *(Houstoniapurpurea)*
Houstonia rosea
bitterweed *(Helenium amarum)*
purple-head sneeze weed *(Helenium flexuosum)*
narrow-leaved sunflower *(Helianthus angustifolius)*
common or annual sunflower *(Helianthus annuus)*
rough or woodland sunflower *(Helianthus divaricatus)*
saw-toothed sunflower *(Helianthus grosse-serratus)*
stiff-haired sunflower *(Helianthus hirsutus)*
small wood sunflower *(Helianthus microcephalus)*
hairy sunflower *(Helianthus mollis)*
Helianthus silphioides
Helianthus helianthoides
turnsole *(Heliopsis indicum)*
daylily *(Hemerocallis fulva)*
mud plantain or duck-salad *(Heteranthera limosa)*

Galium parisiense
Galium pedemontanum
hairy bedstraw *(Galium pilosum)*
Galium tinctorium
fragrant bedstraw *(Galium triflorum)*
Galium uniflorum
biennial gaura *(Gaura biennis)*
yellow or Carolina jasmine *(Gelsemium sempervirens)*
striped gentian *(Gentiana villosa)*
Carolina geranium *(Geranium carolinianum)*
cut-leaved geranium *(Geranium dissectum)*
white avens *(Geum canadense)*
southern magnolia *(Magnolia grandiflora)*
green adder's mouth *(Malaxis unifolia)*
Carolian angle pod *(Matelea carolinensis)*
climbing milkweed or angle pod *(Gonolobus suberosus)*

pineapple weed *(Matricaria matricarioides)*
Mazus pumilus
purple hedge hyssop *(Mecardonia acuminata)*
spotted medic *(Medicago arabica)*
black or hop medic *(Medicago lupulina)*
bunch flower *(Melanthium virginicum)*
China berry *(Melia azedarach)*
melic grass *(Melica mutica)*
white sweet clover *(Melilotus alba)*
yellow sweet clover *(Melilotus officinalis)*
creeping cucumber *(Melothria pendula)*
globifera *(Micranthemum umbrosum)*
Microstegium vimineum
climbing hempweed *(Mikania scandens)*
sharp-winged monkey flower *(Mimulus alatus)*
partridge berry *(Mitchella repens)*
miterwort *(Mitreola petiolata)*
Carolina mallow *(Modiola caroliniana)*
carpet weed *(Mollugo verticillata)*
bee balm *(Monarda fistulosa)*
pinesap *(Monotropa hypopithys)*
red mulberry *(Morus rubra)*
nimble Will *(Muhlenbergia schreberi)*
Muhlenbergia sylvatica
forget-me-not *(Myosotis macrosperma)*
poet's narcissus *(Narcissuspoeticus)*
daffodil *(Narcissus pseudo-narcissus)*

Hibiscus moscheutos
hairy hawkweed *(Hieracium gronovii)*
little barley *(Hordeum pusilium)*
green violet *(Hybanthus concolor)*
common hydrangea *(Hydrangea arborescens)*
oak-leaf hydrangea *(Hydrangea quercifolia)*
Hydrolea uniflora
Hymenocallis occidentalis

St. Peter's wort *(Hypericum crux-andreae)*
Drummond's St. John's wort *(Hypericum drumondii)*
pineweed *(Hypericum gentianoides)*
clasping-leaved St. John's wort *(Hypericum gymnanthi*
hop hornbeam *(Ostrya virginiana)*
yellow wood sorrel *(Oxalis dillenii)*
yellow wood sorrel *(Oxalis stricta)*
violet wood sorrel *(Oxalis violacea)*

hemlock or water dropwort *(Oxypolis rigidior)*
alleghany spurge *(Pachysandra procumbens)*
ginseng *(Panax quinquefolium)*
Grisebach's panic grass *(Panicum aciculare)*
beaked panic grass *(Panicum anceps)*
Bose's panic grass *(Panicum boscii)*
deer tongue grass *(Panicum clandestinum)*
variable panic grass *(Panicum commutatum)*
starved panic grass *(Panicum depauperatum)*
spreading witch grass *(Panicum dichotomiflorum)*
forked panic grass *(Panicum dichotomum)*
gaping panic grass *(Panicum hians)*
wooly panic grass *(Panicum lanuginosum)*
lax-flowered panic grass (Paracwm *laxiflorum)*
Lindheimer's panic grass *(Panicum lindheimeri)*
barbed panic grass *(Panicum microcarpon)*
small-fruited panic grass *(Panicum polyanthes)*
Ravenel's panic grass *(Panicum ravenelii)*
velvety panic grass *(Panicum scoparium)*
round-fruited panic grass *(Panicum sphaerocarpon)*
switch grass *(Panicum virgatum)*
Virginia creeper *(Parthenocissus quinquefolia)*
bull paspalum *(Paspalum boscianum)*
Dallas grass *(Paspalum dilatatum)*
Florida paspalum *(Paspalum floridanum)*
field paspalum *(Paspalum laeve)*
Bahia grass *(Paspalum notatum)*

black gum *(Nyssa sylvatica)*
pennywort *(Obolaria virginica)*
common evening primrose *(Oenothera biennis)*
cut-leaved evening primrose *(Oenothera laciniata)*
thread-leaved sundrops *(Oenothera linifolia)*
showy evening primrose *(Oenothera speciosa)*
clustered bluets *(Oldenlandia uniflora)*
sensative fern *(Onoclea sensibilis)*
false gromwell *(Onosmodium virginianum)*
southern adder's tongue *(Ophioglossum vulgatum)*

sweet cicely *(Osmorhiza longistylis)*
cinnamon fern *(Osmundastrum cinnamomea)*
lopseed *(Phryma leptostachya)*
cut-leaved ground cherry *(Physalis angulata)*
clammy ground cherry *(Physalis heterophylla)*
Virginia ground cherry *(Physalis virginiana)*
pokeweed or pokeberry *(Phytolacca americana)*
short-leaf pine *(Pinus echinata)*
loblolly pine *(Pinus taeda)*
bracted plantain *(Plantago aristata)*
slender plantain *(Plantago heterophylla)*
English plantain *(Plantago lanceolata)*
blackseed plantain *(Plantago rugelii)*
paleseed plantain *(Plantago virginica)*
sycamore *(Plantanus occidentalis)*
Platanthera spp.
green wood orchid *(Platanthera clavellata)*
green fringed orchid *(Platanthera lacera)*

Camphorweed or stinkweed *(Pluchea camphorata)*

annual blue grass *(Poa annua)*
flexuous spear grass *(Poa autumnalis)*
bulbous blue grass *(Poa bulbosa)*
Chapman's blue grass *(Poa chapmaniana)*
Kentucky blue grass *(Poa pratensis)*
may apple or mandrake *(Podophyllum peltatum)*
pinkl milkwort *(Polygala incarnata)*
Maryland milkwort *(Polygala mariana)*
field or purple milkwort *(Polygala sanguinea)*
Solomon's seal *(Polygonatum biflorum)*
prostrate knotweed *(Polygonum aviculare)*
Polygonum posumbu
Polygonum amphibia
wild water pepper *(Persicaria hydropiperiodes)*
dock-leaved smart weed *(Persicaria lapathifolia)*
slender paspalum *(Paspalum setaceum)*
vasey grass *(Paspalum urvillei)*
maypop or passion flower *(Passiflora incarnata)*
yellow passion flower *(Passiflora lutea)*
lousewort *(Pedicularis canadensis)*
Penstemon laxiflorus
beef steak plant *(Perilla frutescens)*
Carolina canary grass *(Phalaris caroliniana)*
wild bean or bean vine *(Phaseolus polystachios)*
blue phlox *(Phlox divaricata)*

downy phlox *(Phlox pilosa)*
mistletoe *(Phoradendron serotinum)*
cottonwood *(Populus deltoides)*
waterthread pondweed *(Potamogeton diversifolius)*
small pondweed *(Potamogeton pusillus)*
decumbent five fingers *(Potentilla simplex)*
lion's foot *(Prenanthes altissima)*
self heal *(Prunella vulgaris)*
chickasaw plum *(Prunus angustifolia)*
Mexican plum *(Prunus mexicana)*
wild black cherry *(Prunus serotina)*
Samson's snakeroot *(Psoraleapsoralioides)*
bracken fern *(Pteridium aquilinum)*
mock bishop's weed *(Ptilimnium capillaceum)*
Nuttal's mock bishop weed *(Ptilimnium nuttallii)*
kudzu *(Pueraria lobata)*
hoary mountain mint *(Pycnanthemum albescens)*
Pycnanthemum pilosum
narrow-leaved mountain mint *(Pycnantheum tenuifolium)*
false dandelion *(Pyrrhopappus carolinianus)*
red chokeberry *(Pyrus arbutifolia)*
pear *(Pyrus communis)*
white oak *(Quercus alba)*
scarlet oak *(Quercus coccinea)*
southern red oak *(Quercus falcata)*
diamond leaf oak *(Quercus laurifolia)*
overcup oak *(Quercus lyrata)*
blackjack oak *(Quercus marilandica)*
swamp chestnut oak *(Quercus michauxii)*
chinkapin oak *(Quercus muhlenbergii)*
water oak *(Quercus nigra)*
cherrybark oak *(Quercus pagoda)*
willow oak *(Quercus phellos)*
northern red oak *(Quercus rubra)*

Pennsylvania smart weed *(Persicaria pensylvanica)*
lady's thumb *(Persicaria maculosa)*
dotted smartweed *(Persicaria persicaria)*

arrow-leaved tear thumb *(Persicaria sagittata)*
climbing knotweed *(Fallopia scandens)*
bristly smartweed *(Polygonum setaceum)*
Virginia knotweed *(Polygonum virginicum)*
bearsfoot or yellow leaf cup *(Smallanthus uvedalius)*
Polypremum *(Polypremum procumbens)*
Christmas fem *(Polystichum acrostichoides)*
buckthorn or Carolina buckthorn *(Rhamnus caroliniana)*
Maryland meadow beauty *(Rhexia mariana)*
Virginia meadow beauty *(Rhexia virginica)*
sweet or wild azalea *(Rhododendron canescens)*
winged sumac *(Rhus copallinum)*
smooth sumac *(Rhus glabra)*
poison ivy *(Toxicodendron radiens)*
poison oak *(Toxicodendron pubescens)*
prairie rhynchosia *(Rhynchosia latifolia)*
erect rhynchosia *(Rhynchosia tomentosa)*
Rhynchospora caduca
homed beakrush *(Rhynchospora corniculata)*
grass-like beakrush *(Rhynchospora globularis)*
clustered beakrush *(Rhynchospora glomerata)*
Rhynchospora gracilenta
Richardia brasiliensis
Richardia scabra
black locus *(Robinia pseudo-acacia)*
Carolina or pasture rose *(Rosa Carolina)*
Rosa chinensis
Multiflowered rose *(Rosa multiflora)*
tooth cup *(Rotala ramosior)*
blackberry *(Rubus argutus)*
Rubus flagellaris
southern dewberry *(Rubus trivialis)*
black-eyed Susan *(Rudbeckia hirta)*
Rudbeckia triloba
wild petunia *(Rueilia caroliniensis)*
Rueilia humilis
field, wood, red, or sheep sorrel *(Rumex acetosella)*

curly dock *(Rumex crispus)*

shumard oak *(Quercus shumardii)*
post oak *(Quercus stellata)*
nuttail oak *(Quercus texana)*

black oak *(Quercus velutina)*
kidney-leaved buttercup *(Ranunculus abortivus)*
early buttercup *(Ranunculus fascicularis)*
spiny-fruited crowfoot *(Ranunculus muricatus)*
small flowered crowfoot *(Ranunculus parviflorus)*

low spearwort *(Ranunculus pusillus)*
hooked or rough crowfoot *(Ranunculus recurvatus)*
short-styled snakeroot *(Sanicula canadensis)*

black snakeroot *(Sanicula marilandica)*
clustered snakeroot *(Sanicula odorata)*
Small's snakeroot *(Sanicula smallii)*
sassafras *(Sassafras albidum)*
lizard's tail *(Saururus cernuus)*
star vine or wild sarsaparilla *(Schisandra glabra)*
broom beard grass *(Schizachyrium scoparium)*
pink sensitive briar *(Schrankia microphylla)*
dark green or black bulrush *(Scirpus atrovirens)*
wool grass *(Scirpus cyperinus)*
hollow-scaled bulrush *(Scirpus koilolepis)*
few-flowered nut rush *(Scleria oligantha)*
papillose nut rush *(Scleria pauciflora)*
tall nut rush *(Scleria triglomerata)*
Scutellaria inc ana
hyssop skullcap *(Scutellaria integrifolia)*
small skullcap *(Scutellaria parvula)*
meadow spikemoss *(Selaginella apoda)*
butterweed *(Senecio glabellus)*
hemp sesbania or coffee weed *(Sesbania macrocarpa)*
giant or nodding foxtail *(Setaria faberi)*
yellow foxtail *(Setaria glauca)*
knot root foxtail *(Setaria geniculata)*
blue field madder *(Sherardia arvensis)*
sibara *(Sibara virginica)*
arrowleaf sida *(Sida rhombifolia)*
prickly sida *(Sida spinosa)*
starry campion *(Silene stellata)*
rosin weed *(Silphium integrifolium)*

white blue-eyed grass *(Sisyrinchium albidum)*

heartwing sorrel *(Rumex hastatulus)*
fiddle dock *(Rumex pulcher)*
rose pink *(Sabatia angularis)*
narrow-leaved sabatia *(Sabatia brachiata)*
prairie sabatia *(Sabatia campestris)*
pearlwort *(Sagina decumbens)*
wapato or duck potato *(Sagittaria latifolia)*
long-beaked arrowhead *(Sagittaria longirostra)*
willow or black willow *(Salix nigra)*
lyre-leaved sage *(Salvia lyrata)*
elderberry *(Sambucus canadensis)*
eastern black nightshade *(Solanum ptycanthum)*
tall goldenrod *(Solidago altissima)*
Booth's goldenrod *(Solidago arguta var. bootii)*
cut-leaved goldenrod *(Solidago arguta var. caroliniana)*
blue-stemmed or wreath goldenrod *(Solidago caesia)*
slender goldenrod *(Solidago erecta?)*
late goldenrod *(Solidago gigantea)*
gray, field or dwarf goldenrod *(Solidago nemoralis)*
anise scented goldenrod *(Solidago odora)*
rough-leaved goldenrod *(Solidago patula)*
downy ragged goldenrod *(Solidago petiolaris)*
wrinkle-leaved goldenrod *(Solidago rugosa)*
showy or noble goldenrod *(Solidago speciosa)*
elm-leaved goldenrod *(Solidago ulmifolia)*
stickers *(Soliva pterosperma)*
spiny-leaved sow thistle *(Sonchus asper)*
long-bristled Indian grass *(Sorghastrum elliottii)*
Indian grass *(Sorghastrum nutans)*
Johnson grass *(Sorghum halepense)*
milo or broom com *(Sorghum vulgare)*
Venus' looking glass *(Speculariaperfoliata)*
Sphenopholis fdiformis
Sphenopholis nitida
Indian pink *(Spigelia marilandica)*
nodding ladies' tresses *(Spiranthes cernua)*
oval ladies' tresses *(Spiranthes ovalis)*
little ladies' tresses *(Spiranthes tuberosa)*
spring ladies' tresses *(Spiranthes vernalis)*
rough rush grass *(Sporobolus clandestinus)*
purple dropseed *(Sporobolus junceus)*

pointed blue-eyed grass *(Sisyrinchium angustifolium)*
eastern blue-eyed grass *(Sisyrinchium atlanticum)*
yellow blue-eyed grass *(Sisyrinchium exile)*
annual blue-eyed grass *(Sisyrinchium rosulatum)*
false Solomon's seal or spikenard *(Maiantemum racemosum)*
bristly greenbrier *(Smilax bona-nox)*
glaucous-leaved greenbrier *(Smilax glauca)*
carrion flower *(Smilax herbacea)*
greenbrier *(Smilax rotundifolia)*
lance-leaved greenbrier *(Smilax smallii)*
hispid greenbrier *(Smilax tamnoides)*
cypress *(Taxodium distichum)*
loose-flowered goat's rue *(Tephrosia spicata)*
goat's rue *(Tephrosia virginiana)*
wood sage *(Teucrium canadense)*
tall meadow rue *(Thalictrum pubescens?)*
meadow parsnip *(Thaspium trifoliatum)*
widespread maiden fem *(Thelypteris kunthii)*
broad beech fern *(Phegopteris hexagonoptera)*
Mariana maiden fem *(Macrothelypteris torresiana)*
brasswood or linden *(Tilia caroliniana)*
crane fly orchid *(Tipularia discolor)*
hedge parsley *(Torilis arvensis)*
climbing dogbane *(Trachelospermum difforme)*
Tradescantia hirsutiflora
common spiderwort *(Tradescantia ohiensis)*
spiderwort *(Tradescantia subaspera)*
blue curls *(Trichostema dichotomum)*
purple top or red top *(Tridens flavus)*
narrow three-toothed grass *(Tridens strictus)*
rabbit-foot clover *(Trifolium arvense)*
low hop clover *(Trifolium campestre)*
least hop clover *(Trifolium dubium)*
crimson clover *(Trifolium incarnatum)*
Trifolium lappaceum
red clover *(Trifolium pratense)*
hedge nettle *(Stachys tenuifolia)*
chickweed *(Stellaria media)*
trailing wild bean *(Strophostyles helvula)*
small wild bean *(Strophostyles leiosperma)*
pink, wild bean or partridge pea

(Strophostyles umbellata)
southern breweria *(Stylisma humistrata)*
pencil flower *(Stylosanthes biflora)*
smooth storax or snowbell *(Styrax americana)*
large-leaved storax or snowbell *(Styrax grandifolia)*
coral berry or Indian current *(Symphoricarpos orbiculatus)*
sweet leaf or horse sugar *(Symplocus tinctoria)*
dandilion *(Taraxacum officinale)*
squaw huckleberry *(Vaccinium stamineum)*
white clover *(Trifolium repens)*
Trifolium vesiculosum
red trillium *(Trillium recurvatum)*
yellow horse gentian *(Triosteum angustifolium)*
gamma grass *(Tripsacum dactyloides)*
wheat *(Triticum aestivum)*
three birds orchid *(Triphora trianthophora)*
narrow-leaved cattail *(Typha angustifolia)*
Typha domingensis?
common cattail *(Typha latifolia)*
winged elm *(Ulmus alata)*
American elm *(Ulmus americana)*
slippery elm *(Ulmus rubra)*
large-flowered bellwort *(Uvularia grandiflora)*
sessile-flowered bellwort *(Uvularia sessilifolia)*
sparkleberry *(Vaccinium arboreum)*
mayberry or Elliot's blueberry *(Vaccinium elliottii)*
muscadine grape *(Vids rotundifolia)*
corn salad *(Valerianella radiata)*
winter or frost grape *(Vitis vulpina)*
woolly mullein or moth mullein *(Verbascum thapsus)*
Wisteria spp.
tall vervain *(Verbena bonariensis)*
Chinese wisteria *(Wisteria sinensis)*
Brazil vervain *(Verbena brasiliensis)*
blunt-lobed woodsia *(Woodsia obtusa)*
Verbena rigida
netted chain fem *(Woodwardia areolata)*
white or nettle-leaved vervain *(Verbena urticifolia)*
cocklebur *(Xanthium strumarium)*
Verbena xutha
slender yellow-eyed grass *(Xyris torta)*
yellow iron weed or winged stem *(Verbesina alternifolia)*
Spanish bayonet *(Yucca aloifolia)*
sunflower crownbeard *(Verbesina helianthoides)*
Virginia crownbeard *(Verbesina virginica)*
ironweed *(Vernonia gigantea)*
com speedwell *(Veronica arvensis)*
purslane speedwell *(Veronica peregrina)*
culver's root *(Veronicastrum virginicum)*
rusty blackhaw *(Viburnum rufidulum)*
Carolina vetch *(Vicia caroliniana)*
Vicia grandiflora
pygmy-flowred vetch *(Vicia minutiflora)*
common or spring vetch *(Vicia sativa)*
slender vetch *(Vicia tetrasperma)*
smooth vetch *(Vicia villosa)*
swamp or Le Conte's violet *(Viola affinis)*
prostrate blue violet *(Viola walteri)*
early blue violet *(Viola palmata)*
field pansy *(Viola rafinesque)*
hemp tree or sage tree *(Vitex agnus-castus)*
summer grape *(Vitis aestivalis)*
downy grape *(Vitis cinerea)*

Table C-3. 2014 Camp McCain Herp/Mammal Surveys by Ed Kaiser, Ph.D.

Salamanders:

Spotted Salamander	*Ambystoma maculatum*
Marbled Salamander	*Ambystoma opacum*
Mole Salamander	*Ambystoma talpoideum*
Spotted Dusky Salamander	*Desmognathus conanti*
Three-Lined Salamander	*Eurycea guttolineata*
Eastern Newt	*Notophthalmus viridescens*
Mississippi Slimy Salamander	*Plethodon Mississippi*
Red Salamander	*Pseudotriton ruber*

Frogs:

Southern Cricket Frog	*Acris gryllus*
Fowler's Toad	*A naxyrus fowl er ii*
Eastern Narrowmouth Toad	*Gastrophryne carolinensis*
Cope's Gray Treefrog	*Hyla chrososcelis Complex*
Green Treefrog	*Hyla cinerea*
Squirrel Treefrog	*Hyla squirella*
Bullfrog	*Lithobates catesbeiana*
Pickerel Frog	*Lithobates palustris*
Southern Leopard Frog	*Lithobates sphenocephalus*
Spring Peeper	*Pseudacris crucifer*
Upland Chorus Frog	*Pseudacris feriarum*
Eastern Spadefoot	*Scaphiopus holbrooki*

Turtles:

Spiny Softshell	*Apalone spinifera*
Common Snapping Turtle	*Chelydra serpentine*
Eastern Box Turtle	*Terrapene Carolina*
Red-Eared Slider	*Trachemys scripta*

Lizards:

Green Anole	*Anolis carolinensis*
Slender Glass Lizard	*Ophisaurus attenuates*
Five-Lined Skink	*Plestiodon fasciatus*
Southeastern Five-Lined Skink	*Plestiodon inexpectus*
Broad-headed Skink	*Plestidon laticeps*
Eastern Fence Lizard	*Sceloporus undulates*
Little Brown Skink	*Scincella lateralis*

Snakes:

Copperhead	*Agkistrodon contortrix*
Cottonmouth	*Agkistrodon piscivorus*
Racer	*Coluber constrictor*

Ring-Necked Snake	*Diadophis punctatus*
Common Kingsnake	*Lampropeltis getula*
Scarlet Kingsnake	*Lampropeltis triangulum*
Plainbelly Watersnake	*Nerodia erythrogaster*
Northern watersnake	*Nerodia sipedon*
Gray Rat Snake	*Scotophis spiloides*

Mammals:

Southern Short-Tailed Shrew	*Blarina carolinensis*
Feral Domestic Dog	*Canis familiaris*
Coyote	*Canis latrans*
American Beaver	*Castor Canadensis*
Armadillo	*Dasypus novemcinctus*
Virginia Opossum	*Didelphis virginiana*
Big Brown Bat	*Eptesicus fuscus*
Eastern Red Bat	*Lasiurus borealis*
Hoary Bat	*Lasiurus cinereus*
River Otter	*Lontra canadensis*
Bobcat	*Lynx rufus*
Striped Skunk	*Mephitis mephitis*
Woodland Vole	*Microtus pinetorum*
Southeastern Myotis	*Myotis austroriparius*
House Mouse	*Mus musculus*
Mink	*Mustela vision*
Eastern Woodrat	*Neotoma floridana*
Evening Bat	*Nycticeius humeralis*
Golden Mouse	*Ochrotomys nuttallii*
White-tailed Deer	*Odocoileus virginianus*
Cotton Mouse	*Peromyscus gossypinus*
White-Footed Mouse	*Peromyscus leucopus*
Raccoon	*Procyon lotor*
Eastern Pipistrelle	*Pipistrellus subflavus*
Eastern Mole	*Scalopus aquaticus*
Eastern Gray Squirrel	*Sciurus carolinensis*
Fox Squirrel	*Sciurus niger*
Hispid Cotton Rat	*Sigmodon hispidus*
Southeastern Shrew	*Sorex longirostris*
Feral Pig	*Sus scrofa*
Swamp Rabbit	*Sylvilagus aquaticus*
Eastern Cottontail	*Sylvilagus floridanus*
Gray Fox	*Urocyon cinereoargenteus*
Red Fox	*Vulpes fulva*

Appendix D

Natural Communities Supporting Rare Plant and Animal Species
Management Unit Descriptions
Location and Description of Unnamed Ponds

Table D-l. Natural communities supporting rare plant and animal species on Camp McCain Training Center, Mississippi and management strategies (NHP).

Natural Community	Rare Plant Species & No. of Occurrences	Rare Animal Species & No. of Occurrences	Management Strategies
Natural Pine Forest	NONE	NONE	Burn regularly to maintain community
Upland Hardwood Forest	*Cheilanthes lanosa (I) Comcmdra umbellata (1) Lilium super bum (7) Matelea obliqua (1) Platanthera lacera (1) Pycnanthemum pilosum (1) Triphora trianthophora (1)*	Cooper's Hawk (1), Sharp-shinned Hawk (1)	Maintain as a hardwood community. Do not convert to pine plantation.
Mesic Bluff Forest	*Aralia racemosa (1) Ant ermaria solitaria (1) Carya leiodermis (1) Celastrus scandens (2) Cypripedium pubescens (2) Luzula acuminata (1) Matelea carolinensis (1) Panax quinquefolius (3) Schisandra glabra (4)*	NONE	Maintain as a hardwood community. Do not site convert to pine plantation.
Bottomland Hardwood Forest	*Carya leiodermis (1) Celastrus scandens (2) Hybanthus concolor (3) Lilium superbum (3) Matelea carolinensis (1) Muhlenbergia sylvatica (2) Osmorhiza longistylis (3) P achy sandr a procumbens(3) Panax quinquefolius (2) Platanthera lacera (2) Schisandra glabra (2) Spiranthes ovalis (1) Triosteum angustifolium (1)*	*Cambarus* sp. nov., ref: ludovicianus (1)	Allow natural regeneration of hardwoods. Retain as a hardwood forest on >100-year rotation. Do not site convert to pine. This community is often associated with wetlands, requiring additional planning prior to management actions (i.e. timber harvesting)

Natural Community	Rare Plant Species	Rare Animal Species & No. of Occurrences	Management Strategies
Alluvial Forest	*Lilium superbum (1) Muhlenbergia sylvatica (3)*	NONE	Maintain as a hardwood community. Do not site convert to pine. This community is often associated with wetlands, especially streams, requiring additional planning prior to management (i.e. timber harvest)
Fields and Open Areas	*Agalinis viridis (1) Celastrus scandens (1) Lilium superbum (1) Pycnanthemum pilosum (7) Rudbeckia subtomentosa(l) Sabatia campestris(l)*	*Cambarus* sp. ref.:diogenes (1)	Bum to remove woody species, and promote herbaceous vegetation (i.e. grasses)
Seeps	*Agalinis viridis (1) Carex strict a (1) Lilium superbum (1) Melanthium virginicum (2)*	Southern Red Salamander (2)	Seeps are wetlands. Avoid management practices that include drainage of, or result in sediment filling in, the wetland. Avoid all upslope activities that disrupt topsoil. Retain a minimum 65' undisturbed buffer strip.
Streams	NONE	Shutispear Crayfish (2), *Orconectes* sp. nov., ref: chickasawae (15), *0.* sp. nov. A (1)	Avoid management practices that alter flow, sediment level, or temperature. This includes logging, tree injection, and any other site disturbances. 65' buffer strip will be maintained except where needed for line of sight purposes for military training in which case we will mow only when dry.
Ponds and Lakes	NONE	Osprey (1)	Ponds and lakes should be maintained to provide habitat for fish and wildlife. Follow recommendations for seeps and streams. Allow wetland edge vegetation to develop by maintaining a 65' buffer strip except where needed for line of sight purposes for military training in which case we will mow only when dry.

Camp McCain Management Unit Descriptions and Forestry Management Strategies for 2018-2023.

UNIT 01

STAND DESCRIPTION

Stand 1 is dominantly a mature pine and hardwood stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 28.24 acres in size. Stand ages range from 35 to 55 within the stand for the dominant and co-dominant trees. The vegetation is composed of upland hardwood forest in the northern section, natural pine forest in the center and alluvial hardwood forest in the southern section.

Current and 5-year management plan for MU-1:

Stand 1 has no planned harvest activity thru 2018. Prescribed burning will be implemented on a 5-7 year intervals.

UNIT 02

STAND DESCRIPTION

Stand 1 is dominantly a small hardwood stand with some scattered pines on the ridges. This stand is 33.59 acres in size. Stand ages range from 50 to 60 within the stand for the dominant and co-dominant trees. This stand is predominately an alluvial hardwood forest on the Western edge. The Eastern part of this stand is composed of upland hardwood and natural pine stands.

Current and 5-year management plan for MU-2:

Stand 1 has no planned harvest activity thru 2018. Prescribed burning will be implemented on a 6-8 year intervals.

UNIT 03

STAND DESCRIPTION

Stand 1 is dominantly a mature pine and hardwood stand with hardwoods as a significant component on the middle to lower slopes and drain heads, and pine being found primarily on the upper slopes and ridge tops. This stand is 171.75 acres in size. Stand ages range from 60 to 70 within the stand for the dominant and co-dominant trees. This stand is predominately upland hardwood forest with natural pine forest in the SW comer of the

stand. There are some interspersing of pine plantations and alluvial forest spread throughout the stand.

Stand 2 is dominantly a hardwood sawtimber stand with some scattered pines on the ridges. This stand is 211.21 acres in size. Ages range from 60 to 70 within the stand for the dominant and co-dominant trees. This stand is an upland hardwood stand.

Current and 5-year management plan for MU-3:

Stand 1 has no planned harvest activity thru 2018. Prescribed burning will be implemented on a 6-8 year intervals.

Stand 2 has no planned harvest activity thru 2018. Prescribed burning will be implemented on a 6-8 year intervals.

UNIT 04

STAND DESCRIPTION

Stand 1 is dominantly a mature pine and hardwood stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 188.6 acres in size. Stand ages range from 40 to 50 within the stand for the dominant and co-dominant trees. This stand is predominately an upland hardwood stand with pockets of natural pine forest spread throughout the hardwoods. The drains contain bottomland hardwood forest.

Current and 5-year management plan for MU-4:

Stand 1 has no timber harvest activity planned thru 2018 due to young age of pines in the main canopy and hardwood component in the understory, no silvicultural methods are recommended. As trees within MU-4 mature, they will provide excellent habitat for numerous wildlife species.

UNIT 05

STAND DESCRIPTION

Stand 1 is dominantly a mature pine and hardwood stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 166.29 acres in size. Stand ages range from 40 to 50 within the stand for the dominant and co-dominant trees. This stand is almost an equal mix of upland hardwood and pine plantations with a small amount of natural pine forest on the North and South boundary of the stand.

Stand 2 is dominantly an open mature hardwood and scattered pine stand with hardwoods as a main component on the lower slopes and drain heads. This stand is 47.52 acres in size. Stand ages range from 40 to 50 within the stand for the dominant and co-dominant trees. This stand has a park like look. The stand is all upland hardwood forest.

Stand 3 is loblolly pine plantation with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. The stand is 88.43 acres in size. Stand age is 18 years. This stand is predominately a pine plantation.

Stand 10 is a hardwood drain or low flat, a wide variety of hardwood species occur in these drains and creek bottoms. Some of the species are gum, poplar, oak, southern magnolia, red maple, sweet bay magnolia, and some pine. The stand is 37.13 acres in size. The water courses in these areas are either ephemeral or perennial in nature. The stand is predominately bottomland and upland hardwood.

Current and 5-year management plan for MU-5:

Stand 1 1 has no planned harvest activity thru 2018. This stand is scheduled to be burned on 5-8 year intervals for fuels reduction and brush control and promote herbaceous growth.

Stand 2 has no planned harvest activity thru 2018. This stand will be scheduled to be burned on 5-8 year intervals to thin out the mid-story vegetation and promote herbaceous growth.

Stand 3 will be planned for thinning in 2015 to open the canopy within the plantation. The stand thinned to an approximate basal area 65 through single tree selection. This stand will be scheduled for prescribed fire on 3-5 year intervals to thin out the mid-story vegetation and promote herbaceous growth.

Stand 10 to be managed as buffer/filter strips (Streamside management zones, smz's) to protect water quality. Disturbance caused by logging or road building should be kept to a minimum.

UNIT 06

STAND DESCRIPTIONS

Stand 1 is a 22 year old pine plantation that was thinned in 2008. The pines have very good height and are in a excellent form class. This stand is 17.99 acres in size.

Stand 2 is a mixed pine and hardwood sawtimber stand that is near maturity. Pine is the predominant species throughout the stand with various hardwoods species being scattered throughout the stand and on the lower slopes and bottoms. This stand is 276.44 acres in size. This stand is composed of an equal mix of upland hardwood forest, natural pine forest and pine plantations with a little alluvial forest on the Northern boundary.

Stand 3 is a mixed pine and hardwood sawtimber stand that is near maturity. Mixed hardwood sawtimber and pulpwood predominant throughout the stand with pine sawtimber stands being confined to the upper slopes and ridge tops. This stand is 344.72 acres in size. This stand is predominately upland hardwood and natural pine forest with a couple of small pine plantations in the stand.

Current and 5-year management plan for MU-6:

Stand 1 will be planned for thinning in 2014 to open the canopy within the plantation. The stand will be thinned to an approximate 65 ft^2 basal area using single tree selection. This stand will be scheduled for prescribed fire 3-5 year intervals to reduce mid-story vegetation and promote herbaceous vegetation.

Stand 2 has no planned harvest activity through 2018. This stand will be scheduled for prescribed fire on 5-8 year intervals to reduce mid-story vegetation and promote herbaceous vegetation.

Stand had no planed harvest activity through 2018. This stand will be scheduled for prescribed fire on 5-8 year intervals to reduce mid-story vegetation and promote herbaceous vegetation.

UNIT 07

STAND DESCRIPTION

Unit 07 is open. This is a 52.74 acre open field east of the cantonment area. Unit 07 will remain open and not in timber production.

UNIT 08

STAND DESCRIPTION

Stand 1 is dominantly a mature pine and hardwood stand with heavy brush in the understory. This stand is 349.7 acres in size. Stand age is 42 years old for the dominant and co-dominant trees. This stand is predominately upland hardwood with interspersed natural pine forest. There are mesic bluffs on the Western edge and alluvial hardwood in the central portion of the stand.

Stand 2 is loblolly pine plantation with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 43.16 acres in size. Stand age is 22 years.

Stand 10 is a hardwood drain or low flat, a wide variety of hardwood species occur in these drains and creek bottoms. Some of the species are gum, poplar, oak, southern magnolia, red maple, sweet bay magnolia, and some pine. This stand is 24.46 acres in size. The water courses in these areas are either ephemeral or perennial in nature. This stand is composed of upland and alluvial hardwood forests.

Current and 5-year management plan for MU-8:

Stand 1 has no scheduled harvest through 2018. Prescribed fire will be on a 5-7 year intervals.

Stand 2 is planned for thinning in 2014 using single tree selection. Prescribed fire will be conducted on a 3-5 year intervals.

Stand 10 to be managed as buffer/filter strips (Streamside management zones, smz's) to protect water quality. Disturbance caused by logging or road building should be kept to a minimum.

UNIT 09

STAND DESCRIPTION

Stand 1 is a mature pine and hardwood stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 97.17 acres in size. Stand ages range from 35 to 60 within the stand for the dominant and co-dominant trees. The eastern side of this stand is composed of alluvial hardwood forest and natural pine forest. The Western section of the stand is composed of upland hardwood forest and natural pine stands.

Stand 2 is a mature pine and hardwood stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 203.36 acres in size. The stand ages are from 35 to 60 years old for the dominant and co-dominant trees.

Stand 3 is an overly stocked pine plantation with scattered hardwood within the stand and hardwoods as a significant component on the lower slopes and drain heads. Stand age is 18 years old.

Current and 5-year management plan for MU-9:

Stand 1 is scheduled to have a thinning conducted in 2018. Basal area will be reduced down to approximately 65 ft^2 Prescribed fire will be implemented 2-3 years following timber harvest and conducted on 3-5 year intervals.

Stand 2 is scheduled for thinning in 2018. Basal area will be reduced down to approximately 65 ft^2 Prescribed fire will be implemented 2-3 years following timber harvest and conducted on 5-7 year intervals.

Stand 3 is scheduled for thinning in 2018. Basal area will be reduced to approximately 65 ft^2. Prescribed fire will be implemented 2-3 years following timber harvest and conducted on 3-5 year intervals.

UNIT 10

STAND DESCRIPTION

Stand 1 is a 22 year old fully stocked pine plantation. The understory is composed mainly of small sweet gums and oaks. This stand is 11.01 acres in size.

Stand 2 is a mixed pine and hardwood sawtimber stand that was thinned in 2008. Pine is the predominant species on the upper slopes and ridges throughout the stand with various hardwoods species being scattered throughout the stand and on the lower slopes and bottoms. This stand is 97.63 acres in size. Ages in this stand range from 60 to 70. This stand is a natural pine forest in the northern section. The southern section is a mixture of natural pine forest, alluvial hardwood forest, and upland hardwood forest.

Stand 3 is a pine plantation that is 18 years old. This stand is 59.16 acres in size and has scattered hardwoods though out the stand. The topography is mainly gentle sloping terrain. Crown closure has been complete for 3 to 4 years now.

Current and 5-year management plan for MU-10:

Stand 1 has no scheduled harvest activity is planned through 2018. Prescribed burning will be conducted on 3-5 year intervals to reduce midstory competition and promote herbaceous vegetation.

Stand 2 has no planned harvest activity thru 2018. Prescribed burning will be conducted on 3-5 year intervals to reduce midstory competition and promote herbaceous vegetation.

Stand 3 is scheduled for its initial thinning in 2016. The BA will be reduced to approximately 65 ft^2. Prescribed fire will be introduced 2-3 years following harvest activity and continue on a 3-5 year interval to reduce understory/midstory competition and promote herbaceous growth.

UNIT 11

STAND DESCRIPTION

Stand 1 is a 22 year old fully stocked pine plantation. This stand is 111.65 acres in size

The stand has been well managed through the use of prescribed fire.

Stand 2 is a mixed pine and hardwood sawtimber stand that is near maturity. Pine is the predominant species on the upper slopes and ridges throughout the stand with various hardwoods species being scattered throughout the stand and on the lower slopes and bottoms. This stand is 202.10 acres in size. Ages in this stand range from 35 to 65. A prescribed fire was conducted in 2012 to thin out the mid-story vegetation prior and create an adequate seed bed for regeneration.

Stand 3 is a predominantly a hardwood sawtimber stand with very little scattered pine on the upper slopes and ridges, sweetgum, various red oak, white oak, and hickory are the most common species in this stand. This stand is 39.93 acres in size. Average age for the stand is 40 to 45 years for the dominant and co-dominant trees. This stand is predominately upland hardwood forest with a small portion being mesic bluffs, and natural pine forest.

Stand 4 is comprised of 12 to 14 year old natural regeneration pine and is adequately stocked. This stand is 27.52 acres in size.

Stand 5 is a pine plantation that is 18 years old. This stand is very open on the upland portion but is heavily inundated with sub-merchantable sweet gum sprouts along the drain area.

Stand 6 is a predominantly pine and hardwood stand with some very large hardwoods present. Harvesting operations were conducted in 2009.

Current and 5-year management plan for MU-11:

Stand 1 will be planned for its second thinning in 2015. The stand will be thinned to an approximatly 65 ft^2 basal area using single tree selection. This stand will be scheduled for prescribed fire 2-3 years following harvest to reduce mid-story vegetation and increase herbaceous vegetation.

Stand 2 could potentially require a line of sight clearing in the future. This stand borders the Crew Proficiency Cource/sniper range and the possible addition of targetry would warrant removal of timber along the south side of Platoon Rd.

Stand 3 was thinned in 2012 for stand improvement. Mature and cull trees were removed and the stand thinned to an approximate 75-80 ft^2 basal area using single tree selection

for over all stand improvement. This stand will be scheduled for prescribed fire in 2013 to reduce mid-story vegetation and create an adequate seed bed for natural regeneration.

Stand 4 has no planned silvicultural activity through 2018 and will be protected from fire and be allowed to develop.

Stand 5 is scheduled for thinning in 2015 and will be scheduled for prescribed fire in 2-3 years following harvest.

Stand 6 has no planned harvesting activity through 2018. Prescribed fire will be conducted on 6-8 year intervals to reduce mid-story competition and promote herbaceous growth.

UNIT 12

STAND DESCRIPTION

Unit 12 is open and will remain open. This unit is 49.29 acres in size.

UNIT 13

STAND DESCRIPTION

Stand 1 is young pine plantation with scattered hardwood within the stand and hardwoods as a significant component on the lower slopes and drain heads. This stand is 9.55 acres in size and is 12 years old.

Current and 5-year management plan for MU-13:

Stand 1 is scheduled harvest activity thru 2018. No prescribed fire activity is anticipated in the near future. As the stand matures prescribed fire will be incorporated on 3-5 year intervals.

UNIT 14

STAND DESCRIPTION

Stand 1 is dominantly a brushy mature pine and hardwood stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 68.1 acres in

size with ages ranging from 60 to 70 within the stand for the dominant and co-dominant trees. This stand is a mixture of pine plantations, mesic bluff and alluvial hardwoods.

Stand 2 is dominantly a mature pine and hardwood stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 62.49 acres in size. Average stand age is 65 within the stand for the dominant and co-dominant trees. This stand is a mix of natural pine forest and upland hardwood forest with a little pine plantation in the NE comer.

Stand 3 is young pine plantation with scattered hardwood within the stand and larger hardwoods as a significant component on the lower slopes and drain heads. This stand is 290.95 acres in size. Stand age isl4 years old. This stand is predominately pine plantation with a mix of mesic bluff, upland hardwood forest, alluvial hardwood forest.

Current and 5-year management plan for MU-14:

Stand 1 has no harvest activity planned at this time. Prescribed fire will be conducted on 5-7 year intervals to thin out the mid-story vegetation and promote the growth of herbaceous vegetation.

Stand 2 is scheduled for harvest in 2018. The BA will be reduced to approximately 65 ft^2. Prescribed fire will be scheduled prior to timber harvest and followed up on 6-8 year intervals to reduct mid-story vegetation and promote herbaceous vegetation growth.

Stand 3 is scheduled for thinning in 2018. The BA will be reduced to approximately 65 fit^2. Prescribed fire will be implemented into the stand 2-3 following logging activity to reduce mid-story vegetation prior to marking and promote herbaceous vegetation growth.

UNIT 15

STAND DESCRIPTION

Stand 1 is a mixed pine hardwood stand that has been thinned in the recent past. There is a high percentage of hardwood regeneration present in the stand, due to the previous harvest. This stand is 73.4 acres in size. The age of this stand is approximately 20. This stand is a mix from W to E of upland hardwood forest, alluvial hardwood forest and mesic bluff vegetation.

Stand 2 is a 44 year old mixed pine hardwood stand that was thinned in 2009. This stand is 38.34 acres in size. Canopy closure has occurred since the last thinning and needs to be reentered.

Current and 5-year management plan for MU-15:

Stand 1 has no scheduled harvest activity thru 2018. Prescribed fire will be implemented on a 6-8 year interval to reduce mid-story vegetation and promote herbaceous vegetation.

Stand 2 has no scheduled harvest activity thru 2018 to open the forest canopy and reduce basal area to 65 ft^2. Prescribed fire will be conducted on 6-8 year intervals.

UNIT 16

STAND DESCRIPTION

Stand 1 is a 20 year old pine plantation that is has been thinned once before and will need a second thinning in 2019. This stand is 47.46 acres in size.

Stand 2 is a 15 year old pine plantation that is unthinned, and shows somewhat poor survival from the initial planting due to the presence wet soil soil conditions. This stand is 44.11 acres in size.

Stand 10 is a hardwood drain, a wide variety of hardwood species occur in these drains and creek bottoms. Some of the species are gum, poplar, oak, southern magnolia, red maple, sweet bay magnolia, ash, and some pine. The water courses in these areas are either ephemeral or perennial in nature. This stand is 47.73 acres in size. This stand is predominately mesic bluff vegetation with a small amount of alluvial hardwood.

Current and 5-year management plan for MU-16:

Stand 1 has no scheduled harvesting planned through 2018. This stand will be scheduled for prescribed fire on 3-5 year intervals for fuel reduction .and to promote herbaceous vetetation growth.

Stand 2 has no scheduled harvesting planned through 2018. This stand will be scheduled for prescribed fire on 5-7 year intervals for fuel reduction and to promote herbaceous vetetation growth.

Stand 10 will be allowed to develop into a mixed hardwood pine stand.

UNIT 17

STAND DESCRIPTION

Stand 1 is dominantly an open mature pine and hardwood stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 152.84 acres in

size. The average stand age is 68 for the dominant and co-dominant trees. This stand is composed of upland pine forest and alluvial hardwood forest.

Stand 2 is a majority hardwood with a few scattered pines. This stand is 75.91 acres in size. Stand ages range from 25 to 35 within the stand for the dominant and co-dominant trees. This stand is a result of pine planting that failed due to wet poorly drained soils that are present. Hardwoods have taken the place of the pines in the poorly drained area are growing well.

Stand 3 is loblolly pine plantation with scattered hardwoods in the stand and hardwoods as a significant component on the lower slopes and drain heads. This stand is 118.64 acres in size. Stand age is 25 years.

Stand 4 is young pine plantation with scattered hardwood within the stand and hardwoods as a significant component on the lower slopes and drain heads. This stand is 43.16 acres in size and is 13 years old.

Stand 5 is an area that was planted with loblolly pines 20 years ago. The stand is 82.44 acres and has a sizeable amount of hardwoods present.

Stand 10 is a hardwood drain, a wide variety of hardwood species occur in these drains and creek bottoms. Some of the species are gum, poplar, oak, southern magnolia, red maple, sweet bay magnolia, and some pine. The water courses in these areas are either ephemeral or perennial in nature. This stand is 13.78 acres in size. This stand is predominately upland hardwood.

Current and 5-year management plan for MU-17:

Stand 1 is scheduled for a thinning in 2017. The stand will be thinned to an approximatly 65 ft^2 basal area using single tree selection. Prescribed fire will be conducted in 5-7 year intervalsto reduce mid-story vegetation and promote herbaceous growth.

Stand 2 will have no harvest activity thru 2018. Prescribed fire will be conducted in 5-7 year intervals to reduce mid-story vegetation and promote herbaceous growth.

Stand 3 will be thinned in 2017. The stand will be thinned to an approximatly 65 ft^2 basal area using single tree selection. This stand will be scheduled for prescribed fire on 3-5 year intervals for fuel reduction and to reduce mid-story competition.

Stand 4 will be thinned in 2014. The stand will be thinned to an approximatly 65 ft^2 basal area using single tree selection. Once the harvest is complete prescribed fire will be introduced at 3-5 year intervals.

Stand 5 has no planned harvest activity thru 2018. Prescribed fire will be implemented on 5-7 year intervals to reduce mid story component and promote herbaceous vegetation.

Stand 10 will be allowed to develop into a mixed hardwood pine stand.

UNIT 18

STAND DESCRIPTION

Stand 1 is dominantly a mature pine and hardwood stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 457.12 acres in size. Stand ages range from 45 to 65 within the stand for the dominant and co-dominant trees.

Stand 2 is young pine plantation with scattered hardwood within the stand and hardwoods as a significant component on the lower slopes and drain heads. This stand is 173.45 acres in size and is 12 years old.

Stand 3 is a young pine plantation with scattered hardwoods within the stand. Stand age is 12 years old and totals 11.31 acres.

Stand 4 is a young pine plantation with a scattered large pine or hardwood. Stand age is 18 years old and totals 80.37 acres.

Stand 10 is a hardwood drain, a wide variety of hardwood species occur in these drains and creek bottoms. Some of the species are gum, poplar, oak, southern magnolia, red maple, sweet bay magnolia, and some pine. The water courses in these areas are either ephemeral or perennial in nature. This stand is 57.75 acres in size.

Current and 5-year management plan for MU-18:

Stand 1 is scheduled to be thinned in 2015. The stand will be thinned to an approximatly 65 ft^2 basal area using single tree selection and patch openings to allow for natural regeneration. Prescribed fire will occur in 6-8 year intervals.

Stand 2 has no planned thinning activity thru 2018. The stand will be thinned to an approximate 65 ft^2 basal area using operator select. This stand will be scheduled for prescribed fire on 3-5 year intervals for mid-story reduction.

Stand 3 has no planned thinning activity thru 2018. Prescribed fire is limited at this point due to its immature state.

Stand 4 will be thinned in 2016. The stand will be thinned to an approximatly 65 ft^2 basal area using single tree selection. Prescribed fire will then be introduced in 3-5 year intervals.

Stand 10 will be allowed to develop into a mixed hardwood pine stand.

UNIT 19

STAND DESCRIPTION

Stand 1 is dominantly hardwoods with a few scattered pines in the stand with hardwoods as the component on the lower slopes and drain heads. This stand is 8.55 acres in size. Average stand age is 40 within the stand for the dominant and co-dominant trees.

Stand 2 is brushy loblolly pine plantation with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 29.39 acres in size. Stand age is 21 years.

Stand 3 is young pine plantation with scattered hardwood within the stand and hardwoods as a significant component on the lower slopes and drain heads. This stand is 14.46 acres in size. Stand is 12 years old.

Stand 10 is a hardwood drain, a wide variety of hardwood species occur in these drains and creek bottoms. Some of the species are gum, poplar, oak, southern magnolia, red maple, sweet bay magnolia, and some pine. The water courses in these areas are either ephemeral or perennial in nature. This stand is 60.77 acres in size. This stand is predominately alluvial hardwood with some mesic bluff and bottomland hardwood vegetation.

Current and 5-year management plan for MU-19:

Stand 1 has no planned thinning activity thru 2018. This stand will be scheduled for prescribed fire in 3-7 year intervals to reduce mid-story vegetation and promote herbaceous growth.

Stand 2 has no planned thinning activity thru 2018. This stand will be scheduled for prescribed fire in 3-7 year intervals to reduce mid-story vegetation and promote herbaceous growth.

Stand 3 is scheduled for thinning in 2014. The stand will be thinned to an approximatly 65 ft^2 basal area using single tree selection. Once thinning is complete prescribed fire will be introduced on 3-5 year intervals for mid-story vegetation control.

Stand 10 will be allowed to develop into a mixed hardwood pine stand

UNIT 20

STAND DESCRIPTION

Stand 1 is loblolly pine plantation with scattered hardwood in the stand. This stand has a high density of pine. This stand is 162.84 acres in size. Stand age is 23 years. This stand was damaged on the Western end due to a prescribed fire in the spring of 2006.

Stand 2 is a combination of planted pine with a large component hardwood in the drains. This stand is 157.94 acres in size. This stand is composed of upland hardwood forest, pine plantations and mesic bluff vegetation.The average stand age is 44.

Stand 3 is a loblolly pine plantation with scattered hardwoods throughout the stand. This stand is 113.15 acres in size and is 23 years old.

Stand 4 is dominantly hardwoods with a few scattered pines in the stand. This stand is 116.09 acres in size. Average stand age is 22. This stand is on a pine site withpredominately upland hardwood forest with a little alluvial hardwood and bottomland hardwood forest.

Stand 5 is young pine plantation with scattered hardwood within the stand and hardwoods as a significant component on the lower slopes and drain heads. This stand is 81.72 acres in size. Stand age is years old.

Stand 6 is a heavy pine stand whose average age is 43. This area is full of vines and brushes due to lack of burning.

Current and 5-year management plan for MU-20:

Stand 1 has no planned harvest activity through 2018. This stand will be scheduled for prescribed fire on 5-7 year intervals.

Stand 2 will have no harvest activities scheduled for this time period. This stand will be scheduled for prescribed fire on 5-7 year intervals.

Stand 3 is scheduled for harvest in 2014 to reduce the basal area to approximately 65 ft^2. This stand will be scheduled for prescribed fire on 3-5 year intervals.

Stand 4 has no planned thinning activities planned through 2018 and will be allowed to develop into a mixed hardwood pine stand. This stand will be scheduled for prescribed fire5-7 year intervals.

Stand 5 is scheduled for thinning in 2017 to reduce the basal area to approximately 65 ft^2. Following harvest prescribed burning will be introduced on 3-5 year intervals.

Stand 6 is scheduled for thinning in 2018 to reduce the basal area to approximately 65 ft^2. Following harvest prescribed burning will be introduced on 6-8 year intervals.

UNIT 21

STAND DESCRIPTION

Stand 1 is loblolly pine plantation with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. This stand was thinned 7 years ago. This stand is 90.33 acres in size. Stand age is 23 years.

Stand 2 is loblolly pine plantation with mature scattered pine and hardwoods in the stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 635.77 acres in size. Stand ages range from as young as 17 to as old as 65 within the stand. This plantation had poor pine survival and has a large number of hardwood compositions. This stand will not look like a true pine plantation. This stand is predominately a pine plantation with a small amount of natural pine forest, upland hardwood forest, alluvial hardwood forest and mesic bluff vegetation.

Stand 3 is loblolly pine plantation with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 345.53 acres in size and is 14 years old.

Stand 10 is a hardwood drain, a wide variety of hardwood species occur in these drains and creek bottoms. Some of the species are gum, poplar, oak, southern magnolia, red maple, sweet bay magnolia, and some pine. The water courses in these areas are either ephemeral or perennial in nature. This stand is 119.88 acres in size. This stand is predominately alluvial hardwood forest with a small portion in pine plantation.

Current and 5-year management plan for MU-21:

Stand 1 has no planned harvest activity thru 2018. This stand will be scheduled for prescribed fire on 5-7 year intervals for fuel reduction and to promote herbaceous vegetation.

Stand 2 is scheduled for thinning in 2016 to reduce the basal area to approximately 65 ft^2. Following harvest prescribed burning will be introduced on 3-5 year intervals.

Stand 3 has no planned harvest activity thru 2018. The stand will be thinned to an approximate 65 ft^2 basal area using operator select. Following harvest prescribed burning will be introduced on 6-8 year intervals.

Stand 10 will be allowed to develop to protect the drainages in this area.

UNIT 22

STAND DESCRIPTION

Stand 1 is loblolly pine plantation with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 163.46 acres in size. This stand thinned summer of 2004. Stand age is 23 years. This stand is predominately pine plantation but has a minor amount of alluvial hardwood forest in the drains.

Stand 2 is loblolly pine plantation with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 59.50 acres in size. This stand has had past thinning. Stand age is 18 years.

Stand 3 is loblolly pine plantation with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 71.66 acres in size. This stand has had some recent thinning 3 years ago. Stand age is 39 years. Fires have been limited in the stand and the vines and brush in the understory are heavy.

Stand 4 is dominantly a mature hardwood with a few scattered pines in the stand with hardwoods as the component on the lower slopes and drain heads. This stand is 292.57 acres in size. Stand ages range from 25 to 75 within the stand. This stand has been high-graded in the past cuttings with most of the pines removed. This stand is predominately an upland hardwood forest with some natural pine forest as well.

Stand 5 is young pine plantation with scattered hardwood within the stand and hardwoods as a significant component on the lower slopes and drain heads. This stand is 438.85 acres in size. Stand age is 15 years old. This stand is predominately pine plantation with alluvial hardwood forest in the drains in the western portion of the stand. The Eastern portion of the stand is upland hardwood and alluvial hardwood forests with some mesic bluff vegetation.

Stand 10 is a hardwood drain, a wide variety of hardwood species occur in these drains and creek bottoms. Some of the species are gum, poplar, oak, southern magnolia, red maple, sweet bay magnolia, and some pine. The water courses in these areas are either ephemeral or perennial in nature. This stand is 81.27 acres in size. This stand is predominately alluvial hardwood forest.

Current and 5-year management plan for MU-22:

Stand 1 is scheduled for thinning in 2014 to reduce the basal area to approximately 65 ft^2. This stand will be scheduled for prescribed fire on 3-5 year intervals prior to and following harvest.

Stand 2 will be planned for thinning in 2014 to open the canopy by reducing the basal area to approximately 65 ft^2 basal area using operator select. This stand will be scheduled for prescribed fire on 3-5 year intervals.
Stand 3 has no thinning activity planned through 2018. This stand will be aggressively managed with fire on 2-4 year intervals.

Stand 4 has no thinning activity planned through 2018. Prescribed fire will be executed on 6-8 year intervals.

Stand 5 has no thinning activity planned through 2018. Prescribed fire will be executed on 6-8 year intervals.

Stand 10 will be allowed to develop to protect the drainages in this area.

UNIT 23

STAND DESCRIPTION

Stand 1 is loblolly pine plantation with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 455.32 acres in size and is 32 years old.

Stand 2 is dominantly a mature hardwood with a few scattered pines in the stand with hardwoods as the component on the lower slopes and drain heads. This stand is 175.49 Stand ages range from as young as 25 to as old as 70 within the stand. This stand has been high-graded in the past cuttings by previous owners with most of the pines removed. This stand is mainly composed of upland hardwood forests with some bottomland hardwood forest.

Stand 3 is loblolly pine plantation with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 18.74 acres in size. Stand age is 23 years. This stand is primarily composed of a pine plantation with some natural pine forest in the center of the stand.

Stand 4 is loblolly pine plantation with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 36.18 acres in size. Stand age is 21 years.

Stand 5 is natural pine stand with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 32.25 acres in size. Stand age is 26 to 31 years old.

Stand 6 is loblolly pine plantation with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 33.35 acres in size. Stand age is 23 years.

Stand 7 is young pine plantation with scattered hardwood within the stand and hardwoods as a significant component on the lower slopes and drain heads. This stand is 180.2 acres in size. Stand age is 14 years old. This stand is composed of a mix of upland hardwood forest and pine plantation.

Stand 10 is a hardwood drain, a wide variety of hardwood species occur in these drains and creek bottoms. Some of the species are gum, poplar, oak, southern magnolia, red maple, sweet bay magnolia, and some pine. The water courses in these areas are either ephemeral or perennial in nature. This stand is a mix of bottomland hardwood and alluvial hardwood forests and is 180.2 acres in size.

Current and 5-year management plan for MU-23:

Stand 1 is scheduled and contracted for harvest in 2013. The objective is to reduce the basal area to approximately 65 ft^2. Prescribed fire will be implemented on 3-5 year intervals following harvest.

Stand 2 has no thinning activity planned at this time. Prescribed fire will be conducted on 6-8 year intervals for midstory reduction and promote herbaceous vegetation.

Stand 3 has no thinning activity planned at this time. Prescribed fire will be conducted on 3-5 year intervals for midstory reduction and promote herbaceous vegetation.

Stand 4 has no thinning activity planned at this time. This stand will be managed with fire on 3-5 year intervals.

Stand 5 has no thinning activity planned at this time. This stand will be managed with fire on 3-5 year intervals to reduce midstory vegetation and promote herbaceous vegetation.

Stand 6 has no thinning activity planned at this time. This stand will be managed with fire on 3-5 year intervals.

Stand 7 will be allowed to develop with no harvest activity during this time period. Efforts will be made to restrict prescribed fire from this stand until it further matures. If fire is used it should be during the dormant season to limit incidental take of the merchantable stand.

Stand 10 will be allowed to develop into a mixed hardwood pine stand.

UNIT 24

STAND DESCRIPTION

Stand 1 is loblolly pine plantation with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 72.30 acres in size. Stand age is 32 years.

Stand 2 is dominantly a young natural pine area with mature hardwood with a few scattered pines in the stand with hardwoods as the component on the lower slopes and drain heads. This stand is 332.90 acres in size. Stand ages range from 15 to 65 within the stand for the dominant and co-dominant trees. This stand is predominately upland hardwood forest with a mixture of natural pine forest, alluvial hardwood forest and mesic bluff vegetation.

Stand 3 is loblolly pine plantation with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. This stand has not had a first thinning. This stand is 5.33 acres in size. Stand age is 48 years.

Stand 4 is dominantly a mature pine and hardwood stand with hardwoods as a significant component on the lower slopes and drain heads. This stand is 17.28 acres in size. Stand ages range from as young as 45 to as old as 65 within the stand. This stand is predominately a natural pine forest.

Stand 5 is young natural pine stand with scattered hardwood within the stand and hardwoods as a significant component on the lower slopes and drain heads. This stand is 232.73 acres in size. Stand age is 15 years old. This stand is a mixture of pine plantations, upland hardwood forest, alluvial hardwood forest, natural pine forest and mesic bluff vegetation.

Stand 6 is a loblolly pine plantation with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. The stand is 38.48 acres in size and is 16 years old. Canopy has closure has not occurred on this stand. The stand is located on the end of ridges and has several deep gullies.

Stand 10 is a hardwood drain and consists of a wide variety of hardwood species. Some of the species are gum, poplar, oak, southern magnolia, red maple, sweet bay magnolia, and some pine. The water courses in these areas are either ephemeral or perennial in nature. This stand is 17.03 acres in size.

Current and 5-year management plan for MU-24:

Stand 1 will be planned for thinning in 2017 to open the canopy throughout the plantation. The stand will be thinned to an approximate 65 ft^2 basal area using operator

select. Prescribed fire will be conducted on 3-5 year intervals for fuel reduction, midstory reduction and to promote herbaceous vegetation.

Stand 2 will be allowed to develop with no harvest activity during this time period. Fire activity will be minimal at this time.

Stand 3 will be planned for thinning in 2017 to open the canopy throughout the plantation. The stand will be thinned to an approximate 65 ft^2 basal area using operator select. Prescribed fire will be conducted on 3-5 year intervals for fuel reduction, midstory reduction and to promote herbaceous vegetation.

Stand 4 has no planned harvest activity at this time. Prescribed fire will be conducted on 3-5 year intervals.

Stand 5 will be planned for thinning in 2017 to open the canopy throughout the plantation. The stand will be thinned to an approximate 65 ft^2 basal area using operator select. Prescribed fire will be conducted on 3-5 year intervals for fuel reduction, midstory reduction and to promote herbaceous vegetation.

Stand 6 will be planned for thinning in 2017 to open the canopy throughout the plantation. The stand will be thinned to an approximate 65 ft^2 basal area using operator select. Prescribed fire will be conducted on 3-5 year intervals for fuel reduction, midstory reduction and to promote herbaceous vegetation.

Stand 10 will be allowed to develop to protect the drainages in this area.

UNIT 25

STAND DESCRIPTION

Stand 1 is a loblolly pine plantation with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. This stand has not had a first thinning. This stand is 185.88 acres in size. Stand age is 23 years.

Stand 2 is dominantly a young natural hardwood area with a few mature hardwoods within the stand. This stand is 58.68 acres in size. Stand ages range from 30 to as 60 within the stand. This stand is comprised of alluvial hardwood forest and mesic bluff vegetation.

Stand 3 is loblolly pine plantation with scattered hardwood in the stand with hardwoods as a significant component on the lower slopes and drain heads. This stand has had a first thinning. This stand is 87.49 acres in size. Stand age is 26 years. This stand is composed of primarily pine plantation with and little upland hardwood forest spread in the center of the stand.

Stand 4 is young pine plantation stand with scattered hardwood within the stand and hardwoods as a significant component on the lower slopes and drain heads. This stand is 202.20 acres in size and is 16 years old.

Stand 10 is a hardwood drain, a wide variety of hardwood species occur in these drains and creek bottoms. Some of the species are gum, poplar, oak, southern magnolia, red maple, sweet bay magnolia, and some pine. The water courses in these areas are either ephemeral or perennial in nature. This stand is 15.49 acres in size. This stand is all alluvial hardwood forest.

Current and 5-year management plan for MU-25:

Stand 1 has no planned harvest activity at this time. Prescribed fire will be conducted on 3-5 year intervals. This stand will be scheduled for prescribed fire in 3-5 year intervals to thin out the mid-story vegetation prior and promote herbaceous vegetation.

Stand 2 has no planned harvest activity at this time. Prescribed fire will be conducted on 3-5 year intervals. This stand will be scheduled for prescribed fire in 3-5 year intervals to thin out the mid-story vegetation prior and promote herbaceous vegetation.

Stand 3 has no planned harvest activity at this time. Prescribed fire will be conducted on 3-5 year intervals. This stand will be scheduled for prescribed fire in 3-5 year intervals to thin out the mid-story vegetation prior and promote herbaceous vegetation.

Stand 4 will be allowed to develop with no harvest activity during this time period.

Stand 10 will be allowed to develop to protect the drainages in this area.

Location and Description of Unnamed Ponds

Unnamed ponds located on Camp McCain, approximate acreage, description, coordinates from the Duck Hill Military Topographic Map, and suggested management techniques for each are:

1) This approximate 1.1-acre pond is located in the north-central portion of the reservation (coordinates 511339). Herbaceous and shrubby vegetation around pond perimeter includes beggar's ticks *(Desmodium* spp.), wild grape *(Vitis* spp.), *Paspalum* spp., blackberry *(Rubus* spp.), sumac *(Rhus),* and beauty-berry *(Callicarpa).* Woody species include black willow *(Salix nigra),* dogwood *(Cornus florida),* persimmon *(Diospyros virginiana),* red maple *(Acer rubrum),* hickory *(Carya* spp.), post oak *(Quercus stellata),* white oak *(Q. alba),* and southern red oak *(Q. falcata).*

2) This approximate 1.1-acre pond is located in the western part of the area between Artillery and Armor Roads (coordinates 536329). Herbaceous and shrub vegetation around pond includes broomsedge *(Andropogori), Lespedeza,* beggar's ticks, plume grass *(Erianthus),* miscellaneous forbs, and button bush *(Cephalanthus occidentalis).* Tree species at pond's edge include black willow and blackgum *(Nyssa sylvatica).* Submerged wetland plants in pond include pondweed *(Potamogetori)* and musk grass *(Chara).*

4) This approximate 1.1-acre pond is located in the south-eastern quarter of the area between Range, Engineer, and Company Roads (coordinates 536309). Primary vegetation includes broomsedge, plume grass, switchcane, blueberry spp., rush *(Juncus),* and bulrush *(Scirpus).* Beaver activity, such as freshly-peeled sticks and recently-used beaver slides, was noted. Water control structures will be monitored and maintained as needed.

5) This approximate 1.7- acre farm pond (Shaw Pond) is a part of the land acquired in 1995. It is located west of Camp McCain Road (coordinates 491338), in a pasture that will be used for tank maneuvers.

6) This approximate 1.3-acre pond (Hunt Cabin Pond) is located at coordinates 474339. It is located on an old homeplace, and has a 15'-20' long fishing pier. The pond is surrounded by young pines and hardwoods (oaks, sycamores).

7) This approximate 1-acre pond is located on the eastern side of Quartermaster Road, just south of Zero Kennel Road (coordinates558330).

8) This .3 acre pond is located just west of Quartermaster Rd (coordinate 554333). It is surrounded by a thinned mixed forest stand.

9) This .3 acre pond is functioning as a retention pond for stormwater control on the upper end of Range 5 (coordinate 546314). It contains a drop inlet pipe that regulates water level.

10) This .5 acre pond was established as a storm water control structure. It borders Epison Creek on the north (coordinate 509311). It contains a drop inlet pipe to control water level.

11) This 1 acre pond is located in the open maneuver area/hay lease area in TA 25 along a forest edge (coordinate 510348).

12) This .5 acre pond was used as a stock pond by the previous owner. It has no obvious inflow or outfall. It is located in the maneuver area/hay lease area of the southeastern portion of TA 25. It is located with 150 m of James H. Biddy Road (coordinates 498337).

13) This .9 acre pond is located in the open maneuver area/hay lease area of TA 24 (coordinates 497339).

15) This .8 acre pond is located to the north of Howitzer Road at the MOUT site (coordinates 496351). It is situated in the open maneuver area/hay lease area and contains bream and largemouth bass.

16) This .3 acre pond is west of the MOUT site surrounded by a mature hardwood forest (coordinates 493349). It has woody and herbaceous vegetation around the pond edge.

17) This .3 acre pond is located along an established forest road/firelane and 150 meters east of Scud Road (coordinates 471338). It is surrounded by a mature mixed forest stand.